Subspace Subcodes of Reed-Solomon Codes

Thesis by

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To my wife

Ikuko Hattori,

who supported me in every aspect.

Acknowledgements

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Abstract

In this paper we introduce a new class of non-linear cyclic error-correcting codes, which we call subspace subcodes of Reed-Solomon (SSRS) codes. An SSRS code is a subset of a parent Reed-Solomon (RS) code consisting of codewords whose components all lie in a fixed ν-dimensional vector subspace $\mathcal{S}$ of $GF(2^m)$.

Starting from a (n, k_0, d_0) RS code over $GF(2^m)$, with any positive integer $0 \leq \nu \leq m$, there is an SSRS code of length n and designed minimum distance d_0 over the symbol alphabet $\mathcal{S}$, the vector space of binary ν-tuples. SSRS codes are constructed using properties of the Galois field $GF(2^m)$. SSRS codes are not linear over $GF(2^\nu)$ but are Abelian group codes over $\mathcal{S}$. However, they are linear over $GF(2)$, and the symbol-wise cyclic shift of any codeword is also a codeword.

Our first main result is an explicit formula for the dimension of an SSRS code. It is followed by a corollary which gives a simple lower bound, which gives the true value for "most" subspaces. We also prove several important duality properties.

Next, we give a classification of the ν-dimensional subspaces of $GF(2^m)$ into *categories*, such that two subspaces in the same category always produce isometric SSRS codes. Then, we give an efficient means to find the "exceptional" subspaces among the huge number of subspaces. We also present a reasonably simple encoding algorithm that works for systematic shortened linear codes in general.

Finally, we present some numerical examples, which show, among other things, that (1) SSRS codes can have a higher dimension than comparable GBCH codes, so that even if $GF(2^\nu)$ is a subfield of $GF(2^m)$, it may not be the "best" ν-dimensional subspace for constructing SSRS codes; and (2) many high-rate SSRS codes have larger dimension than any previously known code with the same values of n, d and q, including algebraic-geometry codes. These examples suggest that high-rate SSRS codes are likely candidates to replace Reed-Solomon codes in high-performance transmission and storage systems.

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Chapter 1 Introduction

1.1 Prelude

The main goal of coding theory is to construct efficient error-correcting codes. A huge amount of research has been done in this field.

Among such codes, Reed-Solomon (RS) codes, first introduced in [23], are one of the most important, from both the theoretical and practical points of view [30]. RS codes are optimal in the sense of being maximum distance separable (MDS) codes, and are used in a variety of applications, like deep space communications, large scale storage systems, and consumer products like CDs.

However, in real communication or storage systems, the choice of an error-correcting code depends heavily on channel characteristics and various practical limitations. Thus, a mathematically optimal Reed-Solomon code is not always the best choice. For example, a direct application of RS codes to an additive white Gaussian noise (AWGN) channel, is not appropriate because of the lack of a good soft decoding algorithm. Indeed, one of the most efficient coding systems currently known for an AWGN channel, is a concatenated coding system, with an inner convolutional code and an outer RS code. As we shall see, RS codes are not necessarily the best choice even here.

A natural way to obtain improved performance is to extend the code length as far as possible with symbol size, dimension and minimum distance fixed. But if we try to improve an RS code this way, we must pay a price — a decrease of the minimum distance or dimension, or both. However, if we can extend the code length by paying only a small penalty, the overall performance of the coding system may be improved. There are several known ways to construct such codes. One way is the class of algebraic-geometry codes, which have been studied for more than a decade.

In this thesis, we will introduce a new class of codes, which we call subspace subcodes of Reed-Solomon (SSRS) codes. Starting from a (n, k_0, d_0) RS code over

$GF(2^m)$, with any positive integer $0 \leq \nu \leq m$, an SSRS code is defined to be the set of codewords whose components all lie in a ν-dimensional vector subspace $\mathcal{S}$. For every parent RS code, there is an SSRS code of length n and designed minimum distance d_0 over the symbol alphabet $\mathcal{S}$. SSRS codes are constructed using properties of the Galois field $GF(2^m)$. However, the field $GF(2^\nu)$ does not come into play in the construction, and so SSRS codes are not linear over the symbol field $GF(2^\nu)$. In fact, SSRS codes are Abelian group codes over $V(2^\nu)$. However, they are linear over $GF(2)$, and the symbol-wise cyclic shift of any codeword is also a codeword.

SSRS codes can be considered to be a generalization of generalized BCH (GBCH) codes and trace-shortened Reed-Solomon (TSRS) codes [17]. Although the extension from subfield subcodes to subspace subcodes is quite natural, there seems to be little previous research on this subject. The study of this class of codes was originated by Solomon in reference [26]. We can see his earlier insight on this problem in reference [25], too.

In [26], a special class of SSRS called "non-linear non-binary cyclic codes," was introduced. Several examples were given and a way of computing the binary dimension was illustrated. However, the construction was quite limited both by a required clever choice of polynomial which defines a primitive root for an underlying field, and by the choice of binary components to be trace-shortened. Thus, a method of counting codewords was available only for some cases and an explicit formula was not given.

Soon afterwards, McEliece and Solomon generalize the idea of [26] to the class of "trace-shortened Reed-Solomon (TSRS) codes" [17]. A formula for the binary dimension of TSRS codes was given. TSRS codes are also a special class of SSRS codes. But again, the class of TSRS codes are restricted; the trace-dual subspace must be spanned by a polynomial basis.

These early references treated this class of codes, using trace-shortening. But if we look at this class of codes as a projection onto a restricted dimensional vector space, things become clearer. However, we should notice that there are a huge number of subspaces. The question arises, how to pick the "best" subspace? What do we gain and lose as compared to known codes? We will answer these questions in this thesis.

1.2 Overview of Thesis

We begin in Chapter 2 by introducing a simple example which is essentially the same as the original construction given in [26]. Then, we will formally define an SSRS code as the set of codewords from a primal RS code whose symbols all lie in a particular vector subspace of the defining field. We will introduce some prerequisites and notation. Finally, we will remark on some immediate consequences of the definition of SSRS codes and list the problems we will solve.

In Chapter 3, we will give, one of our main results, a dimension formula for SSRS codes. We will give several examples illustrating the theorem. We will see that, in some cases, there exists an SSRS code which has a larger number of codewords than the GBCH code derived from the same primal code. We will also show that our formula implies a lower bound for the dimension of SSRS codes and, moreover, the TSRS codes proposed in reference [17], achieve this lower bound in all cases.

In Chapter 4, we discuss a "duality" among subspaces. We will start with a definition which distinguishes the "*interesting*" subspaces, and discuss a relationship between our dimension formula for SSRS codes and a generator (parity-check) matrix for MDS codes. We will see that, among all ν-dimensional subspaces, "most" of them are *ordinary* (which means that the corresponding SSRS code achieves the lower bound on the dimension regardless of the choice of the parent code). However, there exist a few *exceptional* subspaces for most values of m and ν.

Then we will focus on the relationship between the dimension of an SSRS code and subspace duality. Trace-dual subspaces are closely related to each other, and the dimension of the corresponding SSRS codes are also related. We will prove this relationship using a fundamental but not obvious fact that we call the "*defect theorem.*"

From the dimension formula in Chapter 3, we will see that the dimension depends on the choice of subspace. Thus, in order to obtain the highest dimension for SSRS codes, we should examine the subspaces, which give higher dimensions. Since the number of distinct subspaces explodes as m and ν get large, we must have an efficient way to implement this search.

In Chapter 5, we will deal with two equivalences, namely, scalar multiplication and conjugation. We will see that two equivalent subspaces produce isometric SSRS codes, i.e., codes with identical dimensions and weight distributions. Using these equivalences, we will be able to classify the huge number of distinct subspaces into a relatively small number of subsets.

However, we are not satisfied with the classification in Chapter 5, since we must be able to find representative subspaces from each classified subset. The ultimate scenario for this search would be to "*select*" one representative subspace from each distinct exceptional category, directly. How can we do such magic?

In Chapter 6, we will give a partial but very effective answer. We will give an algorithm which generates many such subspaces explicitly. This generation is achieved by relating what we call "*self-conjugate*" subspaces to (m, ν) binary cyclic codes.

From the practical point of view, we will see that the decoding of SSRS codes, up to designed minimum distance, is essentially the same as of primal RS codes, and thus, a decoder can easily be realized with complexity about $\mathcal{O}(n \log n)$. On the other hand, the encoding of SSRS codes is not as straightforward.

In Chapter 7, we will discuss two encoding schemes for SSRS codes. We will briefly mention a non-systematic encoding scheme in the frequency-domain, then we will discuss a systematic encoding in the time-domain.

In Chapter 8, we discuss the performance of SSRS codes in terms of code length, dimension, and designed minimum distance using detailed dimension tables from Appendix C and D. We will give several specific examples. Then, we will compare the performance of SSRS codes to that of algebraic geometry (AG) codes. We will see that, in some cases, SSRS codes are preferable to AG codes. Finally, we will give an infinite sequence of SSRS codes which provides counterexamples to a conjecture about optimal quasi-MDS codes.

Chapter 2 Construction

In this Chapter, we will give the formal definition for subspace subcodes of Reed-Solomon (SSRS) codes. This definition generalizes both the non-linear non-binary codes [26] and the trace-shortened Reed-Solomon (TSRS) codes [17].

We will start with a specific example to motivate the more general discussion. Then, we will give a formal construction for SSRS codes. Finally, we will discuss several properties which easily follow from the construction, and raise several question in consequence.

2.1 Motivation

We start with an example of a simple but attractive SSRS code. This example illustrates the underlying idea, originated by Solomon [26], and leads to the general construction.

Let $\mathbb{C}$ be an ordinary Reed-Solomon (RS) code of length 15 over $\mathbb{F} = GF(2^4)$ with parity-check polynomial

$$h(x) = \sum_{i=1}^{9}(x - \alpha^i), \tag{2.1}$$

where α is a primitive root of $\mathbb{F}$. Thus, $\mathbb{C}$ is a $(15, 9, 7)$ RS code over $GF(2^4)$. Let $\boldsymbol{C} = (C_0, C_1, \dots, C_{14})$ be a codeword from $\mathbb{C}$. We expand each component of $\boldsymbol{C}$ into a binary 4-tuple with respect to the polynomial basis $\{1, \alpha, \alpha^2, \alpha^3\}$. Figure 2.1 illustrates this expansion.

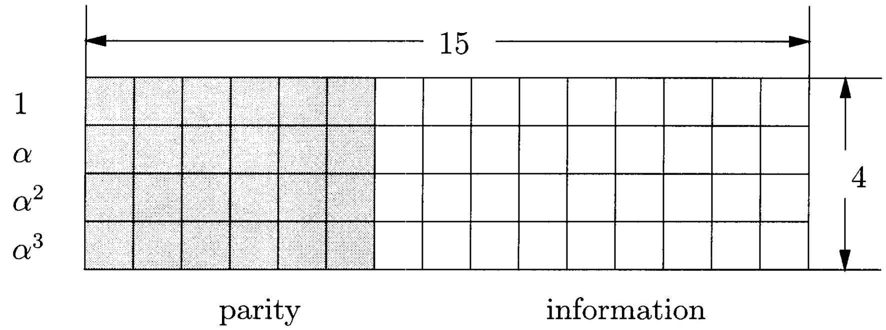


Figure 2.1: (15, 9, 7) Reed-Solomon over $GF(2^4)$

When an element in $GF(2^m)$ is expressed as a binary m-tuple, both the basis and the polynomial defining the primitive root play important roles. We take as basis $\{1, \alpha, \alpha^2, \dots, \alpha^{m-1}\}$, where α is a primitive root[1]. The primitive root must satisfy the following constraints:

If m is odd: $\quad \operatorname{Tr} \alpha^i = 0$ for $1 \le i \le m-1$. ($\operatorname{Tr} 1 = 1$ automatically.)

If m is even: $\quad \operatorname{Tr} \alpha^i = 0$ for $0 \le i \le m$ except for a single odd integer p, where $p < m$ and $\operatorname{Tr} \alpha^p = 1$.

Fortunately, we can find such primitive roots, at least $m \le 12$. For $m = 4$, root of the irreducible polynomial $x^4 + x + 1$ certainly satisfies the condition. So, let $\alpha^4 = \alpha + 1$.

Now, suppose we can magically find codewords from $\mathbb{C}$ whose binary components corresponding to basis α^3 are zero for all $n = 0, 1, \dots, 14$. (See Figure 2.2).

[1] In reality, α is not necessarily a primitive root. We will clarify later, but we follow the original description (due to Solomon) at first.

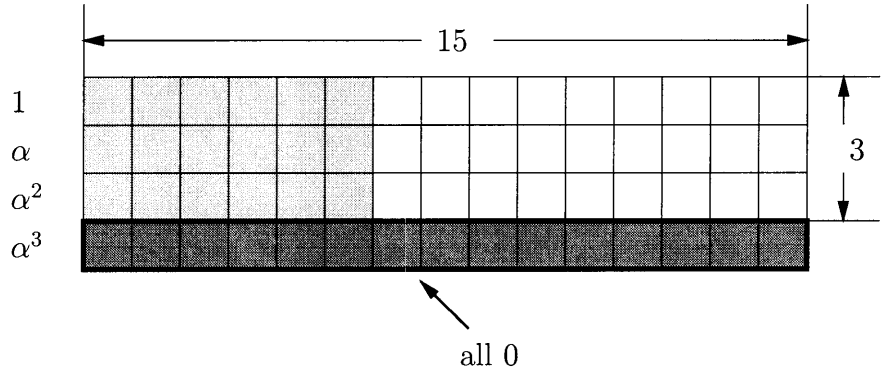


Figure 2.2: $(15, 7\frac{1}{3}, 7^{+})$ Subspace subcode of Reed-Solomon over $V(2^3)$

We call this subset of codewords from $\mathbb{C}$ a "*subspace subcode*" and denote it by $\mathbb{C}_S$ since this subcode can also be considered as the set of codewords, all of whose components lie in the subspace spanned by the remaining basis elements $\{1, \alpha, \alpha^2\}$.

Plainly, this subcode is not a linear code over $GF(2^4)$ or $GF(2^3)$. However, the sum of any two codewords from $\mathbb{C}_S$ is also a codeword and any cyclic shift of a codeword is still a codeword.

When we use this code in a real communication systems, we don't need to send the α^3 components, since these are guaranteed to be zero. So, we can regard this subcode as a non-linear cyclic code of length 15 over the set of binary 3-tuples.

This construction is similar to the construction of a GBCH code as a subfield subcode of a parent RS code. However, the essential difference is that the vector space spanned by $\{1, \alpha, \alpha^2\}$ is not a subfield. Since $GF(2^3)$ is not a subfield of $GF(2^4)$, there is no corresponding GBCH code for this case.

We claim that the minimum distance of $\mathbb{C}_S$ is at least 7, because the minimum distance of the subcode cannot be less than its parent RS code. We say that the "*designed*" minimum distance is 7. Therefore, this construction gives us a non-linear cyclic code of length 15 over 3-tuple with distance 7^{+}. The notation 7^{+} means that the *designed* minimum distance is 7. In general, the true minimum distance can be greater than the designed minimum distance, but an ordinary decoder can only decode up to designed minimum distance, and it is often hard to find the true minimum distance.

The final and most interesting question will be, how many codewords are contained in $\mathbb{C}_S$? To answer this, we invoke the Mattson-Solomon (MS) polynomial (e.g., [16]) for the $(15, 9, 7)$ RS code. If $\boldsymbol{C}$ is an arbitrary codeword from the RS code, then

$$\begin{aligned} \boldsymbol{C} &= (C_0, C_1, \dots, C_{14}) \\ &= (P(1), P(\alpha), P(\alpha^2), \dots, P(\alpha^{14})), \end{aligned} \tag{2.2}$$

where

$$P(x) = \sum_{i=1}^{9} p_i x^i, \qquad \text{for some choice of } p_i \in GF(2^4). \tag{2.3}$$

Thus, the trace of every codeword is simply the binary component corresponding to α^3, since if $x \in GF(2^4)$ and $x = x_0 + x_1\alpha + x_2\alpha^2 + x_3\alpha^3$, where $x_i \in GF(2)$, then

$$\begin{aligned} \operatorname{Tr}(x) &= \operatorname{Tr}(x_0 + x_1\alpha + x_2\alpha^2 + x_3\alpha^3) \\ &= x_0 \operatorname{Tr}(1) + x_1 \operatorname{Tr}(\alpha) + x_2 \operatorname{Tr}(\alpha^2) + x_3 \operatorname{Tr}(\alpha^3) \\ &= x_3. \end{aligned}$$

Therefore, the condition for the codeword $\boldsymbol{C}$ to be in $\mathbb{C}_S$ is

$$\operatorname{Tr}\big(P(x)\big) = \operatorname{Tr}\Big(\sum_{i=1}^{9} p_i x^i\Big) = 0 \qquad \text{for all } x = 1, \alpha, \dots, \alpha^{14}. \tag{2.4}$$

We will see in Chapter 3 (Lemmas 3.2.2 and 3.2.3), that equation (2.4) is equivalent to the following set of conditions on the coefficients of the MS polynomial.

$$p_1 + p_2^8 + p_4^4 + p_8^2 = 0 \tag{2.5}$$

$$p_3 + p_6^8 + p_9^2 = 0 \tag{2.6}$$

$$p_5 + p_5^4 = 0 \tag{2.7}$$

$$p_7 = 0 \tag{2.8}$$

For equation (2.5), it is possible to choose any 3 coefficients freely (say p_1, p_2, and p_4), but the final coefficient is then determined from these coefficients. Therefore, there are $2^{4\cdot 3} = 4096$ possible choices for p_1, p_2, p_4, and p_8. Similarly, there are $2^{4\cdot 2}$ possible choices for p_3, p_6, and p_9 in equation (2.6). Equation (2.7) is not as easy, but it can be shown that equation (2.7) is satisfied if and only if $p_5 \in GF(4)$. Therefore, there are 2^2 elements which satisfy equation (2.7). In total, we conclude that there are

$$2^{4\cdot 3} \cdot 2^{4\cdot 2} \cdot 2^2 = 2^{22} \tag{2.9}$$

distinct sets of coefficients which satisfy equations (2.5)–(2.8). Since each distinct set of coefficients produces a distinct codeword, there are 2^{22} codewords for $\mathbb{C}_{\mathcal{S}}$.

If we define the "pseudo 3-tuple dimension" as $\log_8 |\mathbb{C}_{\mathcal{S}}|$, we find that this code has dimension $22/3 = 7\frac{1}{3}$. So, this SSRS code is a $(15, 7\frac{1}{3}, 7^+)$ code over 3-tuples. So, we have paid a price—reduced dimension by $1\frac{2}{3}$ in order to reduce the symbol set from 16 to 8.

Another construction for a code of length 15 over binary 3-tuples, is a shortened generalized BCH code. In fact, we have a $(63, 52, 7)$ GBCH code over $GF(2^3)$, so by the general shortening argument, we get $(15, 4, 7^+)$ code, which has only $2^{4\cdot 3} = 2^{12}$ codewords. On the other hand, $\mathbb{C}_{\mathcal{S}}$ contains 2^{22} codewords. So, if we need a code of length 15 over binary 3-tuples, a shortened GBCH code is not attractive.

For another comparison, we consider an algebraic-geometry (AG) code. We do not go into details, but there is an elliptic curve of genus 1, which produces a $(14, 7, 7)$ code over $GF(2^3)$. But we can see that $\mathbb{C}_{\mathcal{S}}$ still contains twice as many codewords with 1 symbol larger code length.

2.2 Construction

In this section, we will give a formal definition of SSRS codes. We start from a field $\mathbb{F} = GF(2^m)$, a positive integer n which is a divisor of $2^m - 1$, and a primitive n-th root of unity in $\mathbb{F}$, say α. Let J be a set of k_0 integers whose elements, chosen from $\{0, 1, \ldots, n-1\}$, form an arithmetic progression[2] modulo n whose increment is relatively prime to n.

We then define the code $\mathbb{C}(J)$ to be an (n, k_0, d_0) cyclic Reed-Solomon (RS) code over $\mathbb{F}$, where $d_0 = n - k_0 + 1$, with parity-check polynomial $h(x)$ and generator polynomial $g(x)$ as follows:

$$h(x) = \prod_{j \in J} (x - \alpha^j) \tag{2.10}$$

$$g(x) = \prod_{j \in \bar{J}} (x - \alpha^j) \tag{2.11}$$

Equivalently, using a Mattson-Solomon polynomial $P(x)$, $\mathbb{C}$ consists of all vectors $\mathbf{C} = (C_0, C_1, \ldots, C_{n-1})$ of the form

$$C_i = P(\alpha^i) \qquad i = 0, 1, \ldots, n-1 \tag{2.12}$$

$$P(x) = \sum_{j \in J} p_j x^j \qquad \text{for all } p_j \in \mathbb{F}, \tag{2.13}$$

where $(p_j), j \in J$ is an arbitrary set of elements from $\mathbb{F}$, indexed by J.

Since $\mathbb{C}$ is a RS code, the minimum distance of the code $\mathbb{C}$ is $d_0 = n - k_0 + 1$. We will refer to $\mathbb{C}$ as a *parent* code, since we will define an SSRS code as a subcode of this class of codes. The number d_0 is called the *designed* minimum distance.

2.2.1. Definition. Let $\mathbb{C}$ be a (n, k_0, d_0) parent cyclic RS code over $GF(2^m)$ as previously defined. Let $\mathcal{S}$ be a ν-dimensional vector subspace of $GF(2^m)$, where $0 \leq \nu \leq m$. The "*subspace subcode*" $\mathbb{C}_{\mathcal{S}}$ associated with $\mathbb{C}$ and $\mathcal{S}$, is defined to be the set of codewords from $\mathbb{C}$ whose components all lie in $\mathcal{S}$. ■

In order to investigate SSRS codes using the MS polynomial, we need to introduce the *trace* operation (e.g., [19]), and the trace-dual subspace associated with a subspace

[2] In fact, this discussion can easily be extended to an arbitrary integer set. However, we focus on the consecutive integer sets, i.e., Reed-Solomon codes, because in the more general case, we have no estimate of the minimum distance.

$\mathcal{S}$ of $GF(2^m)$.

Let ξ be an element from $GF(2^m)$. We denote by $\mathrm{Tr}_1^m(\xi)$, the trace of ξ from $GF(2^m)$ to $GF(2^1)$, i.e., the $GF(2)$-linear mapping from $GF(2^m)$ to $GF(2^1)$, given by

$$\mathrm{Tr}_1^m(\xi) = \xi + \xi^2 + \xi^4 + \cdots + \xi^{2^{m-1}}. \tag{2.14}$$

Similarly, if d is a divisor of m, $\mathrm{Tr}_d^m(\xi)$ denotes the trace of ξ from $GF(2^m)$ to $GF(2^d)$ i.e., the $GF(2^d)$-linear mapping from $GF(2^m)$ to $GF(2^d)$, given by

$$\mathrm{Tr}_d^m(\xi) = \xi + \xi^{2^d} + \xi^{2^{2d}} + \cdots + \xi^{2^{(f-1)d}}, \tag{2.15}$$

where $f = m/d$.

Next, we define a *basis* for $GF(2^m)$ to be a set of m linearly independent elements from $GF(2^m)$ which spans whole space. Let us denote a typical basis by

$$\mathfrak{B} = \{\beta_0, \beta_1, \ldots, \beta_{m-1}\}.$$

A dual basis $\mathfrak{G}$ for $\mathfrak{B}$ is defined to be a set of linearly independent elements which are orthogonal to $\mathfrak{B}$, with respect to the trace operator, i.e.,

$$\mathfrak{G} = \{\gamma_0, \gamma_1, \ldots, \gamma_{m-1}\},$$

$$\mathrm{Tr}_1^m(\beta_i\gamma_j) = \begin{cases} 1 & \text{if } i = j, \\ 0 & \text{if } i \neq j. \end{cases} \tag{2.16}$$

It is known (e.g., [19][15]) that a dual basis always exists and is unique corresponding to every basis for $GF(2^m)$.

2.2.2. Example. For $GF(2^4)$, let α be a primitive root defined by $\alpha^4 = \alpha + 1$. If we choose the basis $\mathfrak{B} = \{1, \alpha, \alpha^2, \alpha^3\}$, then a dual basis $\mathfrak{G}$ for $\mathfrak{B}$ is $\mathfrak{G} = \{\alpha^{14}, \alpha^2, \alpha^1, 1\}$.

This is easy to verify:

$$\begin{aligned}
\operatorname{Tr}(\alpha^{14}\cdot 1) &= \operatorname{Tr}\alpha^{14} = 1 & \qquad \operatorname{Tr}(\alpha^{2}\cdot 1) &= \operatorname{Tr}\alpha^{2} = 0\\
\operatorname{Tr}(\alpha^{14}\cdot \alpha) &= \operatorname{Tr}1 = 0 & \qquad \operatorname{Tr}(\alpha^{2}\cdot \alpha) &= \operatorname{Tr}\alpha^{3} = 1\\
\operatorname{Tr}(\alpha^{14}\cdot \alpha^2) &= \operatorname{Tr}\alpha = 0 & \qquad \operatorname{Tr}(\alpha^{2}\cdot \alpha^2) &= \operatorname{Tr}\alpha^{4} = 0\\
\operatorname{Tr}(\alpha^{14}\cdot \alpha^3) &= \operatorname{Tr}\alpha^2 = 0 & \qquad \operatorname{Tr}(\alpha^{2}\cdot \alpha^3) &= \operatorname{Tr}\alpha^{5} = 0,
\end{aligned}$$

etc. ■

Note that if an element ζ from $GF(2^m)$ is expanded with respect to the basis $\mathfrak{B}$ as

(2.17) $$\zeta = \sum_{j=0}^{m-1} z_j\beta_j, \qquad z_j \in GF(2),$$

then its binary components $(z_j), j = 0, 1, \ldots, m-1$ are given by

(2.18) $$z_j = \operatorname{Tr}_1^m(\zeta\gamma_j), \qquad \text{for } j = 0, 1, \ldots, m-1.$$

Now, we consider a ν-dimensional vector subspace $\mathcal{S}$ of $GF(2^m)$, where $0 \le \nu \le m$. Suppose $\mathcal{S}$ is spanned by basis

(2.19) $$\mathfrak{B}_{\mathcal{S}} = \{\beta_0, \beta_1, \ldots, \beta_{\nu-1}\}$$

consisting of ν linearly independent elements.

The "*trace dual*" subspace $\mathcal{S}^\perp$ associated with $\mathcal{S}$ is defined to be the μ-dimensional subspace of $GF(2^m)$ with $\mu = m - \nu$ satisfying

(2.20) $$\operatorname{Tr}_1^m(x\,y) = 0 \qquad \begin{cases} \text{for all } x \in \mathcal{S} \\ \text{for all } y \in \mathcal{S}^\perp. \end{cases}$$

Without loss of generality, we can assume that the elements of $\mathfrak{B}_{\mathcal{S}}$ are the first ν

elements in a complete basis $\mathfrak{B}$. Therefore, if we denote the complete basis and its dual by

$$\mathfrak{B} = \{\beta_0, \beta_1, \ldots, \beta_{\nu-1}, \beta_\nu, \ldots, \beta_{m-1}\} \tag{2.21}$$

$$\mathfrak{G} = \{\gamma_0, \gamma_1, \ldots, \gamma_{\nu-1}, \gamma_\nu, \ldots, \gamma_{m-1}\}, \tag{2.22}$$

then the trace-dual subspace $\mathcal{S}^\perp$ is the subspace spanned by $\{\gamma_\nu, \gamma_{\nu+1}, \ldots, \gamma_{m-1}\}$. We call this basis the "*trace-dual*" basis and denote it by $\mathfrak{G}_\mathcal{S}$. We will write this relationship by the notation

$$\mathfrak{B}_\mathcal{S} = \{\beta_0, \beta_1, \ldots, \beta_{\nu-1}\}, \tag{2.23}$$

$$\mathfrak{G}_\mathcal{S} = \{\gamma_\nu, \gamma_{\nu+1}, \ldots, \gamma_{m-1}\}, \tag{2.24}$$

$$\mathfrak{B}_\mathcal{S} \perp \mathfrak{G}_\mathcal{S}. \tag{2.25}$$

For convenience, we will index the subscripts of elements in $\mathfrak{G}_\mathcal{S}$ from 0 to $\mu - 1$, where $\mu = m - \nu$. It follows from the fact that a dual basis of a complete basis always exists, that a trace-dual subspace of any subspace also exists. However, it is not unique in general.

Now, we are ready to look at the definition of SSRS codes using the MS polynomial. It is always possible to express a complete basis for $GF(2^m)$ of the form

$$\mathfrak{B} = \{\beta_0, \beta_1, \ldots, \beta_{\nu-1}, \beta_\nu, \ldots, \beta_{m-1}\},$$

where β_0 through $\beta_{\nu-1}$ are the basis elements for $\mathcal{S}$ and components β_ν through β_{m-1} are attached so that $\mathfrak{B}$ spans whole space. If we consider the binary expansion of the codeword $\mathbb{C}$ into m-tuples with respect to this complete basis, the definition 2.2.1 for SSRS codes is equivalent to saying that the SSRS code is the set of codewords from $\mathbb{C}$ whose binary components corresponding to $\{\beta_\nu, \ldots, \beta_{m-1}\}$ are all zero. So, if we express a trace-dual basis for $\mathfrak{B}_\mathcal{S}$ by $\mathfrak{G}_\mathcal{S}$ and use equation (2.18), we can rewrite the definition of $\mathbb{C}_\mathcal{S}$ as follows:

2.2.3. Definition. The SSRS code is defined to be the set of codewords $\boldsymbol{C}$ from $\mathbb{C}$ satisfying

$$\boldsymbol{C} = (C_0, C_1, \ldots, C_{n-1}) \tag{2.26}$$

with

$$\mathrm{Tr}_1^m(\gamma_h C_i) = 0 \qquad \begin{cases} \text{for all } h = \nu, \nu+1, \ldots, m-1 \\ \text{for all } i = 0, 1, \ldots, n-1. \end{cases} \tag{2.27}$$

■

2.3 Summary

In summary, an SSRS code $\mathbb{C}_{\mathcal{S}}$ is a code of length n over a 2^ν*-letter alphabet* $\mathcal{S}$. The alphabet $\mathcal{S}$ is a vector space, but not a field. However, $\mathcal{S}$ is certainly an *Abelian group* under addition, and the sum of any two codewords is also a codeword for $\mathbb{C}_{\mathcal{S}}$. Moreover, any symbol-wise cyclic shift of a codeword is still a codeword. Thus, an SSRS code $\mathbb{C}_{\mathcal{S}}$ is a cyclic group code over the elementary Abelian group $\mathcal{S}$.

With the definition above, generalized BCH codes can be considered as a special case in which $\mathcal{S}$ is a subfield $GF(2^\nu)$ of $GF(2^m)$, where $\nu \mid m$. Moreover, "trace-shortened" Reed-Solomon (TSRS) codes [17] can also be regarded as a special case, in which the trace-dual subspace of $\mathcal{S}$ is spanned by a "polynomial" type basis of the form

$$\mathfrak{G}_{\mathcal{S}} = \{1, \gamma, \gamma^2, \ldots, \gamma^{\mu-1}\}, \tag{2.28}$$

where γ is a primitive root[3] of $GF(2^m)$.

We denote the symbol-wise minimum distance of the code $\mathbb{C}_{\mathcal{S}}$ by $d_{\mathcal{S}}$. Since every

[3]We can relax this definition slightly by requiring only that γ is a primitive element (lies in no subfield) rather than a primitive root, as we will see in Section 3.4.

codeword in $\mathbb{C}_{\mathcal{S}}$ is also a codeword in the parent code $\mathbb{C}$, and since $\mathbb{C}$ is a RS code, for which the true minimum distance is $d_0 = n - k_0 + 1$, it follows that the true minimum distance $d_{\mathcal{S}}$ of $\mathbb{C}_{\mathcal{S}}$ satisfies

$$d_{\mathcal{S}} \geq d_0. \tag{2.29}$$

We call d_0 the *designed* minimum distance for the SSRS code $\mathbb{C}_{\mathcal{S}}$. In general, the *true* minimum distance of SSRS codes is not the same as the designed minimum distance.

Decoding SSRS codes is quite easy. Since $\mathbb{C}_{\mathcal{S}}$ is subcode of parent RS code, we can use the sophisticated algorithms for RS codes to decode SSRS codes up to the designed minimum distance. We note that the computational complexity of the most efficient decoding algorithm[4] for RS codes is far less than $\mathcal{O}(n \log^2 n)$ [3].

Contrarily, the encoding of SSRS codes is not as easy as that of RS codes. We will discuss the encoding of SSRS codes in Chapter 7.

As we have seen, an SSRS code over the ν-dimensional subspace $\mathcal{S}$ is a subgroup of the group $\mathcal{S}^n$, and thus the order of the code need not be a power of 2^ν. However, since the sum of any two codewords from $\mathbb{C}_{\mathcal{S}}$ is another codeword, $\mathbb{C}_{\mathcal{S}}$ a linear code over $GF(2)$, and so the order must be a power of 2. Let us denote its $GF(2)$-dimension by $K(\mathbb{C}, \mathcal{S})$. If $|\mathbb{C}_{\mathcal{S}}|$ denotes the number of codewords in $\mathbb{C}_{\mathcal{S}}$, then

$$|\mathbb{C}_{\mathcal{S}}| = 2^{K(\mathbb{C},\mathcal{S})}. \tag{2.30}$$

We call $K(\mathbb{C}, \mathcal{S})$ the *binary* dimension of $\mathbb{C}_{\mathcal{S}}$.

As we have seen, since the field $GF(2^\nu)$ does not come into play, $\mathbb{C}_{\mathcal{S}}$ cannot be a linear code. Nevertheless we will define a *pseudo-dimension* for $\mathbb{C}_{\mathcal{S}}$ as

$$k(\mathbb{C}, \mathcal{S}) = \frac{1}{\nu} K(\mathbb{C}, \mathcal{S}) = \log_{|\mathcal{S}|} |\mathbb{C}_{\mathcal{S}}|. \tag{2.31}$$

Note that $k(\mathbb{C}, \mathcal{S})$ need not to be a integer.

[4] In fact, the complexity of the most efficient decoding algorithms for RS codes (e.g., accelerated Berlekamp-Massey algorithm) are very close to $\mathcal{O}(n \log n)$ in most cases.

The most important theoretical problem, however, is to find the exact dimension, i.e., the number of codewords in $\mathbb{C}_{\mathcal{S}}$. In Chapter 3, we give an explicit formula for computing the exact binary dimension for an SSRS code for a given parent code $\mathbb{C}$ and a ν-dimensional subspace $\mathcal{S}$.

Chapter 3 Dimension

In this Chapter, we will derive an explicit formula for the dimension of a subspace subcode of a Reed-Solomon code. Moreover, we will show that, in some cases, there exists an SSRS code, whose dimension is higher than the generalized BCH code with the same code length n, minimum distance d_0 and symbol size q. Since the setup for our main theorem is a little complicated, we will begin by reviewing some known facts about finite fields, followed by some lemmas which were first introduced and proved in [17]. Then we will state and prove the dimension theorem. This is followed by a corollary which gives a simple lower bound on the dimension of SSRS codes, which is attained by the TSRS codes introduced in [17]. Finally, we will give several examples which shed light on the importance of SSRS codes.

3.1 Main Theorem

First, we define the *modulo n cyclotomic cosets.* Let n be an odd positive integer. If i and j are integers in the range $0 \leq i \leq n-1$, and if $2^s i \equiv j \pmod{n}$ for some integer s, we say that i and j are *conjugate modulo n*. It is easy to see that conjugation modulo n is an equivalence relation on the set $\{0, 1, \ldots, n-1\}$, and so the set $\{0, 1, \ldots, n-1\}$ is partitioned into a number of disjoint equivalent classes, which are called the *modulo n cyclotomic cosets.* Alternatively, the cyclotomic coset containing j, which we will denote by Ω_j, can be described explicitly as the set $\{j, 2j, \ldots, 2^{d-1}j\}$, where d is the least positive integer such that $2^d j \equiv j \pmod{n}$. The integer d is called the *degree* of j, written $d = \deg(j)$. In what follows, we will denote the cardinality of Ω_j by d_j. It is easy to see that every element of Ω_j has degree d_j, and that d_j is a divisor of n, so we denote $f_j = n/d_j$. Finally, we denote by I_n the set consisting of the smallest integers in each cyclotomic coset.

3.1.1. Example. Let $n = 15$. A short calculation shows that there are 5 cyclotomic cosets modulo 15; indeed, we have $I_{15} = \{0, 1, 3, 5, 7\}$, and

$$\begin{array}{lll} \Omega_0 = (0) & d_0 = 1 & f_0 = 4 \\ \Omega_1 = (1, 2, 4, 8) & d_1 = 4 & f_1 = 1 \\ \Omega_3 = (3, 6, 12, 9) & d_3 = 4 & f_3 = 1 \\ \Omega_5 = (5, 10) & d_5 = 2 & f_5 = 2 \\ \Omega_7 = (7, 14, 13, 11) & d_7 = 4 & f_7 = 1. \end{array}$$

■

For future reference, we slightly modify the definition of modulo n cyclotomic coset and define the *modulo n cyclotomic array.* The cyclotomic array is the $|I_n| \times m$ array of integers whose jth row corresponds to the jth cyclotomic coset. However, the integers in the cyclotomic coset whose degree d_j is not equal to m are *repeated* $m/d_j = f_j$-times. More precisely, the nth *cyclotomic array* is the $|I_n| \times m$ matrix of integers in $\{0, 1, \ldots, n-1\}$, whose (j, i)th position is $j2^i \pmod{n}$. Here $j \in I_n$ and $i \in \{0, 1, \ldots, m-1\}$, where m is the least integer such that $2^m \equiv 1 \pmod{n}$.

3.1.2. Example. Let $n = 15$, as in Example 3.1.1. Then the corresponding cyclotomic array is as follows:

$$\begin{array}{c|cccc|cc} & \multicolumn{4}{c}{\text{index } i} & & \\ & 0 & 1 & 2 & 3 & & \\ \hline j = 0 & 0 & 0 & 0 & 0 & d_0 = 1 & f_0 = 4 \\ j = 1 & 1 & 2 & 4 & 8 & d_1 = 4 & f_1 = 1 \\ j = 3 & 3 & 6 & 12 & 9 & d_3 = 4 & f_3 = 1 \\ j = 5 & 5 & 10 & 5 & 10 & d_5 = 2 & f_5 = 2 \\ j = 7 & 7 & 14 & 13 & 11 & d_7 = 4 & f_7 = 1 \\ \hline \end{array}$$

■

As a final preparation for stating our formula for the exact binary dimension for an SSRS code, we define a matrix $\Gamma_j(\mathbb{C}_{\mathcal{S}})$, associated with the j-th row of cyclotomic array, called the "*j-th cyclotomic matrix*" for $\mathbb{C}_{\mathcal{S}}$.

Given the set J, for each $j \in I_n$, we define $J_j = J \cap \Omega_j$. Let $e_j = |J_j|$ be the number integers in J_j. We define the index set A_j, to be the set of integers i, which satisfy $0 \leq i \leq m-1$ and $j \cdot 2^i \in J_j$. With this definition, it is apparent that $|A_j| = a_j = e_j f_j$. For convenience, we order the elements in A_j and denote it as follows:

$$A_j = \{i_0, i_1, \dots, i_{a_j-1}\} \qquad i_0 < i_1 < \dots < i_{a_j-1}. \tag{3.1}$$

The j-th cyclotomic matrix Γ_j is defined as the following $\mu \times a_j$ matrix:

$$\Gamma_j = \begin{bmatrix} \gamma_0^{2^{m-i_0}} & \gamma_0^{2^{m-i_1}} & \cdots & \gamma_0^{2^{m-i_{a_j-1}}} \\ \gamma_1^{2^{m-i_0}} & \gamma_1^{2^{m-i_1}} & \cdots & \gamma_1^{2^{m-i_{a_j-1}}} \\ \vdots & \vdots & \ddots & \vdots \\ \gamma_{\mu-1}^{2^{m-i_0}} & \gamma_{\mu-1}^{2^{m-i_1}} & \cdots & \gamma_{\mu-1}^{2^{m-i_{a_j-1}}} \end{bmatrix}. \tag{3.2}$$

In (3.2), $\{\gamma_0, \gamma_1, \dots, \gamma_{\mu-1}\}$ is a trace-dual basis for $\mathcal{S}$, where $\mu = n - \nu$.

3.1.3. Example. Let $m = 4$, $n = 15$ and $J = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Since $I_{15} = \{0, 1, 3, 5, 7\}$, the cyclotomic array is as follows.

	index i 0	1	2	3					
$j=0$	**0**	**0**	**0**	**0**	$d_0 = 1$	$f_0 = 4$	$e_0 = 1$	$A_0 = \{0,1,2,3\}$	$a_0 = 4$
$j=1$	**1**	**2**	**4**	**8**	$d_1 = 4$	$f_1 = 1$	$e_1 = 4$	$A_1 = \{0,1,2,3\}$	$a_1 = 4$
$j=3$	**3**	**6**	12	**9**	$d_3 = 4$	$f_3 = 1$	$e_3 = 3$	$A_3 = \{0,1,3\}$	$a_3 = 3$
$j=5$	**5**	10	**5**	10	$d_5 = 2$	$f_5 = 2$	$e_5 = 1$	$A_5 = \{0,2\}$	$a_5 = 2$
$j=7$	**7**	14	13	11	$d_7 = 4$	$f_7 = 1$	$e_7 = 1$	$A_7 = \{0\}$	$a_7 = 1$

Suppose $\nu = 2$, then $\mu = m - \nu = 2$. Let the basis of $\mathcal{S}^{\perp}$ be $\{\gamma_0, \gamma_1\}$. Since

$A_0 = \{0, 1, 2, 3\}$, Γ_0 is the 2×4 matrix given by following.

$$\Gamma_0 = \begin{bmatrix} \gamma_0^{2^0} & \gamma_0^{2^3} & \gamma_0^{2^2} & \gamma_0^{2^1} \\ \gamma_1^{2^0} & \gamma_1^{2^3} & \gamma_1^{2^2} & \gamma_1^{2^1} \end{bmatrix}$$

Similarly, we can easily see that $\Gamma_1 = \Gamma_0$ because in the first row of the cyclotomic array, all integers are occupied, since $J_1 = \{1, 2, 4, 8\}$. The cyclotomic matrices for $j = 3, 5, 7$ are as follows:

$$\Gamma_3 = \begin{bmatrix} \gamma_0^{2^0} & \gamma_0^{2^3} & \gamma_0^{2^1} \\ \gamma_1^{2^0} & \gamma_1^{2^3} & \gamma_1^{2^1} \end{bmatrix}$$

$$\Gamma_5 = \begin{bmatrix} \gamma_0^{2^0} & \gamma_0^{2^2} \\ \gamma_1^{2^0} & \gamma_1^{2^2} \end{bmatrix}$$

$$\Gamma_7 = \begin{bmatrix} \gamma_0^{2^0} \\ \gamma_1^{2^0} \end{bmatrix}$$

■

Now we are prepared to state our main theorem for computing the exact binary dimension of the SSRS code $\mathbb{C}_{\mathcal{S}}$ derived from the (n, k_0) RS code $\mathbb{C}$ over $GF(2^m)$.

3.1.4. Theorem (Dimension of SSRS codes). *Given an (n, k_0) parent cyclic RS code $\mathbb{C}$ over $GF(2^m)$ with $n \mid 2^m - 1$ defined by the integer set J. Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ spanned by the basis $\{\beta_0, \beta_1, \dots, \beta_{\nu-1}\}$. Let $\mathcal{S}^\perp$ be the μ-dimensional trace-dual subspace of $\mathcal{S}$ spanned by the basis $\{\gamma_0, \gamma_1, \dots, \gamma_{\mu-1}\}$, where $\mu = m - \nu$. Further, let r_j be the rank of j-th cyclotomic matrix Γ_j. The binary dimension $K(\mathbb{C}, \mathcal{S})$ of SSRS code $\mathbb{C}_{\mathcal{S}}$ is given by the following formula.*

$$K(\mathbb{C}, \mathcal{S}) = \sum_{j \in I_n} d_j (a_j - r_j) \tag{3.3}$$

$$= \sum_{j \in I_n} (m e_j - r_j d_j). \tag{3.4}$$

Note: Theorem 3.1.4 applies to any subspace subcode of a parent code defined by an arbitrary subset J of $\{0, 1, \ldots, n-1\}$ (see equation (2.10)). However, when J is arbitrary, we have neither a good estimate for the minimum distance, nor a good decoding algorithm, for the corresponding parent code, and so we have not emphasized this extra generality.

3.2 Some Known Lemmas

In order to prove Theorem 3.1.4, we will need some lemmas that have already been proved in reference [17]. We will give these results without proof.

Let $P(x)$ be a polynomial of degree $n-1$ with coefficients $(P_j), j = 0, 1, \ldots, n-1$ in $GF(2^m)$, where $n \mid 2^m - 1$:

$$P(x) = \sum_{j=0}^{n-1} P_j x^j, \qquad P_j \in GF(2^m). \tag{3.5}$$

Now we define the polynomial $\mathcal{P}(x)$ as follows:

$$\mathcal{P}(x) = \mathrm{Tr}_1^m\big(P(x)\big) \pmod{x^n - 1} \tag{3.6}$$

$$= \sum_{j=0}^{n-1} \mathcal{P}_j x^j, \tag{3.7}$$

where the operator Tr in equation (3.7) is the *trace* operator given in equation (2.14).

3.2.1. Example. Let $m = 4$, $n = 15$. Then we have

$$P(x) = \sum_{j=0}^{15} P_j x^j,$$

$$\begin{aligned}
\mathcal{P}(x) &= \mathrm{Tr}_1^4\big(P(x)\big) \pmod{x^{15}-1} \\
&= P(x) + P^2(x) + P^4(x) + P^8(x) \pmod{x^{15}-1} \\
&= 1 \cdot (P_0 + P_0^8 + P_0^4 + P_0^2) + x \cdot (P_1 + P_2^8 + P_4^4 + P_8^2) \\
&\quad + x^2 \cdot (P_2 + P_4^8 + P_8^4 + P_1^2) + x^3 \cdot (P_3 + P_6^8 + P_{12}^4 + P_9^2) \\
&\qquad \vdots \\
&\quad + x^{13} \cdot (P_{13} + P_{11}^8 + P_7^4 + P_{14}^2) + x^{14} \cdot (P_{14} + P_{13}^8 + P_{11}^4 + P_7^2).
\end{aligned}$$

Therefore,

$$\begin{aligned}
\mathcal{P}_0 &= P_0 + P_0^8 + P_0^4 + P_0^2 & \mathcal{P}_1 &= P_1 + P_2^8 + P_4^4 + P_8^2 \\
\mathcal{P}_2 &= P_2 + P_4^8 + P_8^4 + P_1^2 & \mathcal{P}_3 &= P_3 + P_6^8 + P_{12}^4 + P_9^2 \\
&\vdots & &\vdots \\
\mathcal{P}_{13} &= P_{13} + P_{11}^8 + P_7^4 + P_{14}^2 & \mathcal{P}_{14} &= P_{14} + P_{13}^8 + P_{11}^4 + P_7^2.
\end{aligned}$$

■

Now we review three Lemmas from reference [17].

3.2.2. Lemma. *Let $P(x)$ be a polynomial of degree $n-1$, as defined in equation (3.5). Then $\mathrm{Tr}_1^m(P(x)) = 0$ for all $x \in \{1, \alpha, \alpha^2, \dots, \alpha^{n-1}\}$ if and only if $\mathcal{P}_j = 0$ for all $j = 0, 1, \dots, n-1$.*

3.2.3. Lemma. *For $j \in \{0, 1, 2, \dots, n-1\}$, if $d = \deg(j)$, then*

$$\mathcal{P}_j = \sum_{i=0}^{m-1} P_{j \cdot 2^i}^{2^{m-i}}, \tag{3.8}$$

where all subscripts and superscripts are modulo n.

3.2.4. Example. Let $n = 15$, $j = 1$. Then we have from Example 3.1.1 that $\Omega_1 = \{1, 2, 4, 8\}$. Lemma 3.2.3 says that in the case that

$$\mathcal{P}_1 = \sum_{i=0}^{3} P_{1 \cdot 2^i}^{2^{m-i}} = P_1 + P_2^8 + P_4^4 + P_8^2,$$

$$\mathcal{P}_2 = \sum_{i=0}^{3} P_{2\cdot 2^i}^{2^{m-i}} = P_2 + P_4^8 + P_8^4 + P_1^2.$$

Similarly, for $\Omega_5 = \{5, 10\}$, we have

$$\mathcal{P}_5 = \sum_{i=0}^{3} P_{5\cdot 2^i}^{2^{m-i}} = P_5 + P_{10}^8 + P_5^4 + P_{10}^2,$$

just as we saw by direct calculation in Example 3.2.1. ■

3.2.5. Lemma. *If j_1 and j_2 are conjugate modulo n, then $\mathcal{P}_{j_1}$ and $\mathcal{P}_{j_2}$ are conjugates in $GF(2^m)$. More precisely, if j has degree d, and if $s \in \{0, 1, \ldots, d-1\}$, then*

$$\mathcal{P}_{j\cdot 2^s} = \mathcal{P}_j^{2^s}, \tag{3.9}$$

where all superscripts and subscripts are modulo n.

3.2.6. Example. Let $m = 4$, $n = 15$. For $j = 1$ and $s = 0, 1, 2, 3$, we have

$$\begin{aligned}
\mathcal{P}_{1\cdot 2^0} &= \mathcal{P}_1 = \mathcal{P}_1^{2^0} = \mathcal{P}_1 \\
\mathcal{P}_{1\cdot 2^1} &= \mathcal{P}_2 = \mathcal{P}_1^{2^1} = \mathcal{P}_1^2 \\
\mathcal{P}_{1\cdot 2^2} &= \mathcal{P}_4 = \mathcal{P}_1^{2^2} = \mathcal{P}_1^4 \\
\mathcal{P}_{1\cdot 2^3} &= \mathcal{P}_8 = \mathcal{P}_1^{2^3} = \mathcal{P}_1^8.
\end{aligned}$$

Similarly, for $j = 5$ and $s = 0, 1$, we have

$$\begin{aligned}
\mathcal{P}_{5\cdot 2^0} &= \mathcal{P}_5 = \mathcal{P}_5^{2^0} = \mathcal{P}_5 \\
\mathcal{P}_{5\cdot 2^1} &= \mathcal{P}_{10} = \mathcal{P}_5^{2^1} = \mathcal{P}_5^2.
\end{aligned}$$

These relationships were also verified directly in Example 3.2.1. ■

3.3 Proof of Dimension Theorem

Now we are prepared to begin the proof of Theorem 3.1.4. First of all, we combine the definition of the SSRS codes given in equation (2.27) with the MS polynomials defined in equation (2.13) to obtain the following equivalent condition:

$$\operatorname{Tr}_1^m\Big(\sum_{j\in J}\big(\gamma_h c_j x^j\big)\Big) = 0, \qquad \begin{cases} \text{for all} \quad h = 0, 1, 2, \dots, \mu - 1 \\ \text{for all} \quad x \in \{1, \alpha^{-1}, \alpha^{-2}, \dots, \alpha^{-(n-1)}\}. \end{cases} \tag{3.10}$$

Next, we define the polynomial $P_h(x)$ for $h = 0, 1, \dots, \mu - 1$ as

$$P_h(x) = \sum_{j\in J} \gamma_h c_j x^j. \tag{3.11}$$

Then, as in equation (3.7), we define the polynomial $\mathcal{P}_h(x)$ as

$$\mathcal{P}_h(x) = \operatorname{Tr}_1^m\big(P_h(x)\big) \pmod{x^n - 1}. \tag{3.12}$$

Thus, condition (3.10) holds if and only if

$$\mathcal{P}_h(x) = 0, \qquad \text{for all } x \in \{1, \alpha, \dots, \alpha^{n-1}\}. \tag{3.13}$$

By Lemma 3.2.2, this is true if and only if

$$\mathcal{P}_{h,j} = 0, \qquad \begin{cases} \text{for all } h = 0, 1, \dots, \mu - 1 \\ \text{for all } j \in J, \end{cases} \tag{3.14}$$

where $\mathcal{P}_{h,j}$ is the coefficient of x^j in the polynomial $\mathcal{P}(x)$. By Lemma 3.2.3, the coefficient $\mathcal{P}_{h,j}$ is given by the formula

$$\mathcal{P}_{h,j} = \sum_{i\in A_j} \gamma_h^{2^{m-i}} c_{j\cdot 2^i}^{2^{m-i}}, \tag{3.15}$$

where A_j is the index set of $J_j = \Omega_j \cap J$ defined in Section 3.1 on page 17.

In summary, a set $(c_j), j \in J$ of elements from $GF(2^m)$ corresponds to a codeword in $\mathbb{C}_{\mathcal{S}}$ if and only if $\mathcal{P}_{h,j} = 0$, for all $h = 0, 1, \ldots, \mu - 1$ and all $j \in J$. However, by Lemma 3.2.5, if $j_1, j_2 \in J$ are conjugates, i.e., both lie in the same cyclotomic coset, $\mathcal{P}_{h,j_1}$ and $\mathcal{P}_{h,j_2}$ are also conjugates. So, if $\mathcal{P}_{h,j} = 0$ for one element j of a given cyclotomic coset, then the coefficients of all other elements of the same coset must be zero. Therefore, when we count the number of solutions to the equations $\mathcal{P}_{h,j} = 0$ for all j, it is sufficient to restrict j to lie in the set I_n, consisting of the least element of each cyclotomic coset.

Therefore, counting the number of sets $(c_j), j \in J$ corresponding to codewords in the SSRS code $\mathbb{C}_{\mathcal{S}}$, is equivalent to counting the number of solutions to the set of equations of the form

$$\sum_{i \in A_j} \gamma_h^{2^{m-i}} c_{j \cdot 2^i}^{2^{m-i}} = 0, \qquad \text{for } h = 0, 1, \ldots, \mu - 1 \tag{3.16}$$

for each $j \in I_n$. Let N_j denote the number of solutions to the set of equations defined by equation (3.16). Since the set of equations in equation (3.16) involves only variables c_l's, where all l's are in the jth cyclotomic coset, we can compute the number of solutions to the set of equations corresponding to each cyclotomic coset independently. It follows that $N_{\mathcal{S}}$, the total number of codewords in the code $\mathbb{C}_{\mathcal{S}}$, is simply

$$N_{\mathcal{S}} = \prod_{j \in I_n} N_j. \tag{3.17}$$

Theorem 3.1.4 will be proven if we can show that N_j, the number of solutions to the set of equations (3.16) for the jth cyclotomic coset, is exactly

$$N_j = 2^{me_j - r_j d_j} = 2^{d_j(a_j - r_j)}. \tag{3.18}$$

Once equation (3.18) is proved, it immediately follows that the binary dimension of

$\mathbb{C}_{\mathcal{S}}$ is

$$K(\mathbb{C}, \mathcal{S}) = \sum_{j \in I_n} K_j, \tag{3.19}$$

where $K_j = me_j - r_j d_j$.

It is easy to see that the set of equations (3.16) can also be written in matrix form by using the jth cyclotomic matrix, defined in equation (3.2), as follows:

$$\Gamma_j \boldsymbol{c}^T = \mathbf{0}^T, \tag{3.20}$$

where

$$\boldsymbol{c} = \left[c_{j \cdot 2^{i_0}}^{2^{m-i_0}}, c_{j \cdot 2^{i_1}}^{2^{m-i_1}}, \ldots, c_{j \cdot 2^{i_{a_j-1}}}^{2^{m-i_{a_j-1}}} \right]. \tag{3.21}$$

We recall that the matrix Γ_j is a $\mu \times a_j$ matrix whose (h,l)-th entry is $\gamma_h^{m-i_l}$. There are e_j distinct variables in the vector $\boldsymbol{c}$, so each variable appears exactly f_j times as a component of $\boldsymbol{c}$, if $d \neq m$.

In order to finish our proof, we consider the two cases $d = m$ and $d \neq m$ separately. We begin with the easier case $d = m$. In the rest of the proof, we will omit the subscript j and simplify the notation by using a, d, e, f and r instead of a_j, d_j, e_j, f_j and r_j, respectively. Since we will focus only on j-th cyclotomic coset, no confusion should occur.

Case I: $d = m$. In equation (3.21), all components $c_{j \cdot 2^i}^{2^{m-i}}$ $(i \in A_j)$ are distinct. We now define the variables x_l as

$$x_l = c_{j \cdot 2^{i_l}}^{2^{m-i_l}}, \qquad l = 0, 1, \ldots, e-1. \tag{3.22}$$

Since the mapping $\xi \longrightarrow \xi^{2^i}$ is one-to-one, the $c_{j \cdot 2^{i_l}}$'s can be uniquely recovered from the x_l's. Thus, the binary dimension K_j is the dimension of the solution to the set of equations given by

$$\Gamma_j \boldsymbol{x}^T = \boldsymbol{0}^T, \tag{3.23}$$

where

$$\boldsymbol{x} = [x_0, x_1, \cdots, x_{e-1}]\,. \tag{3.24}$$

It is apparent that the set of solutions to equation (3.23) is a vector space over $GF(2^m)$. But since equation (3.23) represents a set of simultaneous linear equations, the $GF(2^m)$-dimension of the set of solutions to (3.23) is the nullity of the matrix Γ_j, i.e., $e-r$, where e is the number of variables and r is the rank of Γ_j. Thus, the number of solutions to equation (3.23) is $(2^m)^{e-r} = 2^{me-dr} = 2^{d(a-r)}$, i.e., the contribution of this cyclotomic coset to the binary dimension of $\mathbb{C}_{\mathcal{S}}$ is exactly $me - dr = d(a-r)$. ■

Case II: $d \neq m$. In this case, there are only e distinct coefficients in $\boldsymbol{c}$ and each coefficient appears exactly f times, raised to different powers. This is because if the index i is in A_j, then $i+d, i+2d, \ldots, i+(f-1)d$ are also in A_j. Therefore, since equation (3.20) is no longer a set of simultaneous linear equations, we cannot derive the number of solutions directly from equation (3.20). However, since we have assumed that the indexes i_l, $l = 0, 1, \ldots, a-1$ in equation (3.1) are in increasing order, it follows that the first e coefficients of $\boldsymbol{c}$ are distinct from each other and then repeated f times in the same order. Thus,

$$\begin{aligned}\boldsymbol{c} = [&\overbrace{c_{j\cdot 2^{i_0}}^{2^{m-i_0}}, c_{j\cdot 2^{i_1}}^{2^{m-i_1}}, \ldots, c_{j\cdot 2^{i_{e-1}}}^{2^{m-i_{e-1}}}}^{e}, \overbrace{c_{j\cdot 2^{i_0}}^{2^{m-i_0-d}}, c_{j\cdot 2^{i_1}}^{2^{m-i_1-d}}, \ldots, c_{j\cdot 2^{i_{e-1}}}^{2^{m-i_{e-1}-d}}}^{e}, \\ &\ldots, \overbrace{c_{j\cdot 2^{i_0}}^{2^{m-i_0-(f-1)d}}, c_{j\cdot 2^{i_1}}^{2^{m-i_1-(f-1)d}}, \ldots, c_{j\cdot 2^{i_{e-1}}}^{2^{m-i_{e-1}-(f-1)d}}}^{e}]\end{aligned}. \tag{3.25}$$

Now we recall the fact that any element of $GF(2^m)$ can be expressed as a linear combination of f elements of $GF(2^d)$, where $f = m/d$, and again that $\xi \longrightarrow \xi^{2^i}$ is a one-to-one mapping. So, we can decompose each coefficient $c_{j\cdot 2^i}^{2^{m-i}} \in GF(2^m)$ as

$$c_{j\cdot 2^{ig}}^{2^{m-ig}} = \sum_{l=0}^{f-1} x_{g,l}\alpha^l, \qquad \text{for } g = 0, 1, \ldots, e-1, \tag{3.26}$$

where α is a primitive root in $GF(2^m)$ and $x_{g,l} \in GF(2^d)$ for all $l = 0, 1, \ldots, f-1$.

Next, we will decompose each component of $\boldsymbol{c}$ into f variables in the subfield $GF(2^d)$. Note that if $c_{ig}^{2^{m-ig}}$ appears in $\boldsymbol{c}$, then $c_{ig}^{2^{m-ig-d}}, c_{ig}^{2^{m-ig-2d}}, \ldots, c_{ig}^{2^{m-ig-(f-1)d}}$ also appear in $\boldsymbol{c}$. We expand each such term in terms of the same set of variables $x_{g,l}$. Using (3.26), we get

$$c_{j\cdot 2^{ig}}^{2^{m-ig-ud}} = \left[\sum_{l=0}^{f-1} x_{g,l}\alpha^l\right]^{2^{-ud}} \tag{3.27}$$

$$= \sum_{l=0}^{f-1} \left[x_{g,l}\alpha^l\right]^{2^{-ud}} \tag{3.28}$$

$$= \sum_{l=0}^{f-1} x_{g,l}^{2^{-ud}} \alpha^{l2^{-ud}}. \tag{3.29}$$

In the equations (3.27)–(3.29), all superscripts and subscripts are modulo n. Now, since $x_{g,l} \in GF(2^d)$, $x_{g,l}^{2^{-ud}} = x_{g,l}$ by definition. So, equation (3.29) becomes

$$c_{j\cdot 2^{ig}}^{2^{ig-ud}} = \sum_{l=0}^{f-1} x_{g,l}\alpha^{l2^{-ud}}, \qquad \text{for } u = 0, 1, \ldots, f-1. \tag{3.30}$$

If we now define two length f vectors, $\boldsymbol{c}_g$ and $\boldsymbol{x}_g$, as follows:

$$\boldsymbol{c}_g = \left[c_{j\cdot 2^{ig}}^{2^{m-ig}}, c_{j\cdot 2^{ig}}^{2^{m-ig-d}}, \ldots, c_{j\cdot 2^{ig}}^{2^{m-ig-(f-1)d}}\right] \tag{3.31}$$

$$\boldsymbol{x}_g = \left[x_{g,0}, x_{g,1}, \ldots, x_{g,f-1}\right]. \tag{3.32}$$

Then we can rewrite equations (3.30) in the vector form

$$\boldsymbol{c}_g^T = V\boldsymbol{x}_g^T, \tag{3.33}$$

where V is the $f \times f$ Vandermonde matrix given by

$$V = \begin{bmatrix} 1 & \alpha^1 & \alpha^2 & \dots & \alpha^{(f-1)} \\ 1 & \alpha^{1\cdot 2^{-d}} & \alpha^{2\cdot 2^{-d}} & \dots & \alpha^{(f-1)\cdot 2^{-d}} \\ 1 & \alpha^{1\cdot 2^{-2d}} & \alpha^{2\cdot 2^{-2d}} & \dots & \alpha^{(f-1)\cdot 2^{-2d}} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 1 & \alpha^{1\cdot 2^{-(f-1)d}} & \alpha^{2\cdot 2^{-(f-1)d}} & \dots & \alpha^{(f-1)\cdot 2^{-(f-1)d}} \end{bmatrix}. \tag{3.34}$$

The set of elements in the second column of V, i.e., $\alpha, \alpha^{2^{-d}}, \alpha^{2^{-2d}}, \dots, \alpha^{2^{-(f-1)d}}$ are all distinct, since $m = df$ and α is a primitive root of $GF(2^m)$, and so V is nonsingular.

Now we define two more vectors, $\boldsymbol{c}'$ and $\boldsymbol{x}$ as follows:

$$\boldsymbol{c}' = [\boldsymbol{c}_0, \boldsymbol{c}_1, \dots, \boldsymbol{c}_{e-1}], \tag{3.35}$$

$$\boldsymbol{x} = [\boldsymbol{x}_0, \boldsymbol{x}_1, \dots, \boldsymbol{x}_{e-1}]. \tag{3.36}$$

Since the matrix V in equation (3.34) does not depend on g, we can also express the relationship between $\boldsymbol{c}'$ and $\boldsymbol{x}$ as

$$\boldsymbol{c}'^T = W\boldsymbol{x}^T, \tag{3.37}$$

where W is the $a \times a$ matrix

$$W = \begin{bmatrix} V & 0 & \dots & 0 \\ 0 & V & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & V \end{bmatrix}. \tag{3.38}$$

We remark that $\boldsymbol{c}$ defined in equation (3.21) and $\boldsymbol{c}'$ in definition (3.35) have the same size, a, and the same elements with different order. So, since any permutation of the elements of a vector can be represented by a nonsingular matrix, say Q, we have

$$\boldsymbol{c}^T = Q\boldsymbol{c}'^T. \tag{3.39}$$

Finally, by inserting equations (3.37) and (3.39) into equation (3.20), we get

$$\Gamma_j Q W \boldsymbol{x}^T = \mathbf{0}^T. \tag{3.40}$$

Thus, the number of solutions to the set of equations (3.20) is equal to the number of solutions to equation (3.40), since a nonsingular linear transformation does not change the dimension of the solution space. We notice that the set of equations (3.40) is nothing more than a set of μ simultaneous linear equations in a variables which lie in the subfield $GF(2^d)$. So, the number of solutions must be a power of 2^d and the $GF(2^d)$-dimension of solution space is equal to the nullity of Γ_j, i.e., $a-r$, so the total number of solutions to the equations (3.40) is $2^{d(a-r)}$. Thus, the binary dimension of the solution set is $d(a-r) = me - dr$. This completes the proof of Theorem 3.1.4. ∎

3.4 Lower Bound

From Theorem 3.1.4, it is apparent that $K(\mathbb{C}, \mathcal{S})$, the dimension of SSRS code $\mathbb{C}_{\mathcal{S}}$, is minimized, if all the cyclotomic matrices Γ_j are of full rank. So, we immediately get the following.

3.4.1. Corollary (Lower Bound). *With the same setup as Theorem 3.1.4,*

$$
\begin{aligned}
K(\mathbb{C}, \mathcal{S}) &\geq \sum_j \max(d_j(a_j - \mu), 0) \\
&= \sum_j \max(me_j - \mu d_j, 0).
\end{aligned} \tag{3.41}
$$

Proof. Since Γ_j is a $\mu \times a_j$ matrix, its rank r_j satisfies

$$r_j \leq \min(a_j, \mu). \tag{3.42}$$

Therefore,

$$
\begin{aligned}
K(\mathbb{C}, \mathcal{S}) &= \sum_{j \in I_n} d_j(a_j - r_j) \\
&\geq \sum_{j \in I_n} d_j(a_j - \min(a_j, \mu)) \\
&= \sum_{j \in I_n} \max(d_j(a_j - \mu), 0).
\end{aligned} \tag{3.43}
$$

■

The bound of Corollary 3.4.1 is equal to the formula for the dimension of "TSRS" codes which is proved in reference [17]. Indeed, TSRS codes of [17] and the non-linear non-binary cyclic codes of [26] are both special cases of SSRS codes, in which the subspace $\mathcal{S}$ is spanned by the dual of polynomial basis $\{1, \alpha, \alpha^2, \ldots, \alpha^{\mu-1}\}$. The theorem for the dimension of TSRS codes (Theorem 3.1 in [17]) thus guarantees that there exist SSRS codes whose dimension satisfy Corollary 3.4.1 with equality. We can slightly generalize this result, as follows:

3.4.2. Corollary. *The lower bound of Corollary 3.4.1 is realized if $\mathcal{S}$ is spanned by the dual of polynomial basis $\{1, \xi, \xi^2, \ldots, \xi^{\mu-1}\}$, where ξ is an arbitrary element in $GF(2^m)$ with $\deg(\xi) = m$.*

Proof. From the definition,

$$\Gamma_j = \begin{bmatrix} \gamma_0^{2^{m-i_0}} & \gamma_0^{2^{m-i_1}} & \cdots & \gamma_0^{2^{m-i_{a_j-1}}} \\ \gamma_1^{2^{m-i_0}} & \gamma_1^{2^{m-i_1}} & \cdots & \gamma_1^{2^{m-i_{a_j-1}}} \\ \vdots & & \ddots & \vdots \\ \gamma_{\mu-1}^{2^{m-i_0}} & \gamma_{\mu-1}^{2^{m-i_1}} & \cdots & \gamma_{\mu-1}^{2^{m-i_{a_j-1}}} \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 1 & \cdots & 1 \\ \xi^{2^{m-i_0}} & \xi^{2^{m-i_1}} & \cdots & \xi^{2^{m-i_{a_j-1}}} \\ (\xi^{2^{m-i_0}})^2 & (\xi^{2^{m-i_1}})^2 & \cdots & (\xi^{2^{m-i_{a_j-1}}})^2 \\ \vdots & & \ddots & \vdots \\ (\xi^{2^{m-i_0}})^{\mu-1} & (\xi^{2^{m-i_1}})^{\mu-1} & \cdots & (\xi^{2^{m-i_{a_j-1}}})^{\mu-1} \end{bmatrix}. \tag{3.44}$$

Although the matrix in equation (3.44) is not a square matrix, it is a submatrix of a Vandermonde matrix. Since we assume that $\deg(\xi) = m$ and $a_j = e_j f_j \leq d_j f_j = m$, all the elements in the second row of Γ_j are distinct from each other. So, the Vandermonde matrix is nonsingular and we can conclude that the rank of Γ_j is $\min(a_j, \mu)$. ∎

Corollary 3.4.2 identifies many subspaces for which $K(\mathbb{C}, \mathcal{S})$ is a *minimum*, for a given $\mathbb{C}$ and $\nu = \dim(\mathcal{S})$. Indeed, we will argue in Chapter 4 and 5, that the lower bound of Corollary 3.4.2 is achieved for "most" subspaces of dimension ν. For this reason, we call subspaces for which the lower bound of Corollary 3.4.2 is *not* achieved for all $\mathbb{C}$ "*exceptional.*" We will clarify this definition in Chapter 4.

On the other hand, it is not as easy to find subspaces which give the *maximum* dimension. Unfortunately, if m and ν are large, the number of distinct ν-dimensional subspace over $GF(2^m)$ is huge. So, in general, we cannot exhaustively compute the dimension of every SSRS code, for all possible choices of ν-dimensional subspaces.

However, we will later be able to find exceptional subspaces more efficiently than by mere brute-force. In Chapter 5, we will find two important equivalences on subspaces. Together with the discussion in Chapter 4, this will make it possible to reduce the amount of effort needed to search for "exceptional" subspaces. Then, in Chapter 6, we will give a method for selecting a representative from each equivalence class of subspaces.

Note also that if $\nu \mid m$ there is a subfield $GF(2^\nu)$ of the primal field $GF(2^m)$, which is, indeed, a ν-dimensional subspace. Thus, the definition of SSRS codes certainly includes subfield subcodes, i.e., generalized BCH codes. We clarify this fact by the following corollary.

3.4.3. Definition. Let $\mathbb{C}$ be a (n, k_0, d_0) parent cyclic RS code over $GF(2^m)$ with $n \mid 2^m - 1$ and $d_0 = n = k_0 + 1$ and let $\nu \mid m$. The generalized BCH code is defined to be the "*subfield subcode*," i.e., the set of codewords from $\mathbb{C}$ whose components all lie in subfield $GF(2^\nu)$. ■

3.4.4. Corollary. *GBCH codes are special cases of SSRS codes if* $\nu \mid m$.

3.5 Examples

Before we move to the subspace search problem, we will give, in this section, three examples of SSRS codes. In one of these examples, we will see that there is an SSRS code whose dimension is higher than that of corresponding generalized BCH (GBCH) code.

3.5.1. Example. Let $m = 4$, $n = 15$, $k_0 = 9$, $\nu = 2$ $(\mu = 2)$ and $J = \{1, 2, \ldots, 9\}$. We start from an ordinary $(15, 9, 7)$ RS code. Let α be a primitive root of $GF(2^4)$ defined by $\alpha^4 = \alpha + 1$. We form the cyclotomic matrix, using the same cyclotomic array as Example 3.1.2, with $I_{15} = \{0, 1, 3, 5, 7\}$.

index i

	0	1	2	3					
$j = 0$	0	0	0	0	$d_0 = 1$	$f_0 = 4$	$e_0 = 0$	$A_0 = \emptyset$	$a_0 = 0$
$j = 1$	**1**	**2**	**4**	**8**	$d_1 = 4$	$f_1 = 1$	$e_1 = 4$	$A_1 = \{0, 1, 2, 3\}$	$a_1 = 4$
$j = 3$	**3**	**6**	12	**9**	$d_3 = 4$	$f_3 = 1$	$e_3 = 3$	$A_3 = \{0, 1, 3\}$	$a_3 = 3$
$j = 5$	**5**	10	**5**	10	$d_5 = 2$	$f_5 = 2$	$e_5 = 1$	$A_5 = \{0, 2\}$	$a_5 = 2$
$j = 7$	**7**	14	13	11	$d_7 = 4$	$f_7 = 1$	$e_7 = 1$	$A_7 = \{0\}$	$a_7 = 1$

Consider the subspace $\mathcal{S}_1$ which is spanned by the basis $\{1, \alpha^1\}$. It is easily seen that $\mathcal{S}_1$ is a self dual subspace, so $\mathcal{S}_1^\perp = \mathcal{S}_1$. Using the same procedure as in Example 3.1.3, we get the following.

$$\Gamma_1 = \begin{bmatrix} 1 & 1 & 1 & 1 \\ \alpha & \alpha^8 & \alpha^4 & \alpha^2 \end{bmatrix}$$

$$\Gamma_3 = \begin{bmatrix} 1 & 1 & 1 \\ \alpha & \alpha^8 & \alpha^2 \end{bmatrix}$$

$$\Gamma_5 = \begin{bmatrix} 1 & 1 \\ \alpha & \alpha^4 \end{bmatrix}$$

$$\Gamma_7 = \begin{bmatrix} 1 \\ \alpha \end{bmatrix}$$

The ranks of these matrices are given by

$$r_1 = r_3 = r_5 = 2, \quad r_7 = 1.$$

Now, we can use Theorem 3.1.4 to compute $K(\mathbb{C}, \mathcal{S}_1)$, the dimension of $\mathbb{C}_{\mathcal{S}_1}$, as

$$\begin{aligned} K(\mathbb{C}, \mathcal{S}_1) &= \sum_{j \in I_{15}} d_j(a_j - r_j) \\ &= 4 \cdot (4-2) + 4 \cdot (3-2) + 2 \cdot (2-2) + 4 \cdot (1-1) \\ &= 12. \end{aligned}$$

Thus, we obtain a $(15, 6, 7)$ SSRS code over the alphabet $\mathcal{S}_1$, i.e., the vector space of binary 2-tuples. In this case, all cyclotomic matrices have full rank, so the dimension of $\mathbb{C}_{\mathcal{S}_1}$ is equal to the lower bound in Corollary 3.4.1. In fact, the basis of $\mathcal{S}^{\perp}$, i.e., $\{1, \alpha\}$, is a polynomial basis and $\deg(\alpha) = 4$, so that $\mathbb{C}_{\mathcal{S}_1}$ is a TSRS code as originally defined in [17].

Next, let $\mathcal{S}_2$ be the 2-dimensional subspace spanned by $\{1, \alpha^5\}$. We can see that $\mathcal{S}_2$ is also a self dual subspace, so the basis of ${\mathcal{S}_2}^{\perp}$ can be taken as $\{1, \alpha^5\}$. So, we form the cyclotomic matrix for each $j \in I_{15}$ and compute the rank of each matrix:

$$\Gamma_1 = \begin{bmatrix} 1 & 1 & 1 & 1 \\ \alpha^5 & \alpha^{10} & \alpha^5 & \alpha^{10} \end{bmatrix}$$

$$\Gamma_3 = \begin{bmatrix} 1 & 1 & 1 \\ \alpha^5 & \alpha^{10} & \alpha^{10} \end{bmatrix}$$

$$\Gamma_5 = \begin{bmatrix} 1 & 1 \\ \alpha^5 & \alpha^5 \end{bmatrix}$$

$$\Gamma_7 = \begin{bmatrix} 1 \\ \alpha^5 \end{bmatrix}$$

$$r_1 = r_3 = 2, \quad r_5 = r_7 = 1.$$

Using these results, we can compute the dimension of $\mathbb{C}_{\mathcal{S}_2}$ as

$$\begin{aligned} K(\mathbb{C},\mathcal{S}_2) &= \sum_{j\in I_{15}} d_j(a_j - r_j) \\ &= 4\cdot(4-2) + 4\cdot(3-2) + 2\cdot(2-1) + 4\cdot(1-1) \\ &= 14. \end{aligned}$$

In this case, we get a $(15,7,7)$ SSRS code over the alphabet $\mathcal{S}_2$. This example demonstrates that the dimension of the SSRS code derived from a given parent code, may depend on the choice of subspace, since $K(\mathbb{C},\mathcal{S}_2) > K(\mathbb{C},\mathcal{S}_1)$. Note that the elements $\{1,\alpha^5\}$ both lie in the subfield $GF(4)$ of the primal symbol field $GF(16)$. So, $\mathcal{S}_2$ is, in fact, the subfield $GF(4)$ itself. It follows that $\mathbb{C}_{\mathcal{S}_2}$ is a generalized BCH code over $GF(4)$. ■

3.5.2. Example. Let $m=5$, $n=31$, $k_0=23$, $\nu=4$ ($\mu=1$) and $J=\{1,2,\dots,23\}$. We start from an ordinary $(31,23,9)$ RS code. Let α be a primitive root in $GF(2^5)$ defined by $\alpha^5=\alpha^3+1$. We give the cyclotomic array with $I_{31}=\{0,1,3,5,7,11,15\}$ below.

	index i									
	0	1	2	3	4					
$j=0$	0	0	0	0	0	$d_0=1$	$f_0=5$	$e_0=0$	$A_0=\emptyset$	$a_0=0$
$j=1$	**1**	**2**	**4**	**8**	**16**	$d_1=5$	$f_1=1$	$e_1=5$	$A_1=\{0,1,2,3,4\}$	$a_1=5$
$j=3$	**3**	**6**	**12**	24	**17**	$d_3=5$	$f_3=1$	$e_3=4$	$A_3=\{0,1,2,4\}$	$a_3=4$
$j=5$	**5**	**10**	**20**	**9**	**18**	$d_5=5$	$f_5=1$	$e_5=5$	$A_5=\{0,1,2,3,4\}$	$a_5=5$
$j=7$	**7**	**14**	28	25	**19**	$d_7=5$	$f_7=1$	$e_7=3$	$A_7=\{0,1,4\}$	$a_7=3$
$j=11$	**11**	**22**	**13**	26	**21**	$d_{11}=5$	$f_{11}=1$	$e_{11}=4$	$A_{11}=\{0,1,2,4\}$	$a_{11}=4$
$j=15$	**15**	30	29	27	**23**	$d_{15}=5$	$f_{15}=1$	$e_{15}=2$	$A_{15}=\{0,4\}$	$a_{15}=2$

In the case of $\mu = 1$, all Γ_j's are $1 \times a_j$ matrices, so if $e_j \neq 0$, Γ_j is always full rank, regardless of the choice of subspace $\mathcal{S}$, i.e., $r_j = 1$. Therefore, the bound of Corollary 3.4.1 gives the exact binary dimension of all the SSRS codes for $\mu = 1$. In this example, we get

$$\begin{aligned}
K(\mathbb{C}, \mathcal{S}) &= \sum_{j \in I_{31}} \min(d_j(a_j - \mu), 0) \\
&= 5 \cdot (5-1) + 5 \cdot (4-1) + 5 \cdot (5-1) + 5 \cdot (3-1) + 5 \cdot (4-1) + 5 \cdot (2-1) \\
&= 85.
\end{aligned}$$

Thus, we get a $(31, 21.25, 9)$ SSRS code over the alphabet $V(16)$. We see that the binary dimension need not be a multiple of ν. This example is, actually, a very interesting code, Since its length is twice that of the primal RS code, yet it is still almost optimal, since it is "nearly" MDS, since $n - k_{\mathcal{S}} + 1 - d_0 = 1\frac{3}{4}$. ■

3.5.3. Example. Let $m = 6$, $n = 63$, $k_0 = 53$, $\nu = 2 (\mu = 4)$ and $J = \{1, 2, \dots, 53\}$. We start from an ordinary $(63, 53, 11)$ RS code. Let α be a primitive root of $GF(2^6)$

defined by $\alpha^6 = \alpha + 1$.

index i

	0	1	2	3	4	5				
$j=0$	0	0	0	0	0	0	$d_0 = 1$	$f_0 = 6$	$e_0 = 0$	$a_0 = 0$
$j=1$	**1**	**2**	**4**	**8**	**16**	**32**	$d_1 = 6$	$f_1 = 1$	$e_1 = 6$	$a_1 = 6$
$j=3$	**3**	**6**	**12**	**24**	**48**	**33**	$d_3 = 6$	$f_3 = 1$	$e_3 = 6$	$a_3 = 6$
$j=5$	**5**	**10**	**20**	**40**	**17**	**34**	$d_5 = 6$	$f_5 = 1$	$e_5 = 6$	$a_5 = 6$
$j=7$	**7**	**14**	**28**	56	**49**	**35**	$d_7 = 6$	$f_7 = 1$	$e_7 = 5$	$a_7 = 5$
$j=9$	**9**	**18**	**36**	**9**	**18**	**36**	$d_9 = 3$	$f_9 = 2$	$e_9 = 6$	$a_9 = 6$
$j=11$	**11**	**22**	**44**	**25**	**50**	**37**	$d_{11} = 6$	$f_{11} = 1$	$e_{11} = 6$	$a_{11} = 6$
$j=13$	**13**	**26**	**52**	**41**	**19**	**38**	$d_{13} = 6$	$f_{13} = 1$	$e_{13} = 6$	$a_{13} = 6$
$j=15$	**15**	**30**	60	57	**51**	**39**	$d_{15} = 6$	$f_{15} = 1$	$e_{15} = 4$	$a_{15} = 4$
$j=21$	**21**	**42**	**21**	**42**	**21**	**42**	$d_{21} = 2$	$f_{21} = 3$	$e_{21} = 6$	$a_{21} = 6$
$j=23$	**23**	**46**	**29**	58	**53**	**43**	$d_{23} = 6$	$f_{23} = 1$	$e_{23} = 5$	$a_{23} = 5$
$j=27$	**27**	54	**45**	**27**	54	**45**	$d_{27} = 3$	$f_{27} = 2$	$e_{27} = 4$	$a_{27} = 4$
$j=31$	**31**	62	61	59	55	**47**	$d_{31} = 6$	$f_{31} = 1$	$e_{31} = 2$	$a_{31} = 2$

Now we consider the two subspaces $\mathcal{S}_1$ and $\mathcal{S}_2$, spanned by the bases $\{\alpha^3, \alpha^{12}\}$ and $\{\alpha^{27}, \alpha^{48}\}$, respectively. A little computation shows the bases of the trace dual subspace are as given below. Note that subspace $\mathcal{S}_2$ is equivalent[1] to the subfield $GF(2^2)$.

$$\{\alpha^3, \alpha^{12}\} \perp \{\alpha^0, \alpha^1, \alpha^4, \alpha^{15}\}$$

$$\{\alpha^{27}, \alpha^{48}\} \perp \{\alpha^0, \alpha^1, \alpha^8, \alpha^{21}\}$$

[1] In Chapter 5, we will clarify the definition of *equivalence*.

Now, we get the dimensions of $\mathbb{C}_{\mathcal{S}_1}$ and $\mathbb{C}_{\mathcal{S}_2}$ as follows.

$$\begin{aligned} K(\mathbb{C}, \mathcal{S}_1) &= \sum_{j \in I_{63}} d_j(a_j - r_j) \\ &= 85 \end{aligned}$$

$$\begin{aligned} K(\mathbb{C}, \mathcal{S}_2) &= \sum_{j \in I_{63}} d_j(a_j - r_j) \\ &= 82 \end{aligned}$$

In this case, $\mathbb{C}_{\mathcal{S}_2}$ is a GBCH code over $GF(2^d)$ and its dimension is 41. But $\mathbb{C}_{\mathcal{S}_1}$ has pseudo dimension $42\frac{1}{2}$. Thus, in at least some cases, the dimension of SSRS codes exceeds that of generalized BCH codes. ∎

We will give a detailed table of the dimensions of SSRS codes in Appendix C. We will also discuss the performance of this class of codes in the Chapter 8.

Note that since an SSRS code is a subset of its primal code, we can directly apply any decoding algorithm for the parent code to the subspace subcode. So, if we use an RS code as a parent code, we can immediately apply the well-developed algebraic RS decoding algorithms to the decoding of the SSRS code. Indeed, the decoding complexity might be slightly less than for RS codes, because the syndrome calculation of SSRS codes is a little simpler than for RS codes.

On the other hand, the encoding of SSRS codes is not so easy as for the corresponding parent codes, since SSRS codes are no longer linear in the symbol-wise sense. However, our numerical studies have shown that, in most cases, systematic encoding of SSRS codes is quite easy. We will discuss the encoding of SSRS codes in Section 7.

3.6 Bounds on Dimension

In this section, we will develop estimates for the dimension of SSRS codes from quite general arguments. In a recent paper, Jensen [13] has obtained results on SSRS codes which follow from general results on "subgroup subcodes." In particular, he has derived some interesting estimates for the dimension of subgroup subcodes. We will review his results and give an alternative proof of them.

Let $\mathbb{C}$ be a primal (n, k_0, d_0) RS code over $GF(2^m)$ with $n = 2^m - 1$ and $d_0 = n - k_0 + 1$. Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. We consider the SSRS code $\mathbb{C}_{\mathcal{S}}$. In Theorem 3.1.4, we have derived a formula for the *exact* dimension of $\mathbb{C}_{\mathcal{S}}$, which requires detailed matrix rank computations. But now, we consider a rough *estimate* for the dimension of $\mathbb{C}_{\mathcal{S}}$.

First, we consider the binary expansion of $\mathbb{C}$. If we expand $\mathbb{C}$ into binary ν-tuples, then we obtain a (mn, mk_0, d_0^+) code over $GF(2)$. Therefore, from the argument for general shortened codes, we have the elementary estimate

$$\dim(\mathbb{C}_{\mathcal{S}}) \geq mk_0 - n(m - \nu), \tag{3.45}$$

since $\mathbb{C}_{\mathcal{S}}$ is obtained by requiring $n(m - \nu)$ binary coordinates of the binary code to be zero. But we can improve this bound.

Suppose the parent code $\mathbb{C}$ satisfies an overall parity check, i.e., each codeword $\boldsymbol{C} = (C_0, C_1, \dots, C_{n-1})$ from $\mathbb{C}$ satisfies

$$C_0 + C_1 + \cdots + C_{n-1} = 0. \tag{3.46}$$

In this case, all codewords from $\mathbb{C}$ have even number of 1's in every binary component, and so do the codewords from $\mathbb{C}_{\mathcal{S}}$. Therefore, if we require $m-\nu$ binary components in the first $n-1$ coordinates to be zero, then the last (n-th) coordinate is automatically forced to be zero because of the overall parity check. Thus, we can improve the estimate (3.45) as follows.

$$\dim(\mathbb{C}_{\mathcal{S}}) \geq mk_0 - (n-1)(m-\nu) \tag{3.47}$$

The generalization of this argument is as follows. Suppose $\mathbb{C}$ satisfies a set of t linearly independent parity checks, e.g.,

$$\begin{aligned}
a_{0,0}C_0 + a_{0,1}C_1 + a_{0,2}C_2 + \cdots + a_{0,n-1}C_{n-1} &= 0 \\
a_{1,0}C_0 + a_{1,1}C_1 + a_{1,2}C_2 + \cdots + a_{1,n-1}C_{n-1} &= 0 \\
&\vdots \\
a_{t-1,0}C_0 + a_{t-1,1}C_1 + a_{t-1,2}C_2 + \cdots + a_{t-1,n-1}C_{n-1} &= 0,
\end{aligned} \tag{3.48}$$

where $a_{i,j} \in GF(2)$[2]. Then the estimate (3.47) can be improved, as follows:

$$\dim(\mathbb{C}_{\mathcal{S}}) \geq mk_0 - (n-t)(m-\nu). \tag{3.49}$$

But how many linearly independent equations of the form (3.48) are satisfied by $\mathbb{C}$? Apparently, the vector $(a_{i,0}, a_{i,1}, \ldots, a_{i,n-1})$ is orthogonal to $\boldsymbol{C}$, so it is a codeword from $\mathbb{C}^{\perp}$. But $a_{i,j} \in GF(2)$. Therefore, the set of vectors of the form $(a_{i,0}, a_{i,1}, \ldots, a_{i,n-1})$ satisfying (3.48) is the subfield subcode of $\mathbb{C}^{\perp}$, projected onto $\mathbb{F}_2 = GF(2)$. Therefore,

$$t = \dim(\mathbb{C}^{\perp}_{\mathbb{F}_2}). \tag{3.50}$$

This estimate (3.49), where t is given in equation (3.50), gives a fairly tight bound in some cases. In fact, Jensen shows that the estimate is sharp for $\nu = m-1$. We will later (Theorem 6.1.1 in Chapter 6) prove that for $\nu = m-1$, the dimension of an SSRS code is always given by in Corollary 3.4.1. Thus, there is an exact relationship between equations (3.49) and (3.50), and Corollary 3.4.1 in the case $\nu = m-1$.

3.6.1. Example. For $m = 5$, $n = 31$, $k_0 = 23$ and $\nu = 1$, we consider a $(31, 23, 9)$

[2] We need not restrict $a_{i,j}$ to be elements from $GF(2)$. In fact, we can generalize to $GF(2^d)$, where $d \mid m$.

RS code with $J = \{1, 2, \dots, 23\}$, i.e., parity check polynomial $h(x) = \prod_{i=1}^{23}(x - \alpha^i)$, where α is a primitive root of $GF(2^5)$.

Note that the dual code $\mathbb{C}^{\perp}$ has parity check polynomial $h(x) = \prod_{i=24}^{0}(x - \alpha^i)$. To find the dimension of the $GF(2)$-subfield subcode of $\mathbb{C}^{\perp}$, we delete all integers from $\bar{J}$ which are conjugate to an integer from J modulo n. This leads only 0. But since the degree of 0 is 1, it follows that $\dim(\mathbb{C}^{\perp}_{\mathbb{F}_2}) = 1$. Therefore, equation (3.49) gives

$$\dim(\mathbb{C}_{\mathcal{S}}) \geq (5 \cdot 23 - (31 - 1)(5 - 4))/4 \tag{3.51}$$

$$= 21\frac{1}{4}, \tag{3.52}$$

which gives the exact dimension in this case. ■

On the other hand, Jensen's estimate does not distinguish between different subgroups, i.e., subspaces, of the same order, and so we know that it can't be exact in all cases.

As a final remark, we suggest that further research be done to investigate the relationship between our exact formula Theorem 3.1.4 and Jensen's estimate (3.49). We also note that the lattice diagram for $\mathcal{S}$, $\mathbb{C}$ and $\mathbb{C}_{\mathcal{S}}$ is given as in Figure 3.1.

$$\begin{tikzcd}
 & \mathbb{C} + \mathcal{S}^n \arrow[dl, dash] \arrow[dr, dash] & \\
\mathbb{C} \arrow[dr, dash] & & \mathcal{S}^n \arrow[dl, dash] \\
 & \mathbb{C} \cap \mathcal{S}^n = \mathbb{C}_{\mathcal{S}} &
\end{tikzcd}$$

Figure 3.1: Commutative diagram for SSRS codes.

It follows from the "second isomorphism theorem" from elementary group theory (e.g., [9][24]), that

$$|\mathbb{C}_{\mathcal{S}}| = |\mathbb{C}| \cdot \frac{|\mathcal{S}^n|}{|\mathcal{S}^n + \mathbb{C}|}. \tag{3.53}$$

But note that

$$\dim(\mathcal{S}^n + \mathbb{C}) = \dim(\mathcal{S}^n) + \dim(\mathbb{C}^{\bar{\mathcal{S}}}), \tag{3.54}$$

where $\mathbb{C}^{\bar{\mathcal{S}}}$ denotes the image of $\mathbb{C}$ projected onto $\bar{\mathcal{S}}^n$. From this, the previous estimate (3.49) follows immediately. Thus, a study of the group $\mathcal{S}^n + \mathbb{C}$ gives a quick proof of Jensen's results, and may lead to important generalizations.

Chapter 4 Duality

In this Chapter, we will study the relationship between an SSRS code associated with a given subspace $\mathcal{S}$, and that associated with its trace-dual subspace $\mathcal{S}^{\perp}$. We will start with a discussion of a convenient way to identify an "*interesting*" subspace. Then we discuss a relationship between interesting subspaces and MDS codes. Next, we will focus on the relationship between the dimension of SSRS code and trace-duality. We will show that the dimension of an SSRS code can be computed from that of its complementary trace-dual SSRS codes, without the need for matrix rank computation. We will show this using a fundamental fact that we call the "*defect theorem.*"

4.1 Ordinary Subspace

We showed in Chapter 3 that the dimension of an SSRS code is determined by the rank of the appropriate cyclotomic matrices. The lower bound on the dimension given by Corollary 3.4.1 does not depend on rank computations. Many subspaces which achieve this lower bound are exhibited by Corollary 3.4.2, which says that, if the subspace is spanned by a basis of the form $\{1, \xi, \xi^2, \dots, \xi^{\mu-1}\}$, where ξ is an arbitrary element in $GF(2^m)$ with $\deg(\xi) = m$, i.e., a polynomial basis, then the corresponding cyclotomic matrices Γ_j's are always full rank for any choice of integers from cyclotomic cosets.

But even if the subspace is not spanned by a polynomial basis, it is still possible that the subspace still achieves the lower bound for any primal code. This leads us to the following definition.

4.1.1. Definition. A subspace is said to be "*ordinary*" if the dimension of the corresponding SSRS code achieves the lower bound given by Corollary 3.4.1 regardless of the primal code. A subspace is called "*exceptional*" if it is not ordinary, i.e., if the subspace gives a higher dimension for some primal code. ■

This definition does not give a practical way to determine "ordinariness." In order to clarify the definition, we now give an equivalent condition in terms of the cyclotomic matrices.

Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ spanned by the basis $\{\beta_0, \beta_1, \dots, \beta_{\nu-1}\}$. We have defined the $\nu \times m$ cyclotomic matrix $G(\mathcal{S})$ as follows[1].

$$G(\mathcal{S}) = \begin{bmatrix} \beta_0 & \beta_0^2 & \cdots & \beta_0^{2^{m-1}} \\ \beta_1 & \beta_1^2 & \cdots & \beta_1^{2^{m-1}} \\ \vdots & \vdots & \ddots & \vdots \\ \beta_{\nu-1} & \beta_{\nu-1}^2 & \cdots & \beta_{\nu-1}^{2^{m-1}} \end{bmatrix} \tag{4.1}$$

Thus, a subspace $\mathcal{S}$ is ordinary if and only if every $\nu \times h$ submatrix of the corresponding cyclotomic matrix $G(\mathcal{S})$ has full rank, where $0 < h < m$.

But from an elementary property of matrices (e.g., [7]), "every $\nu \times h$ submatrix" can be replaced by "every $\nu \times \nu$ submatrix." Moreover, if we view $G(\mathcal{S})$ as the generator matrix of a code, we can restate Definition 4.1.1 in a more convenient manner.

4.1.2. Theorem. *A subspace $\mathcal{S}$ is ordinary if and only if every $\nu \times \nu$ submatrix of the cyclotomic matrix $G(\mathcal{S})$ is nonsingular. Equivalently, a subspace $\mathcal{S}$ is ordinary if and only if the cyclotomic matrix $G(\mathcal{S})$ generates an (m, ν) MDS code over $GF(2^m)$.*

This restatement gives us an opportunity to utilize known theorems about MDS codes.

4.1.3. Theorem. *Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ and let $\mathcal{S}^\perp$ be the trace-dual subspace of $\mathcal{S}$. The subspace $\mathcal{S}$ is ordinary if and only if $\mathcal{S}^\perp$ is ordinary.*

---

[1] In Chapter 3, the indices are in reversed order. But here we will make the indices simpler since it does not materially affect the discussion.

Proof. Let $\{\gamma_0, \gamma_1, \ldots, \gamma_{\mu-1}\}$ be a basis for $\mathcal{S}^\perp$. Then by definition,

$$\text{Tr}_1^m(\gamma_i \beta_j) = 0, \qquad \begin{cases} i = 0, 1, \ldots, \mu - 1 \\ j = 0, 1, \ldots, \nu - 1. \end{cases} \tag{4.2}$$

Thus if we define the $\mu \times m$ matrix

$$H = \begin{bmatrix} \gamma_0 & \gamma_0^2 & \cdots & \gamma_0^{2^{m-1}} \\ \gamma_1 & \gamma_0^2 & \cdots & \gamma_0^{2^{m-1}} \\ \vdots & \vdots & \ddots & \vdots \\ \gamma_{\mu-1} & \gamma_{\mu-1}^2 & \cdots & \gamma_{\mu-1}^{2^{m-1}} \end{bmatrix}, \tag{4.3}$$

then $HG^T = 0$, since the inner product of the i-th row of H and the j-th row of G is

$$\beta_i \gamma_j + \beta_i^2 \gamma_j^2 + \cdots + \beta_i^{2^{m-1}} \gamma_j^{2^{m-1}} = \text{Tr}_1^m(\beta_i \gamma_j) = 0. \tag{4.4}$$

It follows that if an (m, ν) code $\mathbb{C}$ is defined by the generator matrix G, then the dual code $\mathbb{C}^\perp$ of $\mathbb{C}$ is generated by the matrix H. But since $\mathcal{S}$ is ordinary, $\mathbb{C}$ is an MDS code. But since the dual code of an MDS code is also an MDS code (Theorem 2 of Chapter 11 in [16]), $\mathbb{C}^\perp$ is also an MDS code. It follows that $\mathcal{S}^\perp$ is ordinary, too. ∎

4.2 Duality and Defect

In this section, we will derive another interesting duality theorem about the dimension of SSRS codes. We will begin by introducing a theorem for general matrices over any field, which we call the "*defect theorem.*" It is a useful and general result in matrix theory, but it does not seem to be well-known. Using the defect theorem, we will prove a second duality theorem on the dimension of SSRS codes.

4.2.1 Shortened and Punctured Codes

Here we give a general discussion of shortening and puncturing of linear codes over any field. Although shortening and puncturing are commonly used techniques in coding theory, this kind of discussion seems to have first appeared in references [20] and [6].

Let $\mathbb{C}$ be a (n, k) linear code over a field $\mathbb{F}$. First, we number each coordinate of $\mathbb{C}$ from 1 to n, and let S be an arbitrary coordinate subset defined as

$$S \subseteq \{1, 2, \dots, n\} \tag{4.5}$$

$$= \{i_1, i_2, \dots, i_s\}, \tag{4.6}$$

where $s = |S|$, and let $\bar{S}$ be the complementary subset of S. Further, we define the projection map $\Pi_S : \mathbb{F}^n \to \mathbb{F}^s$ by

$$\Pi_S(v_1, v_2, \dots, v_n) \longrightarrow (v_{i_1}, v_{i_2}, \dots, v_{i_s}), \tag{4.7}$$

where $v_i \in \mathbb{F}$. Now we apply the mapping Π_S to the code $\mathbb{C}$. We denote the *kernel* of the mapping by $\Omega_S(\mathbb{C})$ and the *image* by $\Omega^S(\mathbb{C})$, i.e.,

$$\Omega_S(\mathbb{C}) = \{\boldsymbol{c} \in \mathbb{C} \mid \Pi_S(\boldsymbol{c}) = \boldsymbol{0}\}, \tag{4.8}$$

$$\Omega^S(\mathbb{C}) = \{\Pi_S(\boldsymbol{c}) \mid \boldsymbol{c} \in \mathbb{C}\}. \tag{4.9}$$

We call $\Omega_S(\mathbb{C})$ the *S-shortened* version of $\mathbb{C}$, and $\Omega^S(\mathbb{C})$ the *$\bar{S}$-punctured* version of $\mathbb{C}$. In fact, $\Omega_S(\mathbb{C})$ is the collection of all codewords from $\mathbb{C}$ which vanish on S, and $\Omega^S(\mathbb{C})$ is the collection of codewords from which all the coordinates in $\bar{S}$ have been punctured, i.e., $\Omega^S(\mathbb{C})$ is the projection of $\mathbb{C}$ onto S.

4.2.1. Theorem.

$$\dim(\Omega_S(\mathbb{C})) + \dim(\Omega^S(\mathbb{C})) = \dim(\mathbb{C}) \tag{4.10}$$

Proof. This follows immediately from the fact that $\Omega_S(\mathbb{C})$ is the kernel, and $\Omega^S(\mathbb{C})$ is the image, of $\mathbb{C}$ under the linear mapping Π_S. ■

Now, let G and H be a generator matrix and a parity-check matrix for $\mathbb{C}$, respectively. Thus, G is a $k \times n$ matrix and H is an $r \times n$ matrix, where $r = n - k$. By definition, we have

$$GH^T = \mathbf{0}. \tag{4.11}$$

Further, let G_S be the $k \times s$ matrix obtained from G by deleting the columns whose indices lie in $\bar{S}$ and similarly let $H_{\bar{S}}$ be the $r \times t$ matrix obtained from H by deleting the columns whose indices lie in S, where $t = n - s$. Figure 4.1 illustrates this definition.

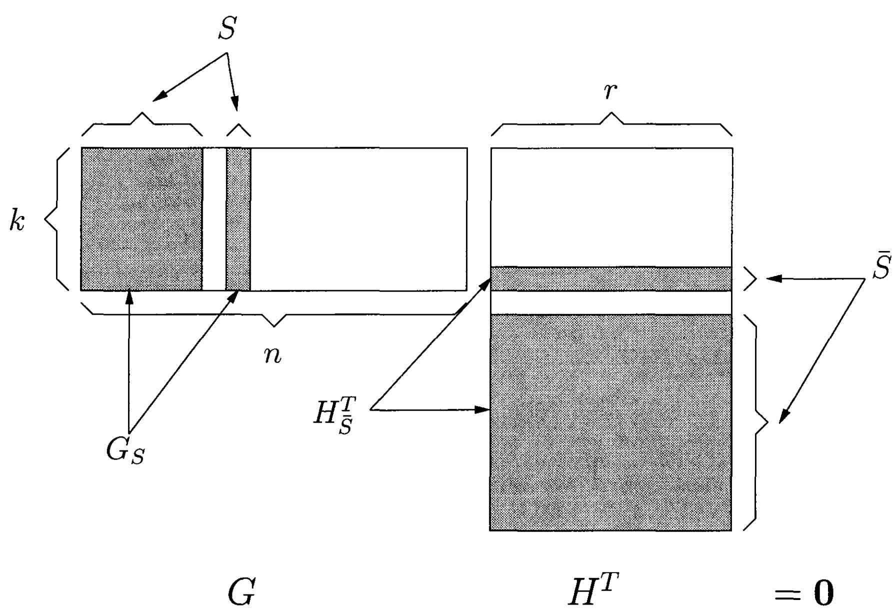


Figure 4.1: Matrices G, H^T, G_S and $H_{\bar{S}}^T$.

4.2.2. Theorem. *$H_{\bar{S}}$ is a parity-check matrix for $\Omega_S(\mathbb{C})$, and G_S is a generator matrix for $\Omega^S(\mathbb{C})$.*

Proof. A vector $\boldsymbol{v}$ such that $\Pi_S(\boldsymbol{v}) = \mathbf{0}$ is a codeword in $\mathbb{C}$ if and only if $H\boldsymbol{v}^T = \mathbf{0}$, but since $\boldsymbol{v}$ is 0 at the S-coordinates, this is equivalent to $H_{\bar{S}}\boldsymbol{v}_{\bar{S}}^T = \mathbf{0}$. Similarly, since the rows of G span $\mathbb{C}$, the rows of G_S will span $\Omega^S(\mathbb{C})$. ■

Theorem 4.2.2 is a simple exercise in linear algebra, but it will give us a fresh view of shortening and puncturing.

4.2.2 Dual Codes

We investigate the relationship between shortened and punctured codes and their duals. Let $\mathbb{C}^\perp$ be the dual code of $\mathbb{C}$. Then $\mathbb{C}^\perp$ is a (n, r) linear code whose generator matrix and parity-check matrix are H and G, respectively.

4.2.3. Theorem.

$$\Omega_S(\mathbb{C})^\perp = \Omega^{\bar{S}}(\mathbb{C}^\perp) \tag{4.12}$$

$$\Omega^S(\mathbb{C})^\perp = \Omega_{\bar{S}}(\mathbb{C}^\perp) \tag{4.13}$$

Proof. From theorem 4.2.2, a parity-check matrix for $\Omega_S(\mathbb{C})$ is $H_{\bar{S}}$. Thus a generator matrix for $\Omega_S(\mathbb{C})^\perp$ is also $H_{\bar{S}}$. Similarly, a generator matrix for $\mathbb{C}^\perp$ is H, and thus again by Theorem 4.2.2, a generator matrix for $\Omega^{\bar{S}}(\mathbb{C}^\perp)$ is $H_{\bar{S}}$. Thus $\Omega_S(\mathbb{C})^\perp$ and $\Omega^{\bar{S}}(\mathbb{C}^\perp)$ have the same generator matrices, and equation (4.12) is proved. Equation (4.13) follows from the previous discussion by replacing $\mathbb{C}$ by $\mathbb{C}^\perp$ and S by $\bar{S}$, which implies

$$\Omega_{\bar{S}}(\mathbb{C}^\perp)^\perp = \Omega^S(\mathbb{C}). \tag{4.14}$$

Then, taking the dual of both sides of (4.14) implies

$$\Omega_{\bar{S}}(\mathbb{C}^\perp) = \Omega^S(\mathbb{C})^\perp, \tag{4.15}$$

which is equation (4.13). ■

4.2.3 Defect Theorem

Let M be an arbitrary $i \times j$ matrix. The rank of M can be written as

$$\operatorname{rank}(M) = \min(i, j) - d(M), \tag{4.16}$$

where $d(M)$ is a non-negative integer in the range $0 \le d(M) \le \min(i, j)$. For convenience, we shall call $d(M)$ the "*defect*" of the matrix M. Note that $d(M) = 0$ if and only if the matrix is *full-rank*. Here is our main result.

4.2.4. Theorem (Defect Theorem).

$$d(H_S) = d(G_{\bar{S}}). \tag{4.17}$$

Proof. Recall that H_S is the $r \times s$ matrix obtained from H by extracting the columns with indices in S, and similarly, $G_{\bar{S}}$ is the $k \times t$ matrix obtained from G by deleting all columns indexed by S. Therefore, the ranks of H_S and $G_{\bar{S}}$ can be written as follows.

$$\operatorname{rank}(H_S) = \min(r, s) - d(H_S), \tag{4.18}$$

$$\operatorname{rank}(G_{\bar{S}}) = \min(k, t) - d(G_{\bar{S}}). \tag{4.19}$$

Apparently, $d(H_S)$ and $d(G_{\bar{S}})$ are non-negative integers in the range

$$0 \le d(H_S) \le \min(r, s), \tag{4.20}$$

$$0 \le d(G_{\bar{S}}) \le \min(k, t). \tag{4.21}$$

From Theorem 4.2.2, we see that H_S is a parity-check matrix for $\Omega_{\bar{S}}(\mathbb{C})$ and $G_{\bar{S}}$ is a generator matrix for $\Omega^{\bar{S}}(\mathbb{C})$. It immediately follows from Theorem 4.2.3 that $G_{\bar{S}}$ is also a parity-check matrix for $\Omega^{\bar{S}}(\mathbb{C})^{\perp} = \Omega_S(\mathbb{C}^{\perp})$.

Now from Theorem 4.2.1, we have

$$\dim(\mathbb{C}) = \dim(\Omega_{\bar{S}}(\mathbb{C})) + \dim(\Omega^{\bar{S}}(\mathbb{C})). \tag{4.22}$$

However, from Theorem 4.2.3, we get

$$\Omega^{\bar{S}}(\mathbb{C}) = \Omega_S(\mathbb{C}^{\perp})^{\perp}. \tag{4.23}$$

This says that $\Omega^{\bar{S}}(\mathbb{C})$ and $\Omega_S(\mathbb{C}^{\perp})$ are dual to each other, and therefore the code length of $\Omega^{\bar{S}}(\mathbb{C})$ and $\Omega_S(\mathbb{C}^{\perp})$ are, of course, the same. Note that the code length of $\Omega^{\bar{S}}(\mathbb{C})$ is $t = n - s$, since the code $\Omega^{\bar{S}}(\mathbb{C})$ is the S-punctured code obtained from $\mathbb{C}$. Now, from the fact that the sum of the dimensions of two codes which are dual to each other, is equal to the length of the code, we get

$$\dim(\Omega^{\bar{S}}(\mathbb{C})) + \dim(\Omega_S(\mathbb{C}^{\perp})) = t. \tag{4.24}$$

Deleting $\dim(\Omega^{\bar{S}}(\mathbb{C}))$ from equation (4.22) by inserting equation (4.24), and using the fact that $\dim(\mathbb{C}) = k$, we get

$$k = \dim(\Omega_{\bar{S}}(\mathbb{C})) + (t - \dim(\Omega_S(\mathbb{C}^{\perp})))$$

$$\dim(\Omega_S(\mathbb{C}^{\perp})) - \dim(\Omega_{\bar{S}}(\mathbb{C})) = t - k. \tag{4.25}$$

Since any linear code is, by definition, the null space of its parity-check matrix, we have the following.

$$\dim(\Omega_{\bar{S}}(\mathbb{C})) = s - \operatorname{rank}(H_S) \tag{4.26}$$

$$\dim(\Omega_S(\mathbb{C}^{\perp})) = t - \operatorname{rank}(G_{\bar{S}}). \tag{4.27}$$

By inserting equation (4.26) and equation (4.27) into equation (4.25), we have

$$(t - \mathrm{rank}(G_{\bar{S}})) - (s - \mathrm{rank}(H_S)) = t - k$$

$$\mathrm{rank}(H_S) - \mathrm{rank}(G_{\bar{S}}) = s - k. \tag{4.28}$$

Finally, we insert equation (4.18) and equation (4.19) into equation (4.28), obtaining

$$(\min(r, s) - d(H_S)) - (\min(k, t) - d(G_{\bar{S}})) = s - k$$

$$d(G_{\bar{S}}) - d(H_S) = \min(k, t) - \min(r, s) + s - k. \tag{4.29}$$

Since $k + r = n$ and $s + t = n$, there are only 8 possibilities for the relationships between k, r, s and t. We evaluate the RHS of equation (4.29) for each of these cases, as follows.

	inequality	$\min(k,t) - \min(r,s) + s - k$
1	$k \le s \le t \le r$	$k - s + s - k = 0$
2	$r \le s \le t \le k$	$t - r + s - k = 0$
3	$k \le t \le s \le r$	$k - s + s - k = 0$
4	$r \le t \le s \le k$	$t - r + s - k = 0$
5	$s \le k \le r \le t$	$k - s + s - k = 0$
6	$t \le k \le r \le s$	$t - r + s - k = 0$
7	$s \le r \le k \le t$	$k - s + s - k = 0$
8	$t \le r \le k \le s$	$t - r + s - k = 0$

Therefore, we can conclude

$$d(G_{\bar{S}}) - d(H_S) = 0. \tag{4.30}$$

■

4.2.4 Application to SSRS Codes

We are ready to apply Theorem 4.2.4 to the problem of computing the dimension of SSRS codes. Let us consider two primal RS codes $\mathbb{C}(J)$ and $\mathbb{C}(\bar{J})$, where $\bar{J}$ is a set of integers which complementary to J. We will call these codes "*complementary.*"

We recall that J determines the (n, k_0) RS code $\mathbb{C}(J)$, where $n = 2^m - 1$ and $k_0 = |J|$ with parity-check polynomial

$$h(x) = \prod_{j \in J} (x - \alpha^j). \tag{4.31}$$

It follows that $\bar{J}$ also defines a $(n, n - k_0)$ RS code with parity-check polynomial

$$\bar{h}(x) = \prod_{j \in \bar{J}} (x - \alpha^j). \tag{4.32}$$

Next, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ and let $\mathcal{S}^\perp$ be its trace-dual subspace, with dimension $\mu = m - \nu$. If we consider the two SSRS codes $\mathbb{C}_{\mathcal{S}}(J)$ and $\mathbb{C}_{\mathcal{S}^\perp}(\bar{J})$, we get the following theorem.

4.2.5. Theorem. *With the setup described above,*

$$K(\mathbb{C}(J), \mathcal{S}) - K_{LB}(\mathbb{C}(J), \nu) = K(\mathbb{C}(\bar{J}), \mathcal{S}^\perp) - K_{LB}(\mathbb{C}(\bar{J}), \mu), \tag{4.33}$$

where $K_{LB}(\mathbb{C}(J), \nu)$ represents the lower bound on the binary dimension of SSRS codes given by Corollary 3.4.1 in Chapter 3.

Theorem 4.2.5 implies that the "*excess*" of the dimension over the lower bound given by Corollary 3.4.1, is the same for $\mathbb{C}_{\mathcal{S}}(J)$ and $\mathbb{C}_{\mathcal{S}^\perp}(\bar{J})$. Since the computation of the lower bound on the dimension does not require the knowledge of the rank of any matrices, Theorem 4.2.5 says that once we know the excess for one of these dimensions, we can immediately compute the other.

Proof. We recall that the dimension of SSRS code is determined by the ranks of the cyclotomic matrices corresponding to the cyclotomic cosets. Let $G(\mathcal{S})$ and $G(\mathcal{S}^\perp)$ be the full cyclotomic matrices associated with the trace-dual subspaces $\mathcal{S}$ and $\mathcal{S}^{\perp}$.

Let $\{\beta_0, \beta_1, \ldots, \beta_{\nu-1}\}$ and $\{\gamma_0, \gamma_1, \ldots, \gamma_{\mu-1}\}$ be bases for $\mathcal{S}$ and $\mathcal{S}^{\perp}$, respectively. Then, as in the proof of Theorem 4.1.3, we have

$$G(\mathcal{S}) = \begin{bmatrix} \gamma_0 & \gamma_0^2 & \gamma_0^{2^2} & \cdots & \gamma_0^{2^{m-1}} \\ \gamma_1 & \gamma_1^2 & \gamma_1^{2^2} & \cdots & \gamma_1^{2^{m-1}} \\ \vdots & \vdots & & \ddots & \vdots \\ \gamma_{\mu-1} & \gamma_{\mu-1}^2 & \gamma_{\mu-1}^{2^2} & \cdots & \gamma_{\mu-1}^{2^{m-1}} \end{bmatrix} \tag{4.34}$$

$$G(\mathcal{S}^{\perp}) = \begin{bmatrix} \beta_0 & \beta_0^2 & \beta_0^{2^2} & \cdots & \beta_0^{2^{m-1}} \\ \beta_1 & \beta_1^2 & \beta_1^{2^2} & \cdots & \beta_1^{2^{m-1}} \\ \vdots & \vdots & & \ddots & \vdots \\ \beta_{\nu-1} & \beta_{\nu-1}^2 & \beta_{\nu-1}^{2^2} & \cdots & \beta_{\nu-1}^{2^{m-1}} \end{bmatrix} \tag{4.35}$$

$$G(\mathcal{S})G(\mathcal{S}^{\perp})^T = \mathbf{0}. \tag{4.36}$$

To compute the dimension of the corresponding SSRS code, we need to compute the ranks of certain submatrices of these cyclotomic matrices. Let Ω_j be the j-th cyclotomic coset. Then, the coordinate set A_j for $\mathbb{C}_{\mathcal{S}}(J)$ is

$$A_j = \Omega_j \cap J. \tag{4.37}$$

Similarly, the corresponding set for $\mathbb{C}_{\mathcal{S}^{\perp}}(\bar{J})$ is its complement

$$\bar{A}_j = \Omega_j \cap \bar{J}. \tag{4.38}$$

Therefore, by Theorem 4.2.4,

$$d(G(\mathcal{S})_{A_j}) = d(G(\mathcal{S}^{\perp})_{\bar{A}_j}). \tag{4.39}$$

Therefore, from equation (3.4) in Section 3.1, the dimension excess is the same as the sum of the products of the degree d_j and the defect of the j-th cyclotomic matrix. But for every j-th cyclotomic coset, the defect of the corresponding submatrices are always the same, so our assertion is proved. ■

4.2.6. Example. We consider $m = 6$ and $\nu = 4$. Let us choose the parameters for $\mathbb{C}$ as $k_0 = 20$ and let $J = \{1, \ldots, 20\}$. From the table in Appendix A, we pick the subspace $\mathcal{S}$ from category $\mathbb{G}_3$ spanned by the basis

$$\mathfrak{B} = \{1, \alpha, \alpha^8, \alpha^{21}\}.$$

It is easy to check

$$K(\mathbb{C}(J), \mathcal{S}) = 48, \qquad K_{LB}(\mathbb{C}(J), 2) = 42$$
$$K(\mathbb{C}(J), \mathcal{S}) - K_{LB}(\mathbb{C}(J), 2) = 6.$$

On the other hand, consider $\mathbb{C}(\bar{J})$ with $k_0 = 63 - 20 = 43$ and $\bar{J} = \{21, \ldots, 62, 0\}$. Here $\mathcal{S}^\perp$ is a $\nu = 2$-dimensional subspace spanned by the basis

$$\mathfrak{B}^\perp = \{1, \alpha^{21}\}.$$

If we compute the dimension for the SSRS code $\mathbb{C}(\bar{J})_{\mathcal{S}}$ then we can verify that the excess dimensions above the lower bound is the same as above:

$$K(\mathbb{C}(\bar{J}), \mathcal{S}^\perp) = 54, \qquad K_{LB}(\mathbb{C}(\bar{J}), 4) = 48$$
$$K(\mathbb{C}(\bar{J}), \mathcal{S}^\perp) - K_{LB}(\mathbb{C}(\bar{J}), 4) = 6.$$

■

If we combine our two duality Theorems 4.1.3 and 4.2.5, we can avoid the rank computation for the computation of the dimension of an SSRS code, if we know the dimension of its dual world. This is very effective if we fix the dimension of primal code k_0 and search for the best possible SSRS code by changing both the integer set

J and the subspace $\mathcal{S}$, since Theorem 4.2.5 guarantees that if an integer set J and a subspace $\mathcal{S}$ gives an optimal SSRS code for a ν-dimensional subspace, then the integer set $\bar{J}$ and the subspace $\mathcal{S}^{\perp}$ also gives an optimal code.

Chapter 5 Subspace Classification

In Chapter 3, we derived an explicit formula for the dimension of an arbitrary SSRS code. We have also seen that for a given parent RS code, the binary dimension of the SSRS code depends on the choice of subspace. Thus, to obtain the highest dimension for the SSRS code, we need to search among the subspaces to find the one that gives the highest dimension. However, since the number of distinct subspaces explodes as m and ν get large, "brute-force" will not suffice.

In this Chapter, we will study two kinds of equivalence among subspaces, scalar multiple and conjugate. We will see that two equivalent subspaces produce SSRS codes whose dimensions and weight distributions are the same. Because of these equivalences, we will be able to reduce the huge number of distinct subspaces into a relatively small number of subsets. Later (Chapter 6), these classifications will allow us to find exceptional subspaces, even for large m and ν.

5.1 Invariance under Scalar Multiplication

We start with the definition of scalar multiplication among subspaces.

5.1.1. Definition. Given positive integers m and ν with $0 \leq \nu \leq m$, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. For any nonzero element λ in $GF(2^m)$, we define the "*scalar multiple*" subspace of $\mathcal{S}$, denoted by $\lambda\mathcal{S}$, as follows.

$$\lambda\mathcal{S} = \{\lambda\, e \mid e \in \mathcal{S}\} \tag{5.1}$$

■

Clearly, the set $\lambda\mathcal{S}$ is closed under addition, so that it forms an Abelian group isomorphic to $\mathcal{S}$.

5.1.2. Theorem. *Let $\mathbb{C}(J)$ be a primal (n, k_0) RS code defined over $GF(2^m)$, where $n = 2^m - 1$ and $|J| = k_0$, and let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. Further, let $\mathbb{C}_{\mathcal{S}}$ be the SSRS code obtained by projecting $\mathbb{C}$ onto $\mathcal{S}$ and let $\lambda\mathcal{S}$ be a scalar multiple of $\mathcal{S}$, where λ is an arbitrary nonzero element in $GF(2^m)$. If we denote the binary dimensions of the SSRS codes $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\lambda\mathcal{S}}$ by $K(\mathbb{C}, \mathcal{S})$ and $K(\mathbb{C}, \lambda\mathcal{S})$, respectively, then*

$$K(\mathbb{C}, \mathcal{S}) = K(\mathbb{C}, \lambda\mathcal{S}). \tag{5.2}$$

Proof. Let $\boldsymbol{C} = (C_0, C_1, \ldots, C_{n-1})$ be a codeword of the SSRS code $\mathbb{C}_{\mathcal{S}}$, and let $P(x)$ be the corresponding Mattson-Solomon polynomial (degree k_0) for $\mathbb{C}$. Since $\boldsymbol{C}$ is a codeword of $\mathbb{C}$, there exists a set of coefficients, say $d_i \in GF(2^m)$, such that

$$P(x) = \sum_{i \in J} d_i x^i, \tag{5.3}$$

$$C_j = P(\alpha^j) \qquad j = 0, 1, 2, \ldots, n-1. \tag{5.4}$$

Note that $\boldsymbol{C}$ is a codeword for $\mathbb{C}_{\mathcal{S}}$, thus

$$C_j \in \mathcal{S} \qquad j = 0, 1, 2, \ldots, n-1. \tag{5.5}$$

We define

$$\lambda\boldsymbol{C} = (\lambda C_0, \lambda C_1, \ldots, \lambda C_{n-1}) \tag{5.6}$$

$$= (\lambda P(1), \lambda P(\alpha), \ldots, \lambda P(\alpha^{n-1})). \tag{5.7}$$

All words in $\lambda\boldsymbol{C}$ lie in $\lambda\mathcal{S}$, by definition. Moreover,

$$\lambda C_j = \lambda P(\alpha^j) \qquad j = 0, 1, 2, \ldots, n-1, \tag{5.8}$$

$$\lambda P(x) = \lambda\big(\sum_{i\in J} d_i x^i\big) \tag{5.9}$$

$$= \sum_{i\in J} (\lambda d_i) x^i. \tag{5.10}$$

But since for any set of d_i's, λd_i's are also a set of elements from $GF(2^m)$, $\lambda \boldsymbol{C}$ must be a codeword from $\mathbb{C}$. Therefore, $\lambda \boldsymbol{C}$ is a codeword from $\mathbb{C}_{\lambda\mathcal{S}}$.

In summary, for every nonzero λ, there exists a one-to-one correspondence between the codewords from $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\lambda\mathcal{S}}$, so the number of codewords from $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\lambda\mathcal{S}}$ must be the same. ∎

Moreover, since the multiplication of a codeword by a nonzero constant does not change the weight of the codeword, the weight distribution of $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\lambda\mathcal{S}}$ must be the same. This leads to the following corollary.

5.1.3. Corollary. *Given a primal RS code $\mathbb{C}$ over $GF(2^m)$, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ and let $\lambda\mathcal{S}$ be a scalar multiple subspace of $\mathcal{S}$. Then two corresponding SSRS codes $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\lambda\mathcal{S}}$ have the same weight distributions.*

We will say that two subspaces $\mathcal{S}$ and $\mathcal{S}'$ are *equivalent*, if $\mathcal{S}' = \lambda\mathcal{S}$ for some nonzero $\lambda \in GF(2^m)$. Now, we shall give a name for a set of equivalent subspaces.

5.1.4. Definition. Let $\mathcal{S}$ be a ν-dimensional vector spaces of $GF(2^m)$. A *class* $\mathbb{T}$ associated with $\mathcal{S}$ is defined as

$$\mathbb{T} = \{\lambda\mathcal{S} \mid \lambda \in GF^*(2^m)\}. \tag{5.11}$$

∎

The set of all ν-dimensional subspaces of $GF(2^m)$ can be partitioned into a relatively small number of *classes*. Theorem 5.1.2 guarantees that the subspaces in a given class all give the same dimension for SSRS codes. So, once we have calculated the dimension of an SSRS code with respect to a subspace $\mathcal{S}$, then we don't have to compute the dimension for any of the scalar multiples of $\mathcal{S}$. In other words, we need to investigate the dimension of SSRS codes only for one *representative* subspace from each class.

For given m and ν, the number of distinct ν-dimensional vector subspaces of $GF(2^m)$ is given by the Gaussian binomial coefficient as follows [28].

$$\mathcal{N}_{\mathcal{S}}(m,\nu) = \begin{bmatrix} m \\ \nu \end{bmatrix}_2 = \frac{(2^m-1)(2^m-2)(2^m-2^2)\cdots(2^m-2^{\nu-1})}{(2^\nu-1)(2^\nu-2)(2^\nu-2^2)\cdots(2^\nu-2^{\nu-1})}. \tag{5.12}$$

We will see how subspaces are classified in the following examples.

5.1.5. Example. We consider a case for $m = 4$ and $\nu = 2$. Note that the number of distinct subspaces is given by

$$\mathcal{N}_{\mathcal{S}}(4,2) = \begin{bmatrix} 4 \\ 2 \end{bmatrix}_2 = \frac{(2^4-1)(2^4-2)}{(2^2-1)(2^2-2)} = 35.$$

Since there are only 15 nonzero elements in $GF(2^4)$, it is easy to write down all elements for every possible 2-dimensional subspace of $GF(2^4)$. We start with a subspace $\mathcal{S}_0$ spanned by the basis $\{1,\alpha\}$. Then, we form the class $\mathbb{T}_0$ consisting of all subspaces equivalent to $\mathcal{S}_0$ by multiplying by an arbitrary nonzero constant. Then we choose a subspace which does not appear in $\mathbb{T}_0$, and repeat the procedure until no subspaces remain.

$$\begin{array}{llll}
\mathbb{T}_0: & \mathcal{S}_0 = \{0,1,\alpha,\alpha^4\} & \mathcal{S}_5 = \{0,\alpha^5,\alpha^6,\alpha^9\} & \mathcal{S}_{10} = \{0,\alpha^{10},\alpha^{11},\alpha^{14}\} \\
& \mathcal{S}_1 = \{0,\alpha,\alpha^2,\alpha^5\} & \mathcal{S}_6 = \{0,\alpha^6,\alpha^7,\alpha^{10}\} & \mathcal{S}_{11} = \{0,\alpha^{11},\alpha^{12},1\} \\
& \mathcal{S}_2 = \{0,\alpha^2,\alpha^3,\alpha^6\} & \mathcal{S}_7 = \{0,\alpha^7,\alpha^8,\alpha^{11}\} & \mathcal{S}_{12} = \{0,\alpha^{12},\alpha^{13},\alpha\} \\
& \mathcal{S}_3 = \{0,\alpha^3,\alpha^4,\alpha^7\} & \mathcal{S}_8 = \{0,\alpha^8,\alpha^9,\alpha^{12}\} & \mathcal{S}_{13} = \{0,\alpha^{13},\alpha^{14},\alpha^2\} \\
& \mathcal{S}_4 = \{0,\alpha^4,\alpha^5,\alpha^8\} & \mathcal{S}_9 = \{0,\alpha^9,\alpha^{10},\alpha^{13}\} & \mathcal{S}_{14} = \{0,\alpha^{14},1,\alpha^3\}
\end{array}$$

$$
\begin{array}{llll}
\mathbb{T}_1: & \mathcal{S}_{15} = \{0, 1, \alpha^2, \alpha^8\} & \mathcal{S}_{20} = \{0, \alpha^5, \alpha^7, \alpha^{13}\} & \mathcal{S}_{25} = \{0, \alpha^{10}, \alpha^{12}, \alpha^3\} \\
& \mathcal{S}_{16} = \{0, \alpha, \alpha^3, \alpha^9\} & \mathcal{S}_{21} = \{0, \alpha^6, \alpha^8, \alpha^{14}\} & \mathcal{S}_{26} = \{0, \alpha^{11}, \alpha^{13}, \alpha^4\} \\
& \mathcal{S}_{17} = \{0, \alpha^2, \alpha^4, \alpha^{10}\} & \mathcal{S}_{22} = \{0, \alpha^7, \alpha^9, 1\} & \mathcal{S}_{27} = \{0, \alpha^{12}, \alpha^{14}, \alpha^5\} \\
& \mathcal{S}_{18} = \{0, \alpha^3, \alpha^5, \alpha^{11}\} & \mathcal{S}_{23} = \{0, \alpha^8, \alpha^{10}, \alpha\} & \mathcal{S}_{28} = \{0, \alpha^{13}, 1, \alpha^6\} \\
& \mathcal{S}_{19} = \{0, \alpha^4, \alpha^6, \alpha^{12}\} & \mathcal{S}_{24} = \{0, \alpha^9, \alpha^{11}, \alpha^2\} & \mathcal{S}_{29} = \{0, \alpha^{14}, \alpha, \alpha^7\}
\end{array}
$$

$$
\begin{array}{ll}
\mathbb{T}_2: & \mathcal{S}_{30} = \{0, 1, \alpha^5, \alpha^{10}\} \\
& \mathcal{S}_{31} = \{0, \alpha^1, \alpha^6, \alpha^{11}\} \\
& \mathcal{S}_{32} = \{0, \alpha^2, \alpha^7, \alpha^{12}\} \\
& \mathcal{S}_{33} = \{0, \alpha^3, \alpha^8, \alpha^{13}\} \\
& \mathcal{S}_{34} = \{0, \alpha^4, \alpha^9, \alpha^{14}\}
\end{array}
$$

Thus, the 35 subspaces are classified into only three distinct classes, namely $\mathbb{T}_0$, $\mathbb{T}_1$ and $\mathbb{T}_2$. Note that $\mathbb{T}_0$ and $\mathbb{T}_1$ consist of 15 subspaces, respectively, whereas $\mathbb{T}_2$ consists of 5 subspaces. Note also that $\mathcal{S}_{30}$ in $\mathbb{T}_2$ is actually the subfield $GF(4)$. Both $\mathcal{S}_0$ and $\mathcal{S}_{30}$ were used in Example 3.5.1 in Chapter 3, but now we see that there is another class $\mathbb{T}_2$ to be investigated. ■

5.2 Number of Classes

In Section 5.1, we partitioned the set of all ν-dimensional subspaces of $GF(2^m)$ into a small number of scalar multiple equivalent classes (5.1.2). In this section, we will give a formula for the exact number of such classes.

Intuitively, we expect the number of classes to be about $\mathcal{N}_{\mathcal{S}}(m, \nu)/(2^m - 1)$. However, this is not exact in general, as we observed in Example 5.1.5.

5.2.1. Theorem. *Given m and ν, if we classify the ν-dimensional subspaces of $GF(2^m)$ into classes, then the number of classes $\mathcal{N}_{\mathbb{T}}(m, \nu)$ is given by the follow-*

ing formula.

$$\mathcal{N}_{\mathbb{T}}(m,\nu) = \frac{1}{2^m - 1} \sum_{d|(m,\nu)} \begin{bmatrix} m/d \\ \nu/d \end{bmatrix}_{2^d} \sum_{k|d} \mu(d)(2^{k/d} - 1), \tag{5.13}$$

where $\mu(d)$ is the Möbius function.

Proof. We use Burnside's lemma [28], which says that

$$\mathcal{N}_{\mathbb{T}}(m,\nu) = \frac{1}{2^m - 1} \sum_{i=0}^{2^m-2} \mathrm{Inv}(\alpha^i), \tag{5.14}$$

where "$\mathrm{Inv}(\alpha^i)$" denotes the number of ν-dimensional subspaces left invariant by multiplication by α^i. But notice that the subspace $\mathcal{S}$ is invariant under multiplication by α^i if and only if it is invariant under multiplication by the subfield generated by $\{1, \alpha^i, \alpha^{2i}, \ldots, \alpha^{(r-1)i}\}$, where $r = \mathrm{ord}(\alpha^i)$. This subfield is exactly $GF(2^d)$, where $d = \deg(\alpha^i)$, i.e., the least integer such that $\alpha^{i2^d} = \alpha^i$. In other words, $\mathcal{S}$ is invariant under α^i if and only if it is a $GF(2^d)$ subfield of dimension ν/d in $GF(2^d)^{m/d}$. This number is the Gaussian binomial coefficient $\left[\begin{smallmatrix} m/d \\ \nu/d \end{smallmatrix}\right]_{2^d}$ Hence,

$$\mathcal{N}_{\mathbb{T}}(m,\nu) = \frac{1}{2^m - 1} \sum_{d|(m,\nu)} \begin{bmatrix} m/d \\ \nu/d \end{bmatrix}_{2^d} \pi(2^d), \tag{5.15}$$

where $\pi(2^d)$ is the number of primitive elements[1] in $GF(2^d)$. But clearly

$$2^m - 1 = \sum_{d|m} \pi(2^d), \tag{5.16}$$

since every nonzero elements in $GF(2^m)$ generates an unique subspace. Thus, by the Möbius inversion formula [28],

$$\pi(2^n) = \sum_{d|n} \mu(d)(2^{n/d} - 1). \tag{5.17}$$

[1]A primitive element is defined to be an element from $GF(2^m)$ which does not belong to any subfield. It is not necessarily a primitive root for $GF(2^m)$.

Equation (5.13) is obtained by combining equations (5.15) and (5.17). ■

In Tables 5.1, 5.2 and 5.3, we give the number of distinct subspaces $\mathcal{N}_{\mathcal{S}}(m,\nu)$, the number of primitive elements $\pi(2^d)$ and the number of classes $\mathcal{N}_{\mathbb{T}}(m,\nu)$ for small m and ν.

	$\nu=1$	$\nu=2$	$\nu=3$	$\nu=4$	$\nu=5$	$\nu=6$
$m=4$	15	35	15	1	–	–
$m=5$	31	155	155	31	1	–
$m=6$	63	651	1395	651	63	1
$m=7$	127	2667	11811	11811	2667	127
$m=8$	255	10795	97155	200787	97155	10795
$m=9$	511	43435	788035	3309747	3309747	788035
$m=10$	1023	174251	6347715	53743987	109221651	53743987
$m=11$	2047	698027	50955971	866251507	3548836819	3548836819
$m=12$	4095	2794155	408345795	13910980083	114429029715	230674393235

Table 5.1: $\mathcal{N}_{\mathcal{S}}(m,\nu)$: The number of distinct ν-dimensional subspaces of $GF(2^m)$

d	1	2	3	4	5	6	7	8	9
$\pi(2^d)$	1	2	6	12	30	54	126	240	504

Table 5.2: $\pi(2^d)$: The number of primitive elements in $GF(2^d)$

	$\nu=1$	$\nu=2$	$\nu=3$	$\nu=4$	$\nu=5$	$\nu=6$
$m=4$	1	3	1	–	–	–
$m=5$	1	5	5	1	–	–
$m=6$	1	11	23	11	1	–
$m=7$	1	21	93	93	21	1
$m=8$	1	43	381	791	381	43
$m=9$	1	85	1543	6477	6477	1543
$m=10$	1	171	6205	52547	106767	52547
$m=11$	1	341	24893	423181	1733677	1733677
$m=12$	1	683	99719	3397111	27943597	56330935

Table 5.3: $\mathcal{N}_{\mathbb{T}}(m,\nu)$: The number of classes of ν-dimensional subspaces of $GF(2^m)$

5.2.2. Example. We consider the case $m=5$ and $\nu=2$. From Table 5.1, there are

$$\mathcal{N}_{\mathcal{S}}(5,2)=\frac{(2^5-1)(2^5-2)}{(2^2-1)(2^2-2)}=155 \tag{5.18}$$

2-dimensional subspaces. But since $\gcd(5,2)=1$, by Theorem 5.2.1 there are

$$\mathcal{N}_{\mathbb{T}}(5,2)=\frac{1}{2^5-1}\cdot\frac{(2^5-1)(2^5-2)}{(2^2-1)(2^2-2)}=5 \tag{5.19}$$

distinct classes, as Table 5.3 shows. If we name these classes $\mathbb{T}_0,\mathbb{T}_1,\ldots,\mathbb{T}_4$, then the subspaces are classified as follows.

$$
\begin{array}{llll}
\mathbb{T}_0: & \mathcal{S}_0 = \{0, \alpha^0, \alpha^1, \alpha^{14}\} & \mathbb{T}_3: & \mathcal{S}_{105} = \{0, \alpha^0, \alpha^7, \alpha^{16}\} \\
& \mathcal{S}_1 = \{0, \alpha^1, \alpha^2, \alpha^{15}\} & & \mathcal{S}_{106} = \{0, \alpha^1, \alpha^8, \alpha^{17}\} \\
& \mathcal{S}_2 = \{0, \alpha^2, \alpha^3, \alpha^{16}\} & & \mathcal{S}_{107} = \{0, \alpha^2, \alpha^9, \alpha^{18}\} \\
& \vdots & & \vdots \\
\mathbb{T}_1: & \mathcal{S}_{35} = \{0, \alpha^0, \alpha^2, \alpha^{28}\} & \mathbb{T}_4: & \mathcal{S}_{140} = \{0, \alpha^0, \alpha^8, \alpha^{19}\} \\
& \mathcal{S}_{36} = \{0, \alpha^1, \alpha^3, \alpha^{29}\} & & \mathcal{S}_{141} = \{0, \alpha^1, \alpha^9, \alpha^{20}\} \\
& \mathcal{S}_{37} = \{0, \alpha^2, \alpha^4, \alpha^{30}\} & & \mathcal{S}_{142} = \{0, \alpha^2, \alpha^{10}, \alpha^{21}\} \\
& \vdots & & \vdots \\
\mathbb{T}_2: & \mathcal{S}_{70} = \{0, \alpha^0, \alpha^4, \alpha^{25}\} & & \\
& \mathcal{S}_{71} = \{0, \alpha^1, \alpha^5, \alpha^{26}\} & & \\
& \mathcal{S}_{72} = \{0, \alpha^2, \alpha^6, \alpha^{27}\} & & \\
& \vdots & &
\end{array}
$$

Note that each class contains 35 subspaces in this case. ■

In general, the number of subspaces in a class is not a constant. We will investigate this number and define a parameter which characterize this phenomena.

Let $F(\mathcal{S})$ be the set of elements from $GF(2^m)$ which "*fix*" the subspace $\mathcal{S}$ under scalar multiplication, i.e.,

(5.20) $$F(\mathcal{S}) = \{0\} \cup \{\lambda \mid \lambda\mathcal{S} = \mathcal{S}, \lambda \in GF(2^m)\}.$$

5.2.3. Theorem. *Given m and ν, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. Then, $F(\mathcal{S})$ forms a subfield $GF(2^d)$, where d is the largest divisor of m such that $\mathcal{S}$ is a vector space over $GF(2^d)$.*

Proof. Obviously, 1 is an element of $F(\mathcal{S})$. Suppose $\lambda_1, \lambda_2 \in F(S)$. Then

(5.21) $$(\lambda_1\lambda_2)\mathcal{S} = \lambda_1(\lambda_2\mathcal{S}) = \lambda_1\mathcal{S} = \mathcal{S},$$

so that $\lambda_1\lambda_2 \in F(\mathcal{S})$. Similarly,

$$(\lambda_1 + \lambda_2)\mathcal{S} = (\lambda_1\mathcal{S}) + (\lambda_2\mathcal{S}) = \mathcal{S} + \mathcal{S} \subseteq \mathcal{S}. \tag{5.22}$$

But, if $\lambda_1 \neq \lambda_2$,

$$|(\lambda_1 + \lambda_2)\mathcal{S}| = |\lambda'\mathcal{S}| = |\mathcal{S}|. \tag{5.23}$$

Thus, $(\lambda_1 + \lambda_2)\mathcal{S} = \mathcal{S}$, so $(\lambda_1 + \lambda_2) \in F(\mathcal{S})$. Therefore, $F(\mathcal{S})$ is closed under both multiplication and addition. Thus, $F(S)$ is therefore a subring of a field, which implies $F(S)$ is in fact a field. ∎

5.2.4. Definition. Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. The "*degree*" d of $\mathcal{S}$ is defined to be the largest divisor of m such that $\mathcal{S} = \lambda\mathcal{S}$ for all $\lambda \in GF(2^d)$. ∎

Clearly, d divides ν as well as m. Normally, only 0 and 1 satisfy the condition (5.20). But for a few subspaces, we will find other elements. Note that if $d \neq 1$ then $\mathcal{S}$ can be regarded as a ν/d-dimensional vector space over $GF(2^d)$. Thus, a *degree* is associated with every subspace. Note also that $F(\mathcal{S})$ is invariant under scalar multiplication, i.e.,

$$F(\mathcal{S}) = F(\zeta\mathcal{S}) \qquad \text{for all } \zeta \in GF^*(2^m). \tag{5.24}$$

Therefore, the degree of the subspace is also invariant under scalar multiplication. We will call d the *degree of the class.*

5.2.5. Example. For $m = 4$ and $\nu = 2$, we refer to the subspace $\mathcal{S}_{31}$ from Example 5.1.5. The elements of $\mathcal{S}_{31}$ are

$$\mathcal{S}_{31} = \{0, \alpha^1, \alpha^6, \alpha^{11}\}. \tag{5.25}$$

It is easily seen that the elements which fix $\mathcal{S}_{31}$ are

$$F(\mathcal{S}_{31}) = \{0, 1, \alpha^5, \alpha^{10}\}. \tag{5.26}$$

Here $F(\mathcal{S}_{31})$ is the subfield $GF(2^2)$. By the above argument it follows that

$$F(\mathcal{S}_{30}) = F(\mathcal{S}_{31}) = \cdots = F(\mathcal{S}_{34}) = GF(2^2). \tag{5.27}$$

■

Now, we shall count the number of subspaces for each degree. All subspaces in the same class as $\mathcal{S}$ are of the form $\lambda\mathcal{S}$. Since λ runs through all nonzero values in $GF(2^m)$, there are at most $2^m - 1$ distinct subspaces. But, these are not always distinct. Let us denote by

$$\begin{Bmatrix} m \\ \nu \end{Bmatrix}_{2^d} \tag{5.28}$$

the number of ν-dimensional subspaces of $GF(2^m)$ of degree d. From Theorem 5.2.3 such subspaces are ν/d-dimensional subspaces over $GF(2^d)$. Therefore, using Gaussian binomial coefficients we get

$$\begin{bmatrix} m/d \\ \nu/d \end{bmatrix}_{2^d} = \sum_{d|e|(m,\nu)} \begin{Bmatrix} m \\ \nu \end{Bmatrix}_{2^e}. \tag{5.29}$$

It follows from the Möbius inversion formula that

$$\begin{Bmatrix} m \\ \nu \end{Bmatrix}_{2^d} = \sum_{d|e|(m,\nu)} \begin{bmatrix} m/e \\ \nu/e \end{bmatrix}_{2^e} \mu\left(\frac{e}{d}\right), \tag{5.30}$$

where $\mu(d)$ is the Möbius function. Note that each subspace of degree d will belong to a class containing $(2^m - 1)/(2^d - 1)$ subspaces. In summary, we have proved the following theorem.

5.2.6. Theorem. *For given m and ν, let $e = \gcd(m, \nu)$. Then for every divisor $d \mid e$,* *there will be*

$$\left\{ {m \atop \nu} \right\}_{2^d} = \sum_{d|e|(m,\nu)} \begin{bmatrix} m/e \\ \nu/e \end{bmatrix}_{2^e} \mu(\frac{e}{d}), \tag{5.31}$$

ν-dimensional subspaces of $GF(2^m)$ of degree d and

$$\left\langle {m \atop \nu} \right\rangle_{2^d} = \frac{2^d - 1}{2^m - 1} \left\{ {m \atop \nu} \right\}_{2^d} \tag{5.32}$$

classes of degree d, each of which contains

$$\frac{2^m - 1}{2^d - 1} \tag{5.33}$$

subspaces.

5.2.7. Example. For $m = 8$ and $\nu = 4$, using formula (5.31), we will investigate the subspaces of degrees $d = 1, 2, 4$.

$$\left\{ {8 \atop 4} \right\}_{2^1} = \sum_{1|e|(8,4)} \begin{bmatrix} 8/e \\ 4/e \end{bmatrix}_{2^e} \mu(\frac{e}{1}) = \begin{bmatrix} 8 \\ 4 \end{bmatrix}_{2^1} - \begin{bmatrix} 4 \\ 2 \end{bmatrix}_{2^2} = 200430$$

$$\left\langle {8 \atop 4} \right\rangle_{2^1} = \frac{2^1 - 1}{2^8 - 1} \left\{ {8 \atop 4} \right\}_{2^1} = \frac{1}{255} \cdot 200430 = 786$$

$$\left\{ {8 \atop 4} \right\}_{2^2} = \sum_{2|e|(8,4)} \begin{bmatrix} 8/e \\ 4/e \end{bmatrix}_{2^e} \mu(\frac{e}{2}) = \begin{bmatrix} 4 \\ 2 \end{bmatrix}_{2^2} - \begin{bmatrix} 2 \\ 1 \end{bmatrix}_{2^4} = 340$$

$$\left\langle {8 \atop 4} \right\rangle_{2^2} = \frac{2^2 - 1}{2^8 - 1} \left\{ {8 \atop 4} \right\}_{2^2} = \frac{3}{255} \cdot 340 = 4$$

$$\left\{ {8 \atop 4} \right\}_{2^4} = \sum_{4|e|(8,4)} \begin{bmatrix} 8/e \\ 4/e \end{bmatrix}_{2^e} \mu(\frac{e}{4}) = \begin{bmatrix} 2 \\ 1 \end{bmatrix}_{2^4} = 17$$

$$\left\langle {8 \atop 4} \right\rangle_{2^4} = \frac{2^4 - 1}{2^8 - 1} \left\{ {8 \atop 4} \right\}_{2^4} = \frac{15}{255} \cdot 17 = 1$$

Therefore, there are $200430 + 340 + 17 = 200787$ distinct subspaces of dimension 4, 200430 of degree 1, 340 of degree 2 and 17 of degree 4. These subspaces are classified into 786, 4 and 1 classes, respectively. We can verify this result by referring to the tables given in Appendix A. ■

In this section, we have counted the number of scalar multiple equivalence classes. In the next section, we will count the number of "*conjugate*" equivalence classes, which we call "*categories.*"

5.3 Invariance under Conjugation

We start with the definition of conjugate subspaces.

5.3.1. Definition. Given positive integers m and ν with $0 \leq \nu \leq m$, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. The "*conjugate*" subspace of $\mathcal{S}$, denoted by $\mathcal{S}^2$, is defined to be the set of squares of elements from $\mathcal{S}$, i.e.,

$$\mathcal{S}^2 = \{e^2 \mid \forall e \in \mathcal{S}\}. \tag{5.34}$$

■

Note that for any field of characteristic 2, the "conjugate" (square) operation is a one-to-one linear mapping. Thus, $\mathcal{S}^2$ also forms a ν-dimensional subspace of $GF(2^m)$. The following theorem should be compared to Theorem 5.1.2 in Section 5.1.

5.3.2. Theorem. *Given positive integers m and ν, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$, and let $\mathcal{S}^2$ be the conjugate of $\mathcal{S}$. Further, let $\mathbb{C}$ be a primal (n, k_0) RS code, and let $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\mathcal{S}^2}$ be the SSRS codes corresponding to $\mathcal{S}$ and $\mathcal{S}^2$, respectively. Then,*

$$K(\mathbb{C}, \mathcal{S}) = K(\mathbb{C}, \mathcal{S}^2). \tag{5.35}$$

Proof. Let $\boldsymbol{C} = (C_0, C_1, \ldots, C_{n-1})$ be a codeword of the SSRS code $\mathbb{C}_{\mathcal{S}}$. Let $P(x)$ be the Mattson-Solomon polynomial for $\mathbb{C}$. Then there exist coefficients, say $d_i \in$

$GF(2^m)$, $i \in J$, such that

$$P(x) = \sum_{i \in J} d_i x^i, \tag{5.36}$$

$$C_j = P(\alpha^j), \qquad j = 0, 1, 2, \ldots, n-1. \tag{5.37}$$

Using the same set of coefficients $(d_i), i \in J$, we define

$$\boldsymbol{D} = (D_0, D_1, \ldots, D_{n-1}) \tag{5.38}$$

$$= (Q(1), Q(\alpha), \ldots, Q(\alpha^{n-1})), \tag{5.39}$$

where

$$Q(x) = \sum_{i \in J} d_i^2 x^i. \tag{5.40}$$

Note that $\boldsymbol{D}$ is also a codeword of $\mathbb{C}$, by the definition of RS codes. On the other hand, if we conjugate the codeword $\boldsymbol{C}$, we get

$$\boldsymbol{C}^2 = (C_0^2, C_1^2, \ldots, C_{n-1}^2) \tag{5.41}$$

$$= (P^2(1), P^2(\alpha), \ldots, P^2(\alpha^{n-1})). \tag{5.42}$$

By definition, $C_i^2 \in \mathcal{S}^2$ for all $i = 0, 1, \ldots, n-1$. But since conjugation is linear,

$$P^2(x) = (\sum_{i \in J} d_i x^i)^2 \tag{5.43}$$

$$= \sum_{i \in J} (d_i x^i)^2 \tag{5.44}$$

$$= \sum_{i \in J} d_i^2 (x^2)^i. \tag{5.45}$$

Clearly, $\boldsymbol{C}^2$ need not be a codeword from $\mathbb{C}$. However, if we compare equations (5.40) and (5.45), we see that the index permutation $\phi : i \to 2i \mod 2^m - 1$ maps $\boldsymbol{C}^2$ to $\boldsymbol{D}$. But by definition, there is a one-to-one correspondence between the codewords $\boldsymbol{C}$ and $\boldsymbol{D}$. Therefore, there exists a one-to-one correspondence between $\boldsymbol{C}$ and $\boldsymbol{C}^2$. ■

The following corollary is immediate.

5.3.3. Corollary. *Given a primal RS code $\mathbb{C}$ over $GF(2^m)$, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ and let $\mathcal{S}^2$ be the conjugate of $\mathcal{S}$. Then the SSRS codes $\mathbb{C}_{\mathcal{S}}$ and $\mathbb{C}_{\mathcal{S}^2}$ have the same weight distributions.*

Apparently, Theorem 5.3.2 gives us another way to classify subspaces into equivalence classes. We combine conjugate equivalence with scalar multiple equivalence in the following theorem.

5.3.4. Theorem. *Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ which lies in a class $\mathbb{T}$. Let $\mathcal{S}^2$ be the conjugate of $\mathcal{S}$. If $\mathcal{S}^2$ lies in class $\mathbb{T}'$, then the conjugate of every subspace in $\mathbb{T}$ also lies in $\mathbb{T}'$. This mapping is one-to-one, and so both $\mathbb{T}$ and $\mathbb{T}'$ contain the same number of subspaces.*

Proof. If $\mathcal{S}' = \mathcal{S}^2$, then $(\lambda\mathcal{S})^2 = \lambda^2\mathcal{S}^2 = \lambda^2\mathcal{S}'$ for every $\lambda \in GF(2^m)$. Since $\lambda^2 \in GF(2^m)$, $(\lambda\mathcal{S})^2$ must be in the same class as $\mathcal{S}'$. Moreover, since the mapping $\phi : \lambda \longrightarrow \lambda^2$ is one-to-one in any field of characteristic 2, $\mathbb{T}$ and $\mathbb{T}'$ must contain the same number of subspaces. ■

In view of Theorem 5.3.4, we can use the word "*conjugate*" not only for subspaces but also for classes. We will denote the conjugate of class $\mathbb{T}$ by $\mathbb{T}^2$. Theorem 5.3.4 allows us to classify all the classes into several disjoint subsets, each of which consists of conjugate classes. We will call these disjoint subsets *categories.*

5.3.5. Definition. Given positive integers m and ν with $0 \le \nu \le m$, suppose all ν-dimensional subspaces of $GF(2^m)$ are classified into classes. A "*category,*" denoted by $\mathbb{G}$, is defined to be a collection of conjugate classes, i.e.,

$$\mathbb{G} = \{\mathbb{T}, \mathbb{T}^2, \mathbb{T}^4, \dots\}. \tag{5.46}$$

■

We will call two subspaces *equivalent*, if both subspaces lie in the same category. We have already shown that equivalent subspaces produce SSRS codes with the same dimensions and weight distributions. We will call categories *ordinary* and *exceptional* if the subspaces they contain are ordinary or exceptional, respectively. The following two corollaries are immediate.

5.3.6. Corollary. *Every class in the same category contains the same number of subspaces, i.e.,*

$$|\mathbb{T}| = |\mathbb{T}'|, \qquad \text{for all } \mathbb{T}, \mathbb{T}' \in \mathbb{G}. \tag{5.47}$$

5.3.7. Corollary. *The degree d of a subspace is invariant under conjugation, i.e.,*

$$F(\mathcal{S}) = F(\mathcal{S}^2). \tag{5.48}$$

Thus, every category consists of subspaces with the same degree.

5.3.8. Example. For $m = 4$ and $\nu = 2$, we have seen in Example 5.1.5, that there are three inequivalent classes, namely $\mathbb{T}_0$, $\mathbb{T}_1$ and $\mathbb{T}_2$. But $\mathbb{T}_0$ and $\mathbb{T}_1$ are conjugate, as we can easily verify. For example,

$$\begin{aligned}
\mathcal{S}_1 &= \{0, \alpha, \alpha^2, \alpha^5\} \in \mathbb{T}_0 \\
\mathcal{S}_1^2 &= \{0, \alpha^2, \alpha^4, \alpha^{10}\} = \mathcal{S}_{17} \in \mathbb{T}_1 \\
\mathcal{S}_{17}^2 &= \{0, \alpha^4, \alpha^8, \alpha^5\} = \mathcal{S}_4 \in \mathbb{T}_0.
\end{aligned}$$

Similarly, for $\mathcal{S}_{29} \in \mathbb{T}_1$,

$$\begin{aligned}
\mathcal{S}_{29} &= \{0, \alpha^{14}, \alpha, \alpha^7\} \in \mathbb{T}_1 \\
\mathcal{S}_{29}^2 &= \{0, \alpha^{13}, \alpha^2, \alpha^{14}\} = \mathcal{S}_{13} \in \mathbb{T}_0.
\end{aligned}$$

Thus, $\mathbb{T}_0$ and $\mathbb{T}_1$ are conjugate to each other, while the conjugate of $\mathbb{T}_2$ is $\mathbb{T}_2$ itself.

Therefore, we conclude that there are only 2 categories for $m = 4$ and $\nu = 2$. We illustrate the relationship among the three classes graphically in Figure 5.1, where a bullet ($\bullet$) denotes a class and an arrow ($\longrightarrow$) represents the conjugate operation applied to a class.

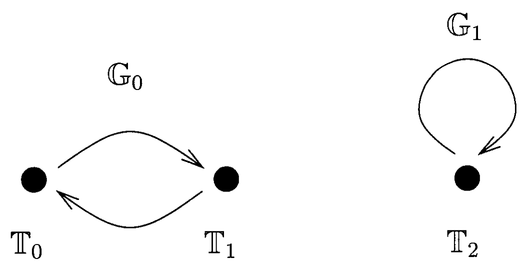


Figure 5.1: Category diagram for $m = 4, \nu = 2$.

When we computed the dimension of SSRS codes for $m = 4$ and $\nu = 2$ in Example 3.5.1 in Chapter 3, we used two subspaces, from $\mathbb{T}_0$ and $\mathbb{T}_2$. Now, we can see that it is unnecessary to consider $\mathbb{T}_1$ and there are only two possible dimensions for this case. ∎

5.3.9. Example. Let $m = 5$ and $\nu = 2$. As we have seen in Example 5.2.2, the 2-dimensional subspaces fall into 5 classes, namely $\mathbb{T}_0, \mathbb{T}_1, \cdots, \mathbb{T}_4$. In the same way as Example 5.3.8, we get the category diagram in Figure 5.2.

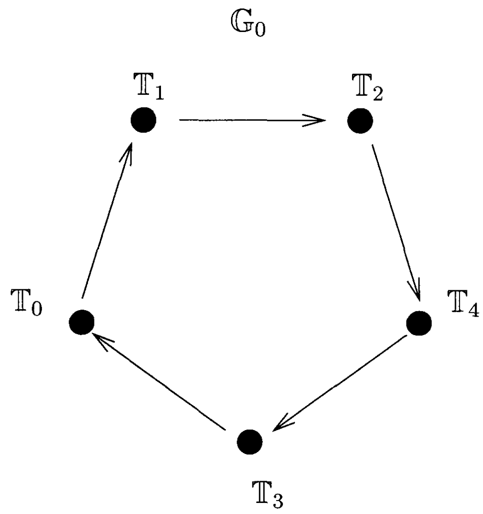


Figure 5.2: Category diagram for $m = 5, \nu = 2$.

By Corollary 3.4.2, for every m and ν, there always exists an ordinary subspace spanned by a polynomial basis. This subspace must be included in one of the five classes in Figure 5.2. But since by Figure 5.2, there is only 1 category, we conclude that there are no exceptional subspaces in this case. Thus, for $m = 5$ and $\mu = 2$, all SSRS codes achieve the lower bound on the dimension given by Corollary 3.4.1. ■

Now, we consider the number of classes in a category.

5.3.10. Definition. Given positive integers m and ν, suppose all ν-dimensional subspaces of $GF(2^m)$ are classified into disjoint categories. The "*cycle*" associated with a category containing a class $\mathbb{T}$, is defined to be the smallest integer such that

$$\mathbb{T}^{2^c} = \mathbb{T}, \tag{5.49}$$

or equivalently,

$$\mathcal{S}^{2^c} = \lambda \mathcal{S} \qquad \text{for some } \lambda \in GF^*(2^m). \tag{5.50}$$

We will denote the cycle of $\mathbb{G}$ by $|\mathbb{G}|$. ■

It is easily seen from elementary group theory [9] that the cycle c must be a divisor of m. For $m = 4$ and $\nu = 2$, we observe that from Example 5.3.8 that there are two categories, with $|\mathbb{G}_0| = 1$ and $|\mathbb{G}_1| = 2$. In Example 5.3.9, there is only one category with cycle 5. We will give one more interesting example.

5.3.11. Example. We consider the case $m = 6$ and $\nu = 2$. Let α be a primitive root of $GF(2^6)$ defined by $\alpha^6 = \alpha + 1$. From Table 5.3, there are 11 classes. Bases of a representative subspace from each class are listed below.

$$\begin{array}{llll} \mathbb{T}_0 = \{1, \alpha^1\} & \mathbb{T}_3 = \{1, \alpha^4\} & \mathbb{T}_6 = \{1, \alpha^9\} & \mathbb{T}_9 = \{1, \alpha^{16}\} \\ \mathbb{T}_1 = \{1, \alpha^2\} & \mathbb{T}_4 = \{1, \alpha^7\} & \mathbb{T}_7 = \{1, \alpha^{11}\} & \mathbb{T}_{10} = \{1, \alpha^{21}\} \\ \mathbb{T}_2 = \{1, \alpha^3\} & \mathbb{T}_5 = \{1, \alpha^8\} & \mathbb{T}_8 = \{1, \alpha^{13}\} & \end{array}$$

We can verify that these 11 classes can be organized into 4 categories in which 1 category has cycle 6, 1 category has cycle 3 and 2 categories has cycle 1. The category diagram is shown in Figure 5.3.

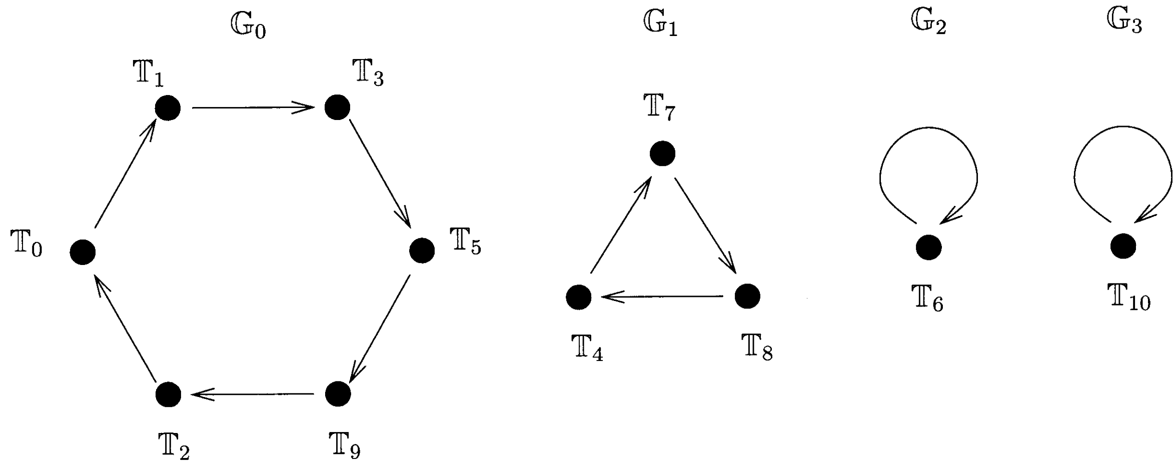


Figure 5.3: Category diagram for $m = 6, \nu = 2$.

We can easily verify that categories $\mathbb{G}_0$ and $\mathbb{G}_1$ are ordinary but the other two categories are exceptional. ■

The next obvious problem is to give a formula for $\mathcal{N}_{\mathbb{G}}(m, \nu)$, i.e., the number of categories for given m and ν. Unfortunately, however, we have not obtained such a formula, and this remains an open problem. Instead, we shall give a short table of the number of categories, obtained numerically, for small m and ν.

	$\nu=1$	$\nu=2$	$\nu=3$	$\nu=4$	$\nu=5$	$\nu=6$	$\nu=7$	$\nu=8$
$m=4$	1	2	1					
$m=5$	1	1	1	1				
$m=6$	1	4	7	4	1			
$m=7$	1	3	15	15	3	1		
$m=8$	1	8	53	109	53	8	1	
$m=9$	1	10	177	–	–	177	10	1
$m=10$	1	19	633	–	–	–	633	19
$m=11$	1	31	–	–	–	–	–	–
$m=12$	1	64	–	–	–	–	–	–

Table 5.4: $\mathcal{N}_{\mathbb{G}}(m,\nu)$: The number of categories of ν-dimensional subspaces of $GF(2^m)$

5.4 Summary and Remarks

Our main concern is to find a subspace which gives the maximum dimension for SSRS codes. But since the number of distinct subspaces grows rapidly, a simple brute-force approach is impractical.

However, if we use the results in the previous two sections, the search for the "best" subspace is drastically simplified. We see from Table 5.4 in Section 5.3 that the number of categories is significantly smaller than the number of distinct subspaces given in Table 5.1. So, once we compute the dimension of an SSRS code with respect to a particular subspace, we don't need to investigate all subspaces which lie in the same category as the original subspace.

Note that since the number of subspace is given by the Gaussian binomial coefficient, we have

$$\begin{bmatrix} m \\ \nu \end{bmatrix} = \begin{bmatrix} m \\ m-\nu \end{bmatrix}. \tag{5.51}$$

This means that given m and ν, there are the same number of $m-\nu$-dimensional subspaces of $GF(2^m)$ as ν-dimensional subspace. Moreover, if we denote a basis for ν-dimensional subspace $\mathcal{S}$ by $\{\beta_0, \beta_1, \dots, \beta_{\nu-1}\}$ and a basis for its trace-dual $\mathcal{S}^\perp$ by $\{\gamma_0, \gamma_1, \dots, \gamma_{\mu-1}\}$, where $\mu = n - \nu$, then

$$\mathrm{Tr}(\beta_i \gamma_j) = 0 \qquad \begin{cases} \text{for all } i = 0, 1, \dots, \nu - 1 \\ \text{for all } j = 0, 1, \dots, \mu - 1. \end{cases} \tag{5.52}$$

But for any nonzero $\lambda \in GF(2^m)$, this is equivalent to

$$\mathrm{Tr}((\lambda\beta_i)(\lambda^{-1}\gamma_j)) = 0 \qquad \begin{cases} \text{for all } i = 0, 1, \dots, \nu - 1 \\ \text{for all } j = 0, 1, \dots, \mu - 1. \end{cases} \tag{5.53}$$

So, if we consider a scalar conjugate subspace $\lambda\mathcal{S}$ spanned by basis $\{\lambda\beta_0, \lambda\beta_1, \dots, \lambda\beta_{\nu-1}\}$ then its trace-dual $(\lambda\mathcal{S})^\perp$ is spanned by basis $\{\lambda^{-1}\gamma_0, \lambda^{-1}\gamma_1, \dots, \lambda^{-1}\gamma_{\mu-1}\}$. But this subspace is exactly $\lambda^{-1}\mathcal{S}$, so there is a one-to-one correspondence between the ν-dimensional classes and the $m-\nu$-dimensional classes.

On the other hand, if we square equation (5.52), since the square operation is linear in $GF(2^m)$, we get

$$(\mathrm{Tr}(\beta_i\gamma_j))^2 = \mathrm{Tr}(\beta_i\gamma_j)^2 = \mathrm{Tr}((\beta_i)^2(\gamma_j)^2). \tag{5.54}$$

Therefore, equation (5.52) is equivalent to

$$\mathrm{Tr}(\beta_i^2\gamma_j^2) = 0 \qquad \begin{cases} \text{for all } i = 0, 1, \dots, \nu - 1 \\ \text{for all } j = 0, 1, \dots, \mu - 1. \end{cases} \tag{5.55}$$

But since $\{\beta_0^2, \beta_1^2, \dots, \beta_{\nu-1}^2\}$ is a basis for $\mathcal{S}^2$ and $\{\gamma_0^2, \gamma_1^2, \dots, \gamma_{\mu-1}^2\}$ is a basis for ${\mathcal{S}^{\perp}}^2$, the conjugate of the subspace corresponds to the conjugate of its trace-dual subspace, and the "duality" result is true for classes, too. Therefore, using the duality results of Chapter 4, we can summarize all theorems derived in this Chapter as follows.

5.4.1. Theorem. *For given m, the following facts are true:*

I. *The ν-dimensional subspaces of $GF(2^m)$ and the $m-\nu$ dimensional subspaces have exactly the same category diagram, with the same numbers of categories, classes and subspaces.*

II. *The degree and the cycle of the subspace is constant within a category and its dual. "Ordinariness" is also preserved.*

III. *Every category, class and subspace is isomorphic to its dual with the two operations, scalar multiplication and conjugation, preserved.*

5.4.2. Example. For $m = 6$, we compare $\nu = 2$ and $\nu = 4$. Figure 5.4 shows the category diagram. We can see that these are identical and every class is in one-to-one correspondence with its dual class.

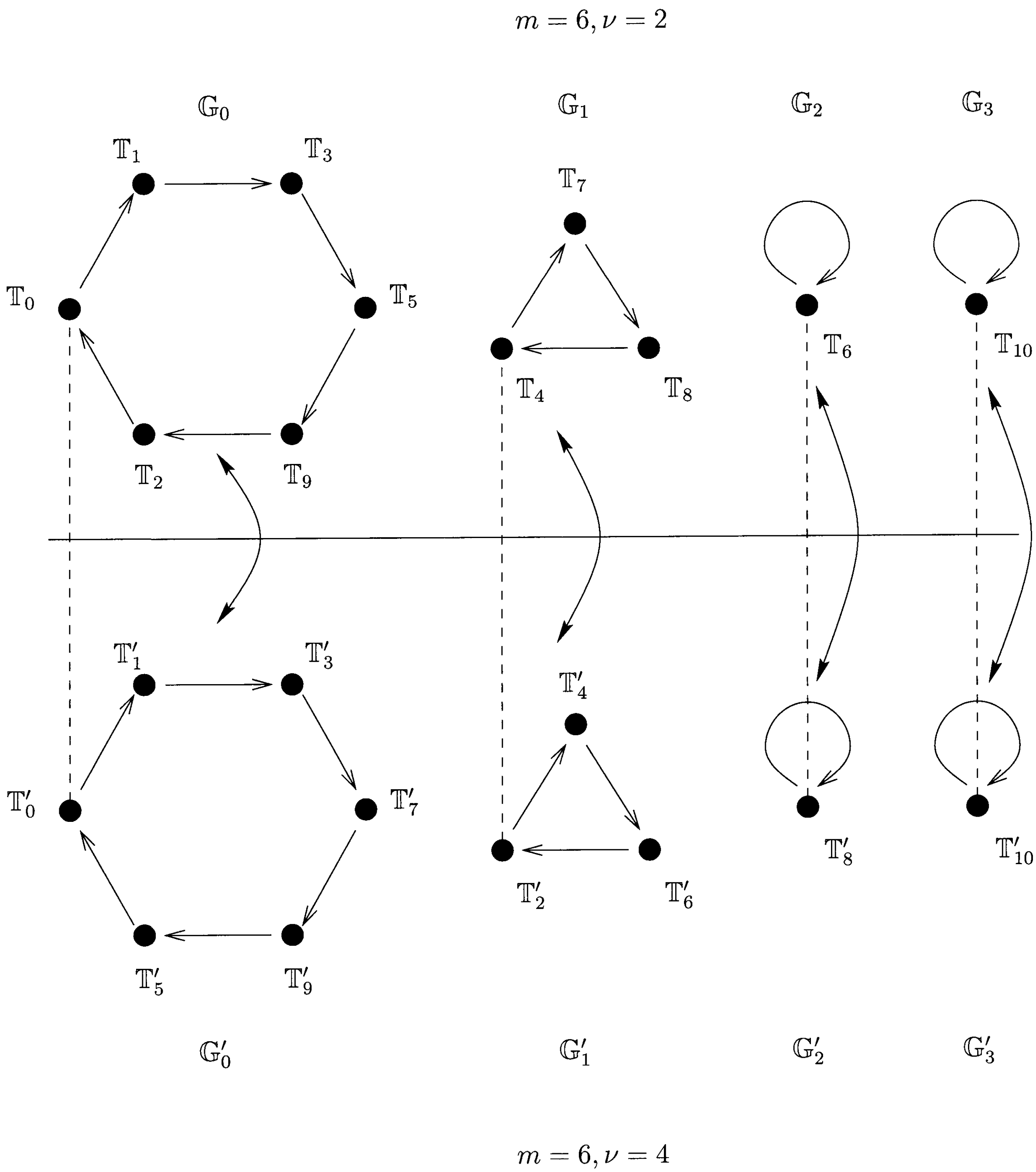


Figure 5.4: Duality in category diagrams for $m = 6$ $\nu = 2$ and $m = 6$ $\nu = 4$.

$m=6$									
$\nu=2$			$\nu=4$						
category	class	basis	category	class	basis		degree	cycle	comment
$\mathbb{G}_0$	$\mathbb{T}_0$	$\{1,\alpha^1\}$	$\mathbb{G}'_0$	$\mathbb{T}'_0$	$\{1,\alpha,\alpha^2,\alpha^3\}$		1	6	P, O
	$\mathbb{T}_1$	$\{1,\alpha^2\}$		$\mathbb{T}'_1$	$\{1,\alpha,\alpha^2,\alpha^4\}$				
	$\mathbb{T}_3$	$\{1,\alpha^4\}$		$\mathbb{T}'_3$	$\{1,\alpha,\alpha^2,\alpha^{10}\}$				
	$\mathbb{T}_5$	$\{1,\alpha^8\}$		$\mathbb{T}'_7$	$\{1,\alpha,\alpha^4,\alpha^8\}$				
	$\mathbb{T}_9$	$\{1,\alpha^{16}\}$		$\mathbb{T}'_9$	$\{1,\alpha,\alpha^4,\alpha^{17}\}$				
	$\mathbb{T}_2$	$\{1,\alpha^3\}$		$\mathbb{T}'_5$	$\{1,\alpha,\alpha^3,\alpha^4\}$				
$\mathbb{G}_1$	$\mathbb{T}_4$	$\{1,\alpha^7\}$	$\mathbb{G}'_1$	$\mathbb{T}'_2$	$\{1,\alpha,\alpha^2,\alpha^9\}$		1	3	P, O
	$\mathbb{T}_7$	$\{1,\alpha^{11}\}$		$\mathbb{T}'_4$	$\{1,\alpha,\alpha^2,\alpha^{15}\}$				
	$\mathbb{T}_8$	$\{1,\alpha^{13}\}$		$\mathbb{T}'_6$	$\{1,\alpha,\alpha^3,\alpha^{14}\}$				
$\mathbb{G}_2$	$\mathbb{T}_6$	$\{1,\alpha^9\}$	$\mathbb{G}'_2$	$\mathbb{T}'_8$	$\{1,\alpha,\alpha^4,\alpha^{15}\}$		1	1	E
$\mathbb{G}_3$	$\mathbb{T}_{10}$	$\{1,\alpha^{21}\}$	$\mathbb{G}'_3$	$\mathbb{T}'_{10}$	$\{1,\alpha,\alpha^8,\alpha^{21}\}$		2	1	E, SF

Figure 5.5: Class, basis, degree and cycle for each category.

The classes, bases of representative subspaces, degree and cycle for these categories are summarized in Table 5.5. Note that classes in each line in Table 5.5 are dual to each other. In the comment column, "O," "E," "P," "SF" denote ordinary, exceptional, polynomial[2] and subfield[3]. In Example 5.3.11, we observed that $\mathbb{G}_0$ and $\mathbb{G}_1$ are ordinary and others are exceptional. Therefore, for $\nu=4$ the duals $\mathbb{G}'_0$ and $\mathbb{G}'_1$ are also ordinary, and others are exceptional. We have also observed in Example 3.5.3, that the subspaces from $\mathbb{G}'_2$ can give a higher dimension for an SSRS code than that of a GBCH code corresponding to $\mathbb{G}'_3$. ■

The reader will find tables of categories found numerically, for $m=4$ through

[2]This means that this category contains a subspace which is spanned by polynomial basis.
[3]Note that this applies only for $\nu=2$.

$m = 12$ in Appendix A. For $m \geq 9$, we give the results only for small ν. These tables also show whether a category is ordinary or exceptional, whether a category contains a subspace spanned by polynomial basis and whether it contains a subfield or not.

We observe from examples and tables that the number of ordinary subspaces is much larger than the number of exceptional subspaces. If we look at the case for $m = 4$ and $\nu = 2$, for example, only $1/7$ of the subspaces are exceptional. As m and ν gets large, this fraction seems to decrease drastically. We do not fully understand this phenomenon. We know that subspaces with polynomial basis are ordinary. But we can see from the tables, that there are many ordinary categories which do not contain a subspace spanned by a polynomial basis.

We will discuss the computation of the dimension of the SSRS code corresponding to every distinct subspace in Chapter 8 in detail. We have observed experimentally that a subspace in a category with a small cycle tends to give a higher dimension for the corresponding SSRS codes. This suggests the conjecture that a subspace from a category with cycle m is always ordinary. However, this is not true in general. We will find a counterexample with $m = 8$ and $\nu = 4$ in Appendix A.

A more promising conjecture is that a subspace from a category with cycle 1 always gives the maximum possible dimension for SSRS codes. In our experiments, it remains true. However, we don't have a complete proof at this point.

5.4.3. Conjecture (weak). *For any m and ν, a ν-dimensional subspace of $GF(2^m)$ in a category with $c = 1$, is always an exceptional subspace.*

5.4.4. Conjecture (strong). *Given any m, ν and a primal code $\mathbb{C}$, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$. Then the dimension of an SSRS code $\mathbb{C}_{\mathcal{S}}$ is maximized if and only if $\mathcal{S}$ lies in a category with the smallest cycle c.*

Another interesting phenomena, we have found, is that there is another equivalence between categories. The following Example 5.4.5 illustrates this.

5.4.5. Example. For $m = 6$ and $\nu = 3$, from the tables in Appendix A we have the following category diagram.

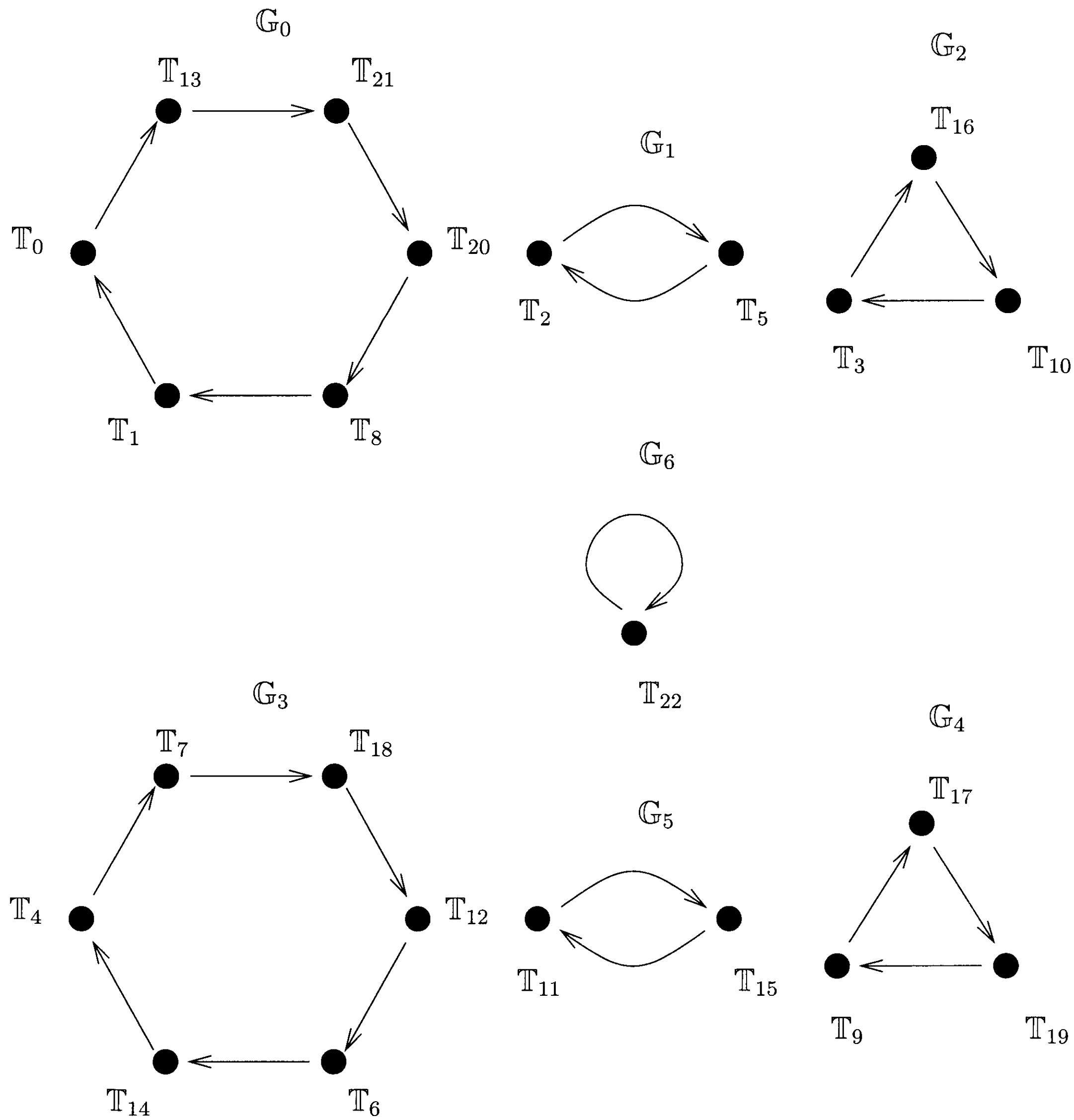


Figure 5.6: Category diagram for $m = 6, \nu = 3$.

Bases for representative subspaces from each category are as follows.

$$
\begin{array}{llll}
\mathbb{G}_0 : \; \mathbb{T}_0 : & \mathfrak{B}_0 = \{1, \alpha, \alpha^2\} & \mathbb{G}_1 : \; \mathbb{T}_2 : & \mathfrak{B}_1 = \{1, \alpha, \alpha^4\} \\
\mathbb{G}_2 : \; \mathbb{T}_3 : & \mathfrak{B}_2 = \{1, \alpha, \alpha^8\} & \mathbb{G}_3 : \; \mathbb{T}_4 : & \mathfrak{B}_3 = \{1, \alpha, \alpha^9\} \\
\mathbb{G}_4 : \; \mathbb{T}_9 : & \mathfrak{B}_4 = \{1, \alpha, \alpha^{19}\} & \mathbb{G}_5 : \; \mathbb{T}_{11} : & \mathfrak{B}_5 = \{1, \alpha, \alpha^{22}\} \\
\mathbb{G}_6 : \; \mathbb{T}_{22} : & \mathfrak{B}_6 = \{1, \alpha^9, \alpha^{18}\} & &
\end{array}
$$

We can easily verify that $\mathbb{G}_2$, $\mathbb{G}_5$ and $\mathbb{G}_6$ are exceptional categories and the others are ordinary. Category $\mathbb{G}_6$ contains the subfield $GF(2^3)$.

Surprisingly, if we look at the dimension tables in Appendix C and D, we find that subspaces from $\mathbb{G}_2$ and $\mathbb{G}_5$ always give the same dimension for SSRS codes, regardless of what primal RS code is chosen.

This is not an accident. In order to verify this fact, we form cyclotomic matrices for their bases.

$$G(\mathbb{G}_2) = \begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 1 \\ \alpha & \alpha^2 & \alpha^4 & \alpha^8 & \alpha^{16} & \alpha^{32} \\ \alpha^8 & \alpha^{16} & \alpha^{32} & \alpha & \alpha^2 & \alpha^4 \end{bmatrix}$$

$$G(\mathbb{G}_5) = \begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 1 \\ \alpha & \alpha^2 & \alpha^4 & \alpha^8 & \alpha^{16} & \alpha^{32} \\ \alpha^{22} & \alpha^{44} & \alpha^{25} & \alpha^{50} & \alpha^{37} & \alpha^{11} \end{bmatrix}$$

We find that the 3×3 submatrices corresponding to coordinate set $S_1 = \{0, 2, 4\}$ or $S_2 = \{1, 3, 5\}$ give rank 2 for both matrices, but for other coordinate sets, these submatrices are always full rank. Thus, these subspaces always give the same dimension of corresponding SSRS codes. Thus, we conclude that, for $m = 6$ and $\nu = 3$, there are only two kinds of distinct exceptional subspaces to be investigated, namely $\mathbb{G}_2$ and $\mathbb{G}_6$. ■

This "ultimate" classification follows.

5.4.6. Definition. Let G_1 and G_2 be cyclotomic matrices with respect to subspaces $\mathcal{S}_1$ and $\mathcal{S}_2$, and let S be an set of coordinates chosen from $\{1, 2, \ldots, m\}$. We shall call that $\mathcal{S}_1$ and $\mathcal{S}_2$ are in the same *super-category* if $\text{rank}(G_1(S)) = \text{rank}(G_2(S))$ for all S. ■

If we look at the case for $m = 8$ and $\nu = 4$, we will observe that this "hidden" equivalence applies to more than two categories. In fact, there are only 12 distinct "*super-categories*" as shown in Figure 5.7.

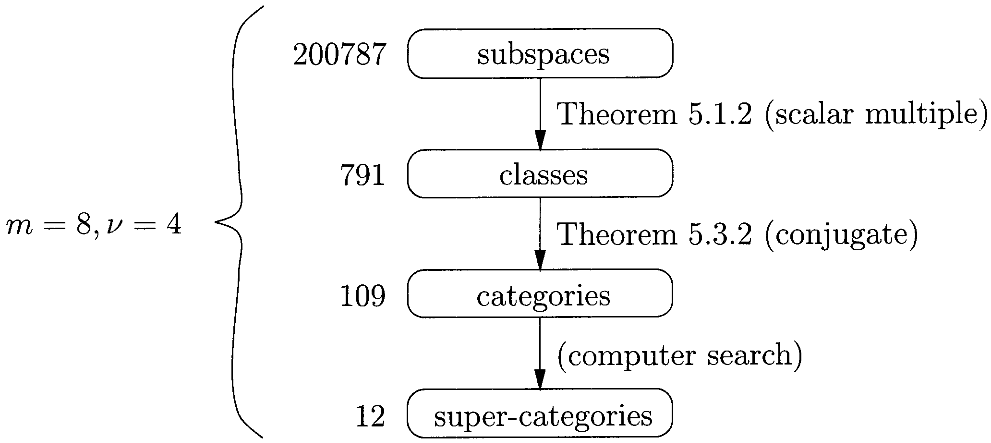


Figure 5.7: Number of subspaces, classes, categories and super-categories for $m = 8, \nu = 4$.

This number is significantly smaller than the number of categories. So, if we could understand this phenomenon better, the required effort for the search would be much reduced. We have investigated this equivalence numerically for some cases. The super-categories are summarized in Appendix B. We give the table for the number of super-categories in Table5.5, which is obtained from the numerical search.

	$\nu = 1$	$\nu = 2$	$\nu = 3$	$\nu = 4$	$\nu = 5$	$\nu = 6$	$\nu = 7$	$\nu = 8$
$m = 4$	1	2	1					
$m = 5$	1	1	1	1				
$m = 6$	1	3	3	3	1			
$m = 7$	1	1	2	2	1	1		
$m = 8$	1	3	5	12	5	3	1	
$m = 9$	1	2	9	–	–	9	2	1
$m = 10$	1	3	7	–	–	–	7	3
$m = 11$	1	1	–	–	–	–	–	–
$m = 12$	1	5	–	–	–	–	–	–

Table 5.5: The number of super-categories of ν-dimensional subspaces of $GF(2^m)$

We should also note that there seems to be a close relationship between the cycle c, the degree d and the number of categories $\mathcal{N}_{\mathbb{G}}(m, \nu)$. This relationship is important when we try to select representative subspaces from each category as we do in Chapter 6. It would be an interesting research topic to investigate the relationships among these parameters.

In conclusion, we have reduced by a significant amount the effort required to search for exceptional subspaces, by combining duality with two equivalences, scalar multiple and conjugation.

However, in order to obtain the maximum dimension SSRS code, we still have to specify the basis elements for the optimal subspace. In other words, we should select a basis for a *representative* subspace from each category; otherwise we must resort to a brute-force search. In Chapter 6, we will find an efficient method for this selection.

Chapter 6 Subspace Selection

From the discussion in Chapter 5, we know that we can classify subspaces into a relatively small number of categories, such that each subspace in a category produces the same dimension for any SSRS code.

But suppose for given primal code, we want to maximize the dimension of an SSRS code by finding an optimal subspace. If we employ a straightforward algorithm for this search, we should start from a particular subspace and compute the dimension, then, "*mark*" all equivalent subspaces and move to the next "*unmarked*" subspace. We then repeat until all subspaces are exhausted. Although this algorithm avoids unnecessary matrix rank computations, it requires us to remember whether each subspace is marked or not, and when we try the next subspace we should check whether or not it has already appeared. This requires a significant amount of storage, sorting, and searching, which is impractical for large m and ν.

The best scenario for this search would be to automatically *select* one representative subspace from each distinct exceptional category, directly. But how can we do such magical selection?

In this Chapter, we will give a partial but very effective answer to this problem. We will give an algorithm for selecting promising subspaces explicitly. This selection is achieved by relating, what we shall call, "*self-conjugate*" subspaces to (m, ν) binary cyclic codes.

We will briefly consider a direct approach for small dimensional subspaces, then we will derive our main theorem for selection and discuss some related topics. Finally, we attempt to generalize our results to c-conjugate subspaces, which we will see are related to quasi-cyclic codes.

6.1 Direct Approach

First, we consider the special cases where the dimension of the subspace is $\nu = 1$ or $\nu = 2$ and try to directly compute the rank of the matrices. We shall see, in this case, that we can predict all the exceptional subspaces for arbitrary m.

First, we deal with the trivial case $\nu = 1$.

6.1.1. Theorem. *All subspaces of dimension $\nu = 1$ or $\nu = m-1$, are ordinary.*

Proof. For $\nu = 1$, the matrix $G(\mathcal{S})$ in equation (4.1) is

$$G(\mathcal{S}) = \left[\beta, \beta^2, \ldots, \beta^{2^{m-1}}\right], \tag{6.1}$$

all of whose submatrices have rank 1. For $\nu = m-1$, the result directly follows from Theorem 5.4.1. ∎

Obviously, the 1-dimensional subspaces include the subfield $GF(2)$. It follows that a primitive BCH code over $GF(2)$ always attains the lower bound of Corollary 3.4.1 on SSRS codes. The duality guarantees that there is only one possible dimension for SSRS codes with $\nu = m-1$.

Thus, for $\nu = 1$ and $\nu = m-1$, we need to compute only the lower bound to find the dimension for the corresponding SSRS code.

Now, we proceed to the case $\nu = 2$.

6.1.2. Theorem. *For $\nu = 2$, the only subspaces which are exceptional, are represented by the subspaces spanned by bases of the form $\{1, \omega\}$, where $\omega^{2^d-1} = 1$ for some divisor $d \mid m$, with $d \neq 1, m$.*

Proof. First, we observe that from Theorem 5.1.2 that it is sufficient to investigate subspaces whose basis is of the form $\{1, \omega\}$, since we can alway take a scalar multiple of an arbitrary chosen subspace. In particular, if we choose a subspace with basis of the form $\{\omega_0, \omega_1\}$, then this subspace is a scalar multiple of the subspace spanned by the basis $\{1, \omega_1/\omega_0\}$.

Note that the cyclotomic matrix $G(\mathcal{S})$ in equation (4.1) for a basis of the form $\{1, \omega\}$, is

$$G(\mathcal{S}) = \begin{bmatrix} 1 & 1 & 1 & \cdots & 1 \\ \omega & \omega^2 & \omega^{2^2} & \cdots & \omega^{2^{m-1}} \end{bmatrix}. \tag{6.2}$$

We need to investigate the ranks of the submatrices of $G(\mathcal{S})$. Clearly, it is sufficient to investigate the rank of arbitrary 2×2 submatrices of $G(\mathcal{S})$. The general 2×2 submatrix of $G(\mathcal{S})$ is the form

$$G' = \begin{bmatrix} 1 & 1 \\ \omega^{2^i} & \omega^{2^j} \end{bmatrix}, \tag{6.3}$$

where $i \neq j$ and $0 \leq i, j \leq m-1$. The determinant of G' is $\omega^{2^j} - \omega^{2^i}$, which is equal to 0 if and only if $\omega^{2^j - 2^i} = 1$. This is equivalent to $\omega^{2^{j-i}-1} = 1$, i.e., $\omega^{2^e - 1} = 1$, where $e = j - i$. But since $\omega^{2^m - 1} = 1$, ω must satisfy $\omega^{2^d - 1} = 1$, where $d = \gcd(e, m)$. ■

6.1.3. Example. For $m = 4$ and $\nu = 2$, the only possible value of d is $d = 2$, i.e., $\omega^3 = 1$, therefore $\omega = \alpha^5$, where α is a primitive root for $GF(2^4)$. Indeed, we have seen in Example 3.5.1 that the basis $\{1, \alpha^5\}$ spans a subfield, which is not ordinary. ■

6.1.4. Example. For $m = 5$ and $\nu = 2$, there are no nontrivial divisors of m. It follows that all subspaces of $GF(2^5)$ are ordinary. ■

6.1.5. Example. For $m = 6$ and $\nu = 2$, the possible divisors are $d = 2, 3$. Therefore the possible bases of exceptional subspaces are $\{1, \alpha^{21}\}$ and $\{1, \alpha^9\}$, both of which are found in classes $\mathbb{T}_6$ and $\mathbb{T}_{10}$ in Example 5.3.11. ■

By the duality of Theorem 5.4.1, the exceptional subspaces for $\nu = m - 2$ are the trace-duals of 2-dimensional exceptional subspaces given by Theorem 6.1.2.

This direct approach does not seem to generalize for $\nu \geq 3$, since the constraints on the determinant are complicated even for $\nu = 3$. We need a more effective method for $\nu \geq 3$.

6.2 Representative of Category

As we mentioned before, our numerical experiments show that subspaces from categories with cycle 1 tend to give the maximum dimension for SSRS codes. In this section, we will give an efficient algorithm for finding such subspaces.

First, let us define a "*self-conjugate*" subspace.

6.2.1. Definition. Let $\mathcal{S}$ be a ν-dimensional subspace over $GF(2^m)$. We will call $\mathcal{S}$ is "*self-conjugate*" if $\mathcal{S} = \mathcal{S}^2$. ■

By definition, the set of scalar multiples of $\mathcal{S}$ form a class $\mathbb{T}$ satisfying $\mathbb{T} = \mathbb{T}^2$, i.e., a category with cycle 1. More generally, we extend the definition as follows.

6.2.2. Definition. We call a ν-dimensional subspace $\mathcal{S}$ of $GF(2^m)$ "*c-conjugate*" if $\mathcal{S} = \mathcal{S}^{2^c}$, and $\mathcal{S} \neq \mathcal{S}^{2^{c'}}$ for $c' < c$. ■

It is also clear from this definition that a class $\mathbb{T}$ which contains a c-conjugate subspace, is a category of cycle c.

The first question is if the converse statement is true or not. For categories with cycle 1, it is true.

6.2.3. Theorem. *In any category of cycle* 1, *there exists at least one self-conjugate subspace.*

Proof. Let $\mathcal{S}$ be any ν-dimensional subspace in a cycle 1 class (category) $\mathbb{T}$. Then by definition, $\mathcal{S}$ satisfies

$$\mathcal{S}^2 = \lambda_1 \mathcal{S} \tag{6.4}$$

for some nonzero λ_1 in $GF(2^m)$. Now, let

$$\mathcal{S}' = \lambda_1^{-1} \mathcal{S}. \tag{6.5}$$

Then, $\mathcal{S}' \in \mathbb{T}$ and

$$\begin{aligned}
\mathcal{S}'^2 &= (\lambda_1^{-1}\mathcal{S})^2 \\
&= \lambda_1^{-2}\mathcal{S}^2 \\
&= \lambda_1^{-1}\mathcal{S} \\
&= \mathcal{S}'.
\end{aligned} \tag{6.6}$$

Thus, $\mathcal{S}'$ is a self-conjugate subspace. ■

The next question is, how many self-conjugate subspaces there are in a category? For cycle 1 categories the answer is 1. In general, we have the following theorem.

6.2.4. Theorem. *Suppose all ν-dimensional subspaces of $GF(2^m)$ are classified into categories. Let $\mathbb{G}$ be a category with cycle c consisting of subspaces of degree d. Assume that there exists at least one c-conjugate subspace in $\mathbb{G}$. Then, the total number of distinct c-conjugate subspaces in $\mathbb{G}$ is given by*

$$c \gcd\Big(\frac{2^m - 1}{2^d - 1}, 2^c - 1\Big). \tag{6.7}$$

Proof. Let $\mathcal{S}$ be a c-conjugate subspace of degree d which lies in a class $\mathbb{T}$ in a category $\mathbb{G}$ with $|\mathbb{G}| = c$, where $c \mid m$. Since $\mathcal{S}$ is c-conjugate,

$$\mathcal{S}^{2^c} = \mathcal{S}. \tag{6.8}$$

By definition, if there exist another such subspace in $\mathbb{T}$, it can be written as $\beta\mathcal{S}$ for some $\beta \in GF(2^m)$. Therefore, we should count the number of distinct c-conjugate subspaces of the form $\beta\mathcal{S}$. But this is the same as counting the number of elements β which give distinct subspaces. Now suppose that $\beta\mathcal{S}$ is also a c-conjugate subspace, then

$$(\beta\mathcal{S})^{2^c} = \beta\mathcal{S}. \tag{6.9}$$

Using equation (6.8), we get

$$\beta^{2^c-1}\mathcal{S} = \mathcal{S} \tag{6.10}$$

for some nonzero $\beta \in GF(2^m)$. But this is true if and only if β^{2^c-1} is a nonzero element in $GF(2^d)$. It follows that

$$\begin{aligned} (\beta^{2^c-1})^{2^d-1} &= 1 \\ \beta^{(2^c-1)(2^d-1)} &= 1 \\ \beta^{\gcd(2^m-1,(2^c-1)(2^d-1))} &= 1. \end{aligned} \tag{6.11}$$

Therefore, there are $\gcd(2^m-1,(2^c-1)(2^d-1))$ c-conjugate subspaces of the form $\beta\mathcal{S}$, where $\beta^{\gcd(2^m-1,(2^c-1)(2^d-1))} = 1$. However, note that not all these c-conjugate subspaces are distinct from each other. Since the degree of these subspaces are d, $\lambda\mathcal{S} = \mathcal{S}$ if and only if $\lambda^{2^d-1} = 1$, i.e., λ is a nonzero element of $GF(2^d)$. It follows that every (2^d-1)-th subspace of these c-conjugate subspaces is the same. Therefore, the number of distinct c-conjugate subspaces is

$$\frac{\gcd(2^m-1,(2^c-1)(2^d-1))}{2^d-1} = \gcd\Big(\frac{2^m-1}{2^d-1}, 2^c-1\Big). \tag{6.12}$$

But since $\mathbb{G}$ contains exactly c classes, the total number of c-conjugate subspaces in $\mathbb{G}$ is

$$c\,\gcd\Big(\frac{2^m-1}{2^d-1}, 2^c-1\Big). \tag{6.13}$$

■

We can see from Theorem 6.2.4 that for a category of cycle 1, there is an unique self-conjugate subspace. Thus, there exists a one-to-one mapping between categories of cycle 1 and self-conjugate subspace. The next theorem identifies this class of subspaces directly.

6.2.5. Theorem. *There exists a one-to-one correspondence between ν-dimensional self-conjugate subspaces of $GF(2^m)$ and (m, ν) binary cyclic codes.*

Proof. By the normal basis theorem (e.g., p.61 in [15]), for $GF(2^m)$ there is a normal basis of the form

$$\mathfrak{B} = \{\beta, \beta^2, \dots, \beta^{2^{m-1}}\}. \tag{6.14}$$

If we expand an arbitrary element x in $\mathcal{S}$ with respect to $\mathfrak{B}$, then

$$x = x_0\beta + x_1\beta^2 + \cdots + x_{m-1}\beta^{2^{m-1}}, \tag{6.15}$$

where $x_i, i = 0, \dots, m-1$ are elements of $GF(2)$. If we write $x \equiv (x_0, x_1, \dots, x_{m-1})$ for short, it is apparent that the conjugation of x in $GF(2^m)$ is represented by the cyclic right shift in this notation, i.e., if $x \equiv (x_0, x_1, \dots, x_{m-1})$, then $x^2 \equiv (x_m, x_0, \dots, x_{m-2})$. Therefore, when all elements are expressed in normal coordinates, a ν-dimensional subspace $\mathcal{S}$ is self-conjugate, if and only if $\mathcal{S}$ is an (m, ν) binary cyclic code. Apparently, this correspondence is one-to-one mapping, so our assertion follows. ∎

We will next show that the one-to-one mapping exhibited in the proof of Theorem 6.2.5 does not depend on the choice of normal basis.

The normal basis theorem [15] guarantees that there exists a normal basis for any finite field, but it is not unique. Theorem 6.2.5 assures that the mapping is one-to-one. Does this mapping depend on the normal basis? For a given generator polynomial $g(x)$ for a (m, ν) binary cyclic code, is it possible to construct distinct subspaces with respect to every normal basis?

To look at this more closely, let us define $G(x)$ to be the linearized associate [2][15] of $g(x)$[1], i.e.,

$$g(x) = g_0 + g_1x + g_2x^2 + \cdots + g_{m-1}x^{m-1}, \tag{6.16}$$

$$G(x) = g_0x + g_1x^2 + g_2x^{2^2} + \cdots + g_{m-1}x^{2^{m-1}}. \tag{6.17}$$

We assume that both α and β are normal elements in $GF(2^m)$ which form normal bases, say, $\mathfrak{A}$ and $\mathfrak{B}$, i.e.,

$$\begin{aligned} \mathfrak{A} &= \{\alpha, \alpha^2, \alpha^{2^2}, \ldots, \alpha^{2^{m-1}}\}, \\ \mathfrak{B} &= \{\beta, \beta^2, \beta^{2^2}, \ldots, \beta^{2^{m-1}}\}. \end{aligned} \tag{6.18}$$

Now, let γ be an element from $\mathcal{S}$ corresponding $g(x)$. Using basis $\mathfrak{A}$ we define the element γ in $\mathcal{S}$ as

$$\gamma = g_0\alpha + g_1\alpha^2 + g_2\alpha^{2^2} + \cdots + g_{m-1}\alpha^{2^{m-1}} \tag{6.19}$$

$$= G(\alpha). \tag{6.20}$$

Since $g(x)$ generates a (m, ν) cyclic code, γ also "*generates*" the whole subspace $\mathcal{S}$. But we can also expand α with respect to the other normal basis $\mathfrak{B}$,

$$\alpha = h_0\beta + h_1\beta^2 + h_2\beta^{2^2} + \cdots + h_{m-1}\beta^{2^{m-1}}. \tag{6.21}$$

If we define $H(x)$ by

$$H(x) = h_0x + h_1x^2 + h_2x^{2^2} + \cdots + h_{m-1}x^{2^{m-1}}, \tag{6.22}$$

[1]The degree of $g(x)$ is equal to $m - \nu - 1$.

then $\alpha = H(\beta)$. But

$$\begin{aligned} \gamma &= G(\alpha) \\ &= G(H(\beta)) \\ &= G \otimes H(\beta). \end{aligned} \tag{6.23}$$

So, if we define the linearized associate of $H(x)$ by $h(x)$ as

$$h(x) = h_0 + h_1 x + h_2 x^2 + \cdots + h_{m-1} x^{m-1}, \tag{6.24}$$

then, $G \otimes H(x)$ corresponds to $g(x)h(x)$ by a property of linearized polynomial (e.g., see [15] pages 101–106). Note that $g(x)h(x)$ generates the same code if and only if $\gcd(g(x)h(x), x^m - 1) = g(x)$, i.e., $\gcd(h(x), \dfrac{x^m - 1}{g(x)}) = 1$. But by the assumption that β is a normal element, we have [15]

$$\gcd(h(x), x^m - 1) = 1. \tag{6.25}$$

Thus, $g(x)h(x)$ generates the same cyclic code.

So, we conclude that the one-to-one mapping between self-conjugate subspaces and (m, ν) cyclic codes is independent of the choice of the normal basis in equation (6.14).

It is known [16] that each (m, ν) binary cyclic code corresponds to a distinct factor of $x^m - 1$ of degree ν. These factors can easily be found even if m and ν are fairly large using Berlekamp's factorization algorithm [2]. We summarize this relationship in Figure 6.1.

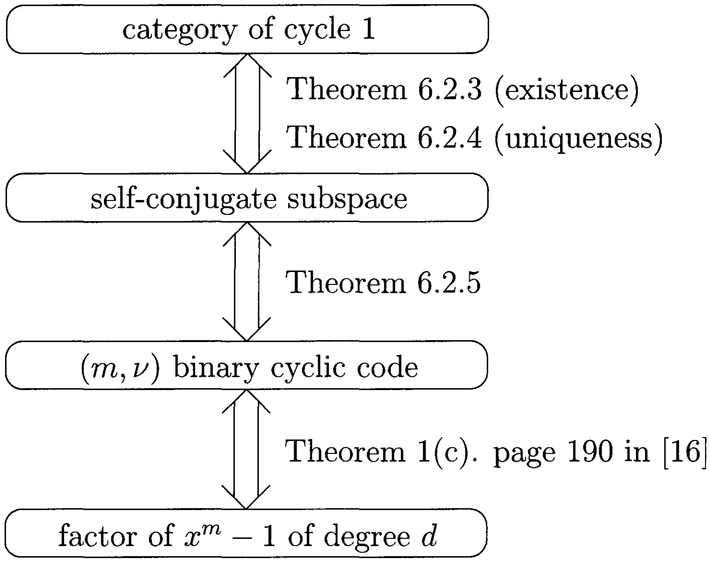


Figure 6.1: Relationship between category of cycle 1, self-conjugate subspace and (m, ν) binary cyclic code.

Note also that, if $\nu \mid m$, then we know that $GF(2^m)$ has $GF(2^\nu)$ as a subfield, which is, of course, a self-conjugate ν-dimensional subspace.

6.2.6. Corollary. *If $\nu \mid m$ then the subfield $GF(2^\nu)$ corresponds to the factor $x^\nu - 1$ of $x^m - 1$.*

Proof. Since $GF(2^\nu) = \{x \in GF(2^m) \mid x^{2^\nu} = x\}$, if x is represented in normal coordinates $x = (x_0, x_1, \ldots, x_{m-1})$, then $x \in GF(2^\nu)$ if and only if the coordinates x_i's are ν periodic, i.e., $x_{i+\nu \pmod m} = x_i$ for $i = 0, 1, \ldots, m-1$. So, we can conclude that $GF(2^\nu)$ is the self-conjugate subspace with parity-check polynomial $x^\nu - 1$. ■

The proof of Theorem 6.2.5 suggests a procedure for finding a basis for the self-conjugate subspace corresponding to each factor of $x^m - 1$. We will illustrate this in the following examples.

6.2.7. Example. For $m = 6$, we have

$$x^6 - 1 = (x+1)^2(x^2+x+1)^2 \qquad \text{over } GF(2). \tag{6.26}$$

So, we get the following table of factors of degree ν and corresponding ν-dimensional self-conjugate subspaces over $GF(2^6)$.

	ν	$h(x)$	comment
$(a.)$	1	$x+1$	$GF(2)$
$(b.)$	2	$(x+1)^2 = x^2+1$	$GF(2^2)$
$(c.)$	2	x^2+x+1	
$(d.)$	3	$(x+1)(x^2+x+1) = x^3+1$	$GF(2^3)$
$(e.)$	4	$(x+1)^2(x^2+x+1)$	dual to $(c.)$
$(f.)$	4	$(x^2+x+1)^2$	dual to $(b.)$
$(g.)$	5	$(x+1)(x^2+x+1)^2$	dual to $(a.)$

Now, let α be a primitive root of $\mathbb{F} = GF(2^6)$ satisfying $\alpha^6 = \alpha + 1$. Here is one normal basis for $\mathbb{F}$:

$$\mathfrak{A} = \{\alpha^5, \alpha^{10}, \alpha^{20}, \alpha^{40}, \alpha^{17}, \alpha^{34}\}.$$

For $\nu = 2$, there should be two self-conjugate subspaces namely $(b.)$ and $(c.)$ corresponding to the polynomials x^2+1 and x^2+x+1, respectively. From Corollary 6.2.6, we know that $(b.)$ corresponds to the subfield $GF(2^2)$. For $(b.)$, the corresponding generator polynomial of the $(6,2)$ binary cyclic code is

$$g_b(x) = (x^2+x+1)^2 = x^4 + x^2 + 1.$$

Therefore the generator matrix G_b for $(b.)$ is

$$G_b = \begin{bmatrix} 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 & 0 & 1 \end{bmatrix}.$$

Now,

$$\alpha^5 + \alpha^{20} + \alpha^{17} = \alpha^{21}$$
$$\alpha^{10} + \alpha^{40} + \alpha^{34} = \alpha^{42},$$

and, so a basis for the self-conjugate subspace derived from $(b.)$, is $\{\alpha^{21}, \alpha^{42}\}$. Plainly, this basis forms $GF(2^2)$ since $21 \mid 2^6 - 1$, and corresponds to category $\mathbb{G}_3$ of Example 5.3.11.

Similarly, for $(c.)$, the generator polynomial of the corresponding $(6, 2)$ binary cyclic code is

$$g_c(x) = (x+1)^2(x^2 + x + 1) = x^4 + x^3 + x + 1,$$

and thus, the generator matrix G_c is

$$G_c = \begin{bmatrix} 1 & 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1 & 1 \end{bmatrix}.$$

By simple computation, we get

$$\alpha^5 + \alpha^{10} + \alpha^{40} + \alpha^{17} = \alpha^{27}.$$

So, we get the basis $\{\alpha^{27}, \alpha^{54}\}$ for subspace $(c.)$. It is easily seen that this subspace lies in category $\mathbb{G}_2$ of Example 5.3.11. This is the subspace with which we found the higher dimension than that of GBCH code in Example 3.5.3.

Note also that even if we employ another normal basis, e.g.,

$$\mathfrak{B} = \{\alpha^{15}, \alpha^{30}, \alpha^{60}, \alpha^{57}, \alpha^{51}, \alpha^{39}\},$$

the subspace corresponding to G_c is

$$\alpha^{15} + \alpha^{30} + \alpha^{57} + \alpha^{51} = \alpha^{27}.$$

Thus, we get the same basis $\{\alpha^{27}, \alpha^{54}\}$. ■

6.2.8. Example. For $m = 7$, the factorization of $x^7 - 1$ over $GF(2)$ is

$$x^7 - 1 = (x+1)(x^3+x+1)(x^3+x^2+1).$$

Thus, all factors of degree ν are summarized as follows.

ν	n	$h(x)$
1	1	$x+1$
2	0	
3	2	x^3+x+1, x^3+x^2+1
4	2	$(x+1)(x^3+x+1), (x+1)(x^3+x^2+1)$
5	0	
6	1	$(x^3+x+1)(x^3+x^2+1)$

In this table, n denotes the number of factors of degree ν, which is equal to the number of distinct (m, ν) binary cyclic codes, and $h(x)$ denotes the corresponding parity-check polynomials for the codes. We can see that for $m = 7$ and $\nu = 2$, there is no self-conjugate category. In fact, all subspaces are ordinary for this case. However, for $\nu = 3$, there are two self-conjugate subspaces, both of which are exceptional. ■

6.3 Extension to c-Conjugate Subspaces

It is natural to wonder if the discussion in Section 6.2 can be extended to c-conjugate subspaces. Just as we found a correspondence between self-conjugate subspaces and (m, ν) binary cyclic codes, we would hope to relate c-conjugate subspaces to (m, ν)

"*quasi-cyclic*" codes. A code is called *quasi-cyclic* if there is an integer s such that every cyclic shift of a codeword by s places is again a codeword [16]. Of course a cyclic code is a quasi-cyclic code with $s = 1$. For convenience, we will call s the cycle of the code. Apparently, if a code $\mathbb{C}$ is quasi-cyclic of cycle c then it is also a quasi-cyclic code of cycle kc for any integer k. So, we define the cycle of the code to be the *least* such integer. (Note that in some papers, the definition of quasi-cyclic code is restricted to "single generator" quasi-cyclic codes [8], which is different from ours.)

Unlike the case for cyclic codes, there seems to be no efficient way to construct generator matrices for quasi-cyclic codes. Therefore, even if we succeeded proving the desired relationship, the problem of choosing representative c-conjugate subspaces would remain. Nevertheless, we will try to prove the relationship, and in fact, we will succeed in most, but not all, cases. Figure 6.2 illustrates what we are going to prove.

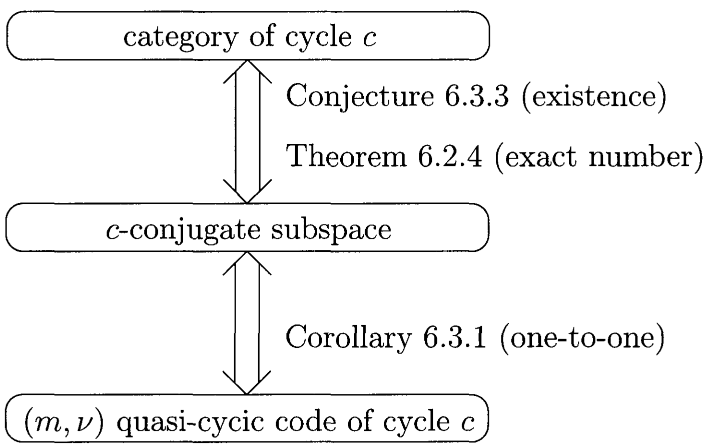


Figure 6.2: Conjectured relationship between categories of cycle c, c-conjugate subspaces and (m, ν) binary quasi-cyclic codes of cycle c.

First, we generalize Theorem 6.2.5 for categories with an arbitrary cycle c. This is an almost immediate consequence of the proof of Theorem 6.2.5.

6.3.1. Corollary. *There exists a one-to-one correspondence between ν-dimensional c-conjugate subspaces of $GF(2^m)$ and (m, ν) binary quasi-cyclic codes with cycle c.*

Proof. The proof is almost the same as for Theorem 6.2.5. We recall that if $\mathcal{S}$ is c-conjugate, then

$$\mathcal{S}^{2^c} = \mathcal{S}. \tag{6.27}$$

Let α be a normal element in $GF(2^m)$, and let the corresponding normal basis be $\mathfrak{A} = \{\alpha, \alpha^2, \dots, \alpha^{2^{m-1}}\}$. For any element $\beta \in \mathcal{S}$, let

$$\beta = a_0\alpha + a_1\alpha^2 + a_2\alpha^{2^2} + \dots + a_{m-1}\alpha^{2^{m-1}} \tag{6.28}$$

be its binary expansion. We abbreviate this binary expansion by the vector notation $\beta \equiv (a_0, a_1, a_2, \dots, a_{m-1})$. Note that in this notation, β^{2^c} is represented by the c-place cyclic shift $(a_{m-c}, a_{m-c+1}, \dots, a_0, a_1, a_2, \dots, a_{m-c-1})$. Therefore, by definition, this set of vectors forms a (m, ν) quasi-cyclic code with cycle c. Plainly, this mapping is also one-to-one. ■

After the proof of Theorem 6.2.5, we showed that the correspondence between self-conjugate subspaces and (m, ν) cyclic codes is independent of the normal basis chosen. However, for general c-conjugate subspaces with $c \neq 1$, this is no longer true, as the following example shows.

6.3.2. Example. For $m = 4$ and $\nu = 2$, there are 35 distinct subspaces which fall into 3 classes and 2 categories, as we have seen in Example 5.3.8. These are: a 2 cycle category $\mathbb{G}_0$ of degree 1, and a 1 cycle category $\mathbb{G}_1$ of degree 2.

In $\mathbb{G}_1$ we easily find that there is 1 self-conjugate subspace of degree 2, as predicted by Theorem 6.2.5, i.e.,

$$\mathcal{S}_{30} = \{0, 1, \alpha^5, \alpha^{10}\}.$$

In fact, $\mathcal{S}_{30}$ is the subfield $GF(2^2)$. In category $\mathbb{G}_0$, we are lucky enough to find at least one 2-conjugate subspace[2]. By Theorem 6.2.4, there are

$$c \gcd\left(\frac{2^m - 1}{2^d - 1}, 2^c - 1\right) = 2 \gcd\left(\frac{2^4 - 1}{2^1 - 1}, 2^2 - 1\right) = 6$$

2-conjugate subspaces in total. In fact, these are:

$$\begin{aligned} \mathcal{S}_0 &= \{0, 1, \alpha, \alpha^4\}, & \mathcal{S}_{15} &= \{0, 1, \alpha^2, \alpha^8\} \\ \mathcal{S}_5 &= \{0, \alpha^5, \alpha^6, \alpha^9\}, & \mathcal{S}_{25} &= \{0, \alpha^{10}, \alpha^{12}, \alpha^3\} \\ \mathcal{S}_{10} &= \{0, \alpha^{10}, \alpha^{11}, \alpha^{14}\}, & \mathcal{S}_{20} &= \{0, \alpha^5, \alpha^7, \alpha^{13}\}. \end{aligned}$$

On the other hand, there is only one $(4, 2)$ cyclic code, and 6 $(4, 2)$ quasi-cyclic codes of cycle 2. Generator matrices for these codes are:

$$G_0 = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{bmatrix}$$

$$G_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}, G_2 = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$
$$G_3 = \begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}, G_4 = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix}$$
$$G_5 = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 1 & 0 & 1 & 1 \end{bmatrix}, G_6 = \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 \end{bmatrix}.$$

If we use the normal basis

$$\mathfrak{A} = \{\alpha^3, \alpha^6, \alpha^{12}, \alpha^9\},$$

then we find a one-to-one mapping between subspaces and quasi-cyclic codes as fol-

[2]For this case, Lemma 6.3.4 will guarantee the existence of a 2-conjugate subspace

lows:

$$\begin{array}{cccc} G_0 \Longleftrightarrow \mathcal{S}_{30} & G_1 \Longleftrightarrow \mathcal{S}_{25} & G_3 \Longleftrightarrow \mathcal{S}_{15} & G_5 \Longleftrightarrow \mathcal{S}_{20} \\ & G_2 \Longleftrightarrow \mathcal{S}_5 & G_4 \Longleftrightarrow \mathcal{S}_0 & G_6 \Longleftrightarrow \mathcal{S}_{10} \end{array}$$

Note that if instead we use the normal basis

$$\mathfrak{B} = \{\alpha^7, \alpha^{14}, \alpha^{13}, \alpha^{11}\},$$

then the mapping is changed as follows.

$$\begin{array}{cccc} G_0 \Longleftrightarrow \mathcal{S}_{30} & G_1 \Longleftrightarrow \mathcal{S}_{20} & G_3 \Longleftrightarrow \mathcal{S}_0 & G_5 \Longleftrightarrow \mathcal{S}_{25} \\ & G_2 \Longleftrightarrow \mathcal{S}_{10} & G_4 \Longleftrightarrow \mathcal{S}_{15} & G_6 \Longleftrightarrow \mathcal{S}_5. \end{array}$$

Note that while the correspondence between the cyclic code generated by G_0 and the self-conjugate subspace $\mathcal{S}_0$ is unchanged by the choice of normal basis, for $c \neq 1$, the mapping is dependent on the basis chosen. ■

The remaining part of the extension we need, is a generalization of the existence theorem (Theorem 6.2.3) for a category of arbitrary cycle c. Unfortunately, this part has not been completely proved. Instead, we present a conjecture, which we have strong reason to believe is true.

6.3.3. Conjecture. *In every category with cycle c, there exists at least one c-conjugate subspace $\mathcal{S}$, i.e., a subspace such that*

$$\mathcal{S}^{2^c} = \mathcal{S}. \tag{6.29}$$

This conjecture is certainly true for $c = 1$ and $c = m$, so we consider other divisors. Again, let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ which lies in the class $\mathbb{T}$ in the category $\mathbb{G}$ with $|\mathbb{G}| = c$. By definition, $\mathcal{S}$ must satisfy

$$\mathcal{S}^{2^c} = \lambda_1 \mathcal{S}, \tag{6.30}$$

for some nonzero $\lambda_1 \in GF(2^m)$.

If we *assume* that for such a subspace $\mathcal{S}$, there exists an element γ such that

$$\mathcal{S}^{2^c} = \gamma \mathcal{S}, \tag{6.31}$$

$$\gamma^{\frac{2^m-1}{2^c-1}} = 1, \tag{6.32}$$

then this element γ has a (2^c-1)-th root in $GF(2^m)$. Now, we define the scalar multiple subspace $\mathcal{S}'$ of $\mathcal{S}$ by

$$\mathcal{S}' = \gamma^{-\frac{1}{2^c-1}} \mathcal{S}. \tag{6.33}$$

Analogously to the case $c = 1$, we get

$$\begin{aligned} \mathcal{S}'^{2^c} &= (\gamma^{-\frac{1}{2^c-1}} \mathcal{S})^{2^c} \\ &= \gamma^{-\frac{2^c}{2^c-1}} \mathcal{S}^{2^c} \\ &= \gamma^{-\frac{2^c}{2^c-1}} (\gamma \mathcal{S}) \\ &= \gamma^{-\frac{1}{2^c-1}} \mathcal{S} \\ &= \mathcal{S}'. \end{aligned} \tag{6.34}$$

Thus, $\mathcal{S}'$ is a c-conjugate subspace and our conjecture would be proved, provided that the assumption is valid.

In this attempted proof, the only unproved assumption we made, is the existence of (2^c-1)-th root for the element γ. Note that the degree d and the cycle c of the category will both be involved in the discussion. In the remaining discussion, we will prove this assumption in several special cases. First, we claim the following lemma.

6.3.4. Lemma (trial I). *Let $\mathbb{G}$ be an arbitrary category of degree d and cycle c. If $\gcd(c,d) = 1$, then there exists at least one c-conjugate subspace in $\mathbb{G}$.*

Proof of Trial I. Let $\mathcal{S}$ be an arbitrary ν-dimensional subspace over $GF(2^m)$ which lies in class $\mathbb{T}$ and category $\mathbb{G}$ with $|\mathbb{G}| = c$, where $c \mid m$. By definition, there exists some nonzero λ_1 in $GF(2^m)$ such that

$$\mathcal{S}^{2^c} = \lambda_1 \mathcal{S}. \tag{6.35}$$

Let $k = m/c$. If we take the 2^c-th power of both sides of equation (6.35), and repeat this operation k-times, we obtain

$$\mathcal{S}^{2^c} = \lambda_1 \mathcal{S}, \tag{6.36}$$

$$\mathcal{S}^{2^{2c}} = (\lambda_1 \mathcal{S})^{2^c} = \lambda_1^{2^c} \mathcal{S}^{2^c}, \tag{6.37}$$

$$\mathcal{S}^{2^{3c}} = (\lambda_1^{2^c} \mathcal{S}^{2^c})^{2^c} = \lambda_1^{2^{2c}} \mathcal{S}^{2^{2c}}, \tag{6.38}$$

$$\vdots \tag{6.39}$$

$$\mathcal{S}^{2^{kc}} = (\lambda_1^{2^{(k-2)c}} \mathcal{S}^{2^{(k-2)c}})^{2^c} = \lambda_1^{2^{(k-1)c}} \mathcal{S}^{2^{(k-1)c}}. \tag{6.40}$$

Since $\mathcal{S}^{2^{kc}} = \mathcal{S}^{2^m} = \mathcal{S}$, by inserting these equations sequentially in reverse order, we have

$$\begin{aligned} \mathcal{S} &= \lambda_1^{2^{(k-1)c}} \lambda_1^{2^{(k-2)c}} \cdots \lambda_1^{2^{2c}} \lambda_1^{2^c} \lambda_1^{1} \mathcal{S} \\ &= \lambda_1^{2^{(k-1)c}+2^{(k-2)c}+\cdots+2^{2c}+2^c+1} \mathcal{S} \\ &= \lambda_1^{\frac{2^m-1}{2^c-1}} \mathcal{S}. \end{aligned} \tag{6.41}$$

In summary, for any subspace $\mathcal{S}$ in a category with cycle c, there exists λ_1 in $GF(2^m)$ such that

$$\mathcal{S} = \lambda_1^{\frac{2^m-1}{2^c-1}} \mathcal{S}. \tag{6.42}$$

Now, let $\zeta = \lambda_1^{\frac{2^m-1}{2^c-1}}$. Since $\zeta^{2^c-1} = 1$, ζ must be an element from the subfield $GF(2^c)$. But we recall that the degree d of subspace is defined to be the largest divisor of both

m and ν such that

$$\mathcal{S} = \beta\mathcal{S} \qquad \text{for all } \beta \in GF(2^d). \tag{6.43}$$

Therefore, ζ must be an element of both $GF(2^c)$ and $GF(2^d)$. So, if $\gcd(c, d) = 1$, then $\mathcal{S} = \zeta\mathcal{S}$ if and only if $\zeta = 1$. But since 1 has an (2^c-1)-th root, our "assumption" is true, and the lemma follows immediately. ■

We can generalize the discussion in Lemma 6.3.4, as follows.

6.3.5. Lemma (Trial II). *Let $\mathbb{G}$ be an arbitrary category of degree d with cycle c. If*

$$\gcd\left(\frac{2^m - 1}{2^c - 1}, 2^d - 1\right) = 1, \tag{6.44}$$

then there exists at least one c-conjugate subspace in $\mathbb{G}$.

Proof of Trial II. By combining equations (6.42) and (6.43), we have

$$\mathcal{S}^{2^c} = \lambda_1\beta\mathcal{S}, \tag{6.45}$$

for some $\lambda_1 \in GF(2^m)$ and for all $\beta \in GF(2^d)$. If we repeat the same procedure as in the proof of Trial I, we get

$$\begin{aligned} \mathcal{S} &= (\lambda_1\beta)^{\frac{2^m-1}{2^c-1}}\mathcal{S} \\ &= \zeta_1\beta^{\frac{2^m-1}{2^c-1}}\mathcal{S}, \end{aligned} \tag{6.46}$$

where ζ_1 is an element from $GF(2^c)$, and β is an arbitrary element from $GF(2^d)$. Thus, if there exists a particular element $\beta_1 \in GF(2^d)$ satisfying

$$\zeta_1\beta_1^{\frac{2^m-1}{2^c-1}} = 1, \tag{6.47}$$

the "assumption" will be true. One sufficient condition for the existence of such an element, is that $\beta^{\frac{2^m-1}{2^c-1}}$ runs through all values of $GF(2^c)$, as β runs through all elements in $GF(2^d)$. This is true if and only if $\gcd(\frac{2^m-1}{2^c-1}, 2^d-1) = 1$ and our assertion is proved. ■

6.3.6. Example. For $m = 8$, $\nu = 4$, there is a subspace $\mathcal{S}$ of degree $d = 2$ which is spanned by the basis $\{1, \alpha, \alpha^{41}, \alpha^{72}\}$. It is easy to verify that this subspace is located in the category of cycle $c = 4$.

$$\mathcal{S}^{2^4} = \{\alpha^{60}, \alpha^{61}, \alpha^{85}, \alpha^{101}, \alpha^{132},$$
$$\alpha^{145}, \alpha^{146}, \alpha^{170}, \alpha^{186}, \alpha^{217}, \alpha^{230}, \alpha^{231}, \alpha^{0}, \alpha^{16}, \alpha^{47}\}.$$

We see that $\mathcal{S}$ satisfies

$$\mathcal{S}^{2^4} = \alpha^{60}\mathcal{S}, \qquad \mathcal{S}^{2^4} = \alpha^{145}\mathcal{S}, \qquad \mathcal{S}^{2^4} = \alpha^{230}\mathcal{S}.$$

If we pick $\lambda_1 = \alpha^{230}$, we will fail since α^{230} does not have a (2^4-1)-th root of unity. But $\zeta_1 = \lambda_1^{\frac{2^8-1}{2^4-1}} = \alpha^{230\cdot 17} = \alpha^{85}$, is a primitive root of $GF(2^2)$. Since $\gcd((2^8-1)/(2^4-1), 2^2-1) = \gcd(17,3) = 1$, if β runs through all elements in $GF(2^2)$, then β^{17} also runs through all elements in $GF(2^2)$. Therefore, we can find an element β_1 such that $\zeta_1\beta_1^{17} = 1$. For example, if $\beta_1 = \alpha^{85}$, then we get $(\lambda_1\beta_1)^{17} = \zeta_1\beta_1^{17} = \alpha^{85}\alpha^{170} = 1$. Note that $\zeta_1\beta_1 = \alpha^{60}$ has a 15-th root of unity, α^4,α^{21}, etc. Thus, $\mathcal{S}' = \alpha^{-4}\mathcal{S}$ is a 4-conjugate subspace. ■

In every example we have found, the condition $\gcd(\frac{2^m-1}{2^c-1}, 2^d-1) = 1$ is satisfied, but we have no proof of this fact. But the following is a "partial" counterexample.

6.3.7. Example. For $m = 36$, $\nu = 12$, there exists a subspace $\mathcal{S}$ with $d = 4$. We assume that the cycle of the category which contains $\mathcal{S}$ is $c = 6$. This may or may not be true, but it is difficult for the computer to verify what the exact cycle is. If this is possible, $2^d - 1 \mid \frac{2^m-1}{2^c-1}$ holds, and we have no means to compensate λ_1 by an element of β in $GF(2^d)$. ■

To conclude this section, we remark that there should be some relationship between the degree d and the cycle c. But we do not know what this relationship may be.

6.4 Summary

Here we briefly summarize the facts which we have derived in Chapter 5 and 6, to find exceptional subspaces.

I. Most subspaces are ordinary. But for most m and ν there exist exceptional subspaces.

II. Scalar multiple subspaces and conjugate subspaces generate SSRS codes of the same dimension which are isometric to each other.

III. Every subspace lies in a class, and every class lies in a category, where "class" and "category" are defined by the equivalences mentioned above.

IV. There is a duality between ν-dimensional subspaces and $m-\nu$ dimensional subspaces. The trace-dual of an ordinary subspace is ordinary. Moreover, the category diagrams for ν and $m-\nu$ are the same, and the classes and categories are in one-to-one correspondence.

V. A subspace which is spanned by a basis of the form $\{1, \beta, \beta^2, \ldots, \beta^{\nu-1}\}$, where β is a primitive element in $GF(2^m)$, is ordinary.

VI. For $\nu = 1, m-1$, every subspace is ordinary.

VII. For $\nu = 2$, the only exceptional subspaces have bases of the form $\{1, \omega\}$, where ω^{2^d-1} for some divisor of $d \mid m$, $d \neq 1, m$.

VIII. By duality, we can find all exceptional subspaces for $\nu = m-2$.

IX. In every category with cycle 1 there exists an unique self-conjugate subspace.

X. There exists a one-to-one correspondence between self-conjugate subspaces and (m, ν) binary cyclic codes, which allows us to find a representative subspace for each category with cycle 1.

XI. There also exists a one-to-one correspondence between binary quasi-cyclic codes with cycle c and c-conjugate subspace. But we don't have any means to find a representative subspace.

Throughout a discussion, we have not only classified subspaces into a small number of distinct categories, but also constructed an efficient way to find certain representatives, which we call self-conjugate subspaces. As we mentioned before, self-conjugate subspaces are the most attractive subspaces for corresponding SSRS codes.

However, there is still room for further research. Especially, the relationship between the degree and the cycle must be investigated. In addition, the counting problems for the number of categories, and the number of quasi-cyclic codes, remain unsolved.

Chapter 7 Encoding

As we mentioned in Section 2.2, decoding an SSRS code, up to the designed minimum distance, is essentially the same as for the parent cyclic RS code, and thus, the decoding complexity is almost $\mathcal{O}(n \log n)$. On the other hand, encoding SSRS codes is not as straightforward. In this Chapter, we will discuss two encoding scheme for SSRS codes. We will briefly mention a non-systematic encoding schemes in the frequency-domain, and then we will discuss systematic encoding in the time-domain.

7.1 Frequency-Domain Encoder

In Chapter 3, we proved the dimension formula (Theorem 3.1.4) by counting the exact number of codewords in an SSRS code. We converted the constraint that all components must lie in a particular subspace, into constraints on the coefficients of the MS polynomials. We found that this set of constraints on the MS coefficients leads to an expression for them in terms of a set of elements in $GF(2^{d_j})$, where d_j denotes the degree of a cyclotomic coset. If we regard these elements as information symbols, we can construct a frequency-domain[1] encoder [3] in a relatively straightforward manner.

Let us explain this frequency-domain encoding by the following example. Let $m = 4$ and $\nu = 3$. We define the primal code $\mathbb{C}$ to be a $(15, 9)$ RS code with $J = \{1, 2, \dots, 9\}$. For $\mu = 1$, all subspaces are ordinary. So, we can choose any subspace, but for convenience, we take the subspace $\mathcal{S}$ which is spanned by the basis $\mathfrak{B} = \{1, \alpha, \alpha^2\}$. The trace-dual $\mathcal{S}^\perp$ of $\mathcal{S}$ is spanned by the basis $\mathfrak{G} = \{1\}$, i.e., $\mathcal{S}^\perp = GF(2)$. We can see from the table in Appendix C that the binary dimension

[1]Here "frequency-domain" means nothing more than the coefficient-domain of the MS polynomial. But since this terminology has become fashionable recently, we will use it.

for $\mathbb{C}_{\mathcal{S}}$ is 22. In fact, the condition

$$\mathrm{Tr}_1^4\left(\sum_{i=1}^{9} c_i x^i\right) = 0 \quad \text{for all } x \in GF(2^4), \tag{7.1}$$

is equivalent to the following constraints on the coefficients c_i:

$$c_1 + c_2^8 + c_4^4 + c_8^2 = 0 \tag{7.2}$$

$$c_3 + c_6^8 + c_9^2 = 0 \tag{7.3}$$

$$c_5 + c_5^4 = 0 \tag{7.4}$$

$$c_7 = 0. \tag{7.5}$$

In equation (7.2), we can regard c_1, c_2 and c_4 as independent information components with c_8 then determined by these components. Thus, the contribution to the dimension in equation (7.2) is 3 $GF(2^4)$-symbols, i.e., 12 bits. Similarly, in equation (7.3), we regard c_3 and c_6 as information symbols. Equation (7.4) says that c_5 must be an element from the subfield $GF(2^2)$, so that there are 4 possible choices for c_5, and the binary dimension from this equation is 2. In this way, we map 22 information bits into the coefficients by choosing arbitrary elements from $GF(2^4)$ for c_1, c_2, c_3, c_4 and c_6 and an arbitrary element from $GF(2^2)$ for c_5. Then, we compute c_8 and c_9 so that equations (7.2) and (7.3) hold. All the other coefficients are set to zero. Finally, if we take the discrete Fourier transform (DFT) of this set of coefficients, we will obtain the corresponding time-domain codeword, all of whose components lie in $\mathcal{S}$. Figure 7.1 summarizes this procedure.

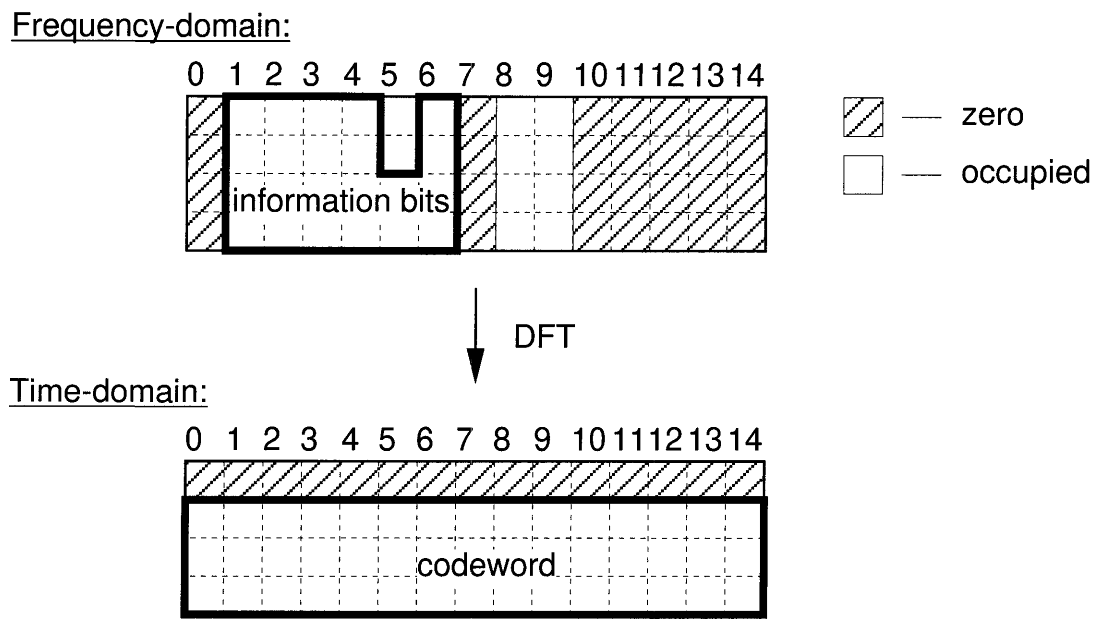


Figure 7.1: Frequency-Domain Encoding.

This procedure above can easily be extended to $\nu \geq 1$. In general, for any SSRS code, there exists a linear transformation from the information bits to the frequency domain coefficients in each cyclotomic coset, as we have seen in the proof of Theorem 3.1.4. We summarize this encoding algorithm as follows.

•Frequency-Domain Encoder

Step-I. Map the information bits to a set of coefficients for each cyclotomic coset.

Step-II. Compute all "occupied" coefficients. This can be accomplished by a simple linear transformation.

Step-III. Set other coefficients to be zero.

Step-IV. Take a DFT of the set of coefficients to obtain the time-domain codeword.

As we have seen in the example, this frequency-domain encoding scheme is easily realized by simple linear transformations, and the DFT on a finite field.

However, this encoding scheme is not systematic in the time-domain. In practical applications, this could be a significant disadvantage, since if the number of errors exceeds the designed minimum distance, all information bits in the frequency-domain might be affected.

Moreover, note that in general, the mapping in the first step employs a linear transformation. Therefore, this encoding may not even be systematic in the frequency-domain, i.e., the information bits may not appear directly as binary component of the MS coefficients. In this case, inverting these transformations is necessary in the decoding procedure.

7.2 Systematic Encoding in the Time-Domain

An SSRS code is no longer a code over the symbol alphabet $GF(2^m)$ nor $GF(2^\nu)$. Indeed, the code is essentially a code over $GF(2)$, despite the fact that the minimum distance is evaluated in terms of ν-bit symbols from $\mathcal{S}$. Thus it is not obvious whether or not we can construct a systematic encoding over $\mathcal{S}$ in the time-domain. In fact, such an encoding does not always exist. However, from the practical point of view, things are not hopeless.

We again start with an example. Let $\mathbb{C}$ be a $(15,11,5)$ RS code over $GF(2^4)$ with $J = \{1,2,\ldots,11\}$. We choose the parameter μ to be 1. From the table in Appendix C, we find $K(\mathbb{C},\mathcal{S}) = 30$ which means there is a $(15,10,5)$ SSRS code over a $\nu = m - \mu =$ 3-dimensional subspace $\mathcal{S}$. We assume that $\mathcal{S}$ is spanned by the basis $\{1,\alpha,\alpha^2\}$, where α is a primitive root satisfying $\alpha^4 = \alpha + 1$. The dual basis of the polynomial basis $\{1,\alpha,\alpha^2,\alpha^3\}$ for $GF(2^4)$ is $\{\alpha^{14},\alpha^2,\alpha,1\}$, so the trace-dual subspace $\mathcal{S}^\perp$ of $\mathcal{S}$ is the 1-dimensional subspace spanned by basis $\{1\}$, i.e., $GF(2)$.

For convenience, we give the binary expansion (a_0,a_1,a_2,a_3) of the elements in $GF(2^4)$ with respect to the basis $\{1,\alpha,\alpha^2,\alpha^3\}$ in Table 7.1.

α^i	a_0	a_1	a_2	a_3	$\mathrm{Tr}(\alpha^i)$
0	0	0	0	0	0
1	1	0	0	0	0
α	0	1	0	0	0
α^2	0	0	1	0	0
α^3	0	0	0	1	1
α^4	1	1	0	0	0
α^5	0	1	1	0	0
α^6	0	0	1	1	1
α^7	1	1	0	1	1
α^8	1	0	1	0	0
α^9	0	1	0	1	1
α^{10}	1	1	1	0	0
α^{11}	0	1	1	1	1
α^{12}	1	1	1	1	1
α^{13}	1	0	1	1	1
α^{14}	1	0	0	1	1

Table 7.1: Binary expansion of the elements in $GF(2^4)$. ($\alpha^4 = \alpha + 1$)

Thus, the elements of $\mathcal{S}$ are exactly the trace-zero elements in $GF(2^4)$, i.e.,

$$\mathcal{S} = \{0, 1, \alpha, \alpha^2, \alpha^4, \alpha^5, \alpha^8, \alpha^{10}\}. \tag{7.6}$$

Since in this case, the binary dimension 30 is a multiple of the symbol size $\nu = 3$, we denote the codeword $\boldsymbol{C}$ of $\mathbb{C}_{\mathcal{S}}$ in a pseudo symbol-wise manner, i.e.,

$$\boldsymbol{C} = [P_0, P_1, P_2, P_3, I_0, I_1, I_2, Q_0, I_3, I_4, I_5, I_6, I_7, I_8, I_9]. \tag{7.7}$$

All symbols $P_0, \dots, P_3$, Q_0 and $I_0 \dots, I_9$, must be chosen from the subspace $\mathcal{S}$. We assume that the coordinates I_i are information symbols. The parity symbols are separated into two parts namely, (P_0, P_1, P_2, P_3) and Q_0. The value of Q_0 cannot be arbitrarily chosen and this choice of coordinates is essential for our encoder. But for the moment, we assume that these are given.

Since the binary dimension of $\mathbb{C}_{\mathcal{S}}$ is 30, we need 15 parity bits in the codeword, which is 3 bits (one symbol) larger than for the primal code $\mathbb{C}$. The additional parity symbol Q_0 can be considered as a penalty which has to be paid to increase the code length while keeping the symbol alphabet size fixed.

Now, we expand each component of the codeword of $\mathbb{C}_{\mathcal{S}}$ into a binary 4-tuple with respect to the polynomial basis $\{1, \alpha, \alpha^2, \alpha^3\}$. Since all components of the codeword must lie in $\mathcal{S}$, the binary component which corresponds to the basis element α^3, must be zero. Figure 7.2 illustrates this binary expansion of $\boldsymbol{C}$.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
α^2	$P_0^{(2)}$	$P_1^{(2)}$	$P_2^{(2)}$	$P_3^{(2)}$	$I_0^{(2)}$	$I_1^{(2)}$	$I_2^{(2)}$	$Q^{(2)}$	$I_3^{(2)}$	$I_4^{(2)}$	$I_5^{(2)}$	$I_6^{(2)}$	$I_7^{(2)}$	$I_8^{(2)}$	$I_9^{(2)}$
α^1	$P_0^{(1)}$	$P_1^{(1)}$	$P_2^{(1)}$	$P_3^{(1)}$	$I_0^{(1)}$	$I_1^{(1)}$	$I_2^{(1)}$	$Q^{(1)}$	$I_3^{(1)}$	$I_4^{(1)}$	$I_5^{(1)}$	$I_6^{(1)}$	$I_7^{(1)}$	$I_8^{(1)}$	$I_9^{(1)}$
α^0	$P_0^{(0)}$	$P_1^{(0)}$	$P_2^{(0)}$	$P_3^{(0)}$	$I_0^{(0)}$	$I_1^{(0)}$	$I_2^{(0)}$	$Q^{(0)}$	$I_3^{(0)}$	$I_4^{(0)}$	$I_5^{(0)}$	$I_6^{(0)}$	$I_7^{(0)}$	$I_8^{(0)}$	$I_9^{(0)}$
$\boldsymbol{C}$	P_0	P_1	P_2	P_3	I_0	I_1	I_2	Q	I_3	I_4	I_5	I_6	I_7	I_8	I_9

Figure 7.2: The binary expansion of $\mathbb{C}_{\mathcal{S}}$.

Before we start the encoding process, we need to discuss a "special" mapping. All information components are set to be zero, i.e., $I_i = 0$, for $i = 0, \ldots, 9$. Then we substitute all possible elements from $\mathcal{S}$ for Q_0 and generate parity components P_0, P_1, P_2, P_3 so that the word

$$\hat{\boldsymbol{C}} = [\hat{P}_0, \hat{P}_1, \hat{P}_2, \hat{P}_3, 0, 0, 0, Q_0, 0, 0, 0, 0, 0, 0, 0]$$

becomes a codeword for primal code $\mathbb{C}$. This procedure is executed by using an encoder for $\mathbb{C}$. Since the parent code $\mathbb{C}$ is cyclic, we can use the well-known "division by the generator polynomial $g(x)$" for the $\mathbb{C}$-encoder. Figure 7.3 illustrates the binary expansion of the codeword. Note that the resulting codeword may not be a codeword of $\mathbb{C}_{\mathcal{S}}$, i.e., the binary components $\hat{P}_i^{(3)}$ for $i = 0, 1, 2, 3$, need not to be zero.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	$\hat{P}_0^{(3)}$	$\hat{P}_1^{(3)}$	$\hat{P}_2^{(3)}$	$\hat{P}_3^{(3)}$	0	0	0	0	0	0	0	0	0	0	0
α^2	$\hat{P}_0^{(2)}$	$\hat{P}_1^{(2)}$	$\hat{P}_2^{(2)}$	$\hat{P}_3^{(2)}$	0	0	0	$Q^{(2)}$	0	0	0	0	0	0	0
α^1	$\hat{P}_0^{(1)}$	$\hat{P}_1^{(1)}$	$\hat{P}_2^{(1)}$	$\hat{P}_3^{(1)}$	0	0	0	$Q^{(1)}$	0	0	0	0	0	0	0
α^0	$\hat{P}_0^{(0)}$	$\hat{P}_1^{(0)}$	$\hat{P}_2^{(0)}$	$\hat{P}_3^{(0)}$	0	0	0	$Q^{(0)}$	0	0	0	0	0	0	0
$\hat{\boldsymbol{C}}$	$\hat{P}_0$	$\hat{P}_1$	$\hat{P}_2$	$\hat{P}_3$	0	0	0	Q_0	0	0	0	0	0	0	0

Figure 7.3: Generation of preserved mapping ϕ by $\mathbb{C}$-encoder.

In this case, the generator polynomial $g(x)$ is

(7.8)
$$\begin{aligned} g(x) &= \prod_{i=12}^{0} (1 - \alpha^i x) \\ &= 1 + \alpha^{13} x + \alpha^6 x^3 + \alpha^9 x^4. \end{aligned}$$

Thus, for the $\mathbb{C}$-encoder, we use the congruence

(7.9)
$$x^4 \equiv \alpha^{12} x^3 + \alpha^4 x^2 + \alpha^6 \pmod{g(x)}.$$

For example, if $Q_0 = 1$, then the information word is x^7 and since

(7.10)
$$x^7 \equiv \alpha^4 + \alpha^7 x + \alpha^8 x^2 + \alpha^6 x^3. \pmod{g(x)},$$

the corresponding codeword is as shown in Figure 7.4.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
α^2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
α^1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
α^0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0
$\hat{\boldsymbol{C}}$	α^4	α^7	α^8	α^6	0	0	0	1	0	0	0	0	0	0	0

Figure 7.4: Codeword $\hat{\boldsymbol{C}}$ for primal RS code $\mathbb{C}$.

Likewise, for every element for Q_0 from $\mathcal{S}$, we generate parity components P_0, P_1, P_2, P_3. But we pay attention only to the binary components in $[\hat{P}_0^{(3)}, \hat{P}_1^{(3)}, \hat{P}_2^{(3)}, \hat{P}_3^{(3)}]$. For $Q_0 = 1$, we have $[0, 1, 0, 1]$. So, we define the mapping ϕ as

$$\phi : [Q_0^{(0)}, Q_0^{(1)}, Q_0^{(2)}] \longrightarrow [\hat{P}_0^{(3)}, \hat{P}_1^{(3)}, \hat{P}_2^{(3)}, \hat{P}_3^{(3)}],$$

and tabulate it in Figure 7.5.

Q_0	$[Q_0^{(0)}, Q_0^{(1)}, Q_0^{(2)}]$	$[\hat{P}_0^{(3)}, \hat{P}_1^{(3)}, \hat{P}_2^{(3)}, \hat{P}_3^{(3)}]$
0	$[0,0,0]$	$[0,0,0,0]$
1	$[1,0,0]$	$[0,1,0,1]$
α	$[0,1,0]$	$[0,0,1,1]$
α^2	$[0,0,1]$	$[1,1,0,0]$
α^4	$[1,1,0]$	$[0,1,1,0]$
α^5	$[0,1,1]$	$[1,1,1,1]$
α^8	$[1,0,1]$	$[1,0,0,1]$
α^{10}	$[1,1,1]$	$[1,0,1,0]$

Figure 7.5: Mapping ϕ.

Obviously, the mapping ϕ is always linear. In this case, ϕ is one-to-one and the image of ϕ spans a 3-dimensional linear space. Note that the generator polynomial $g(x)$ contains the term $x-1$, so that the weight of every codeword must be even. If we look at all the images in Table 7.5, we see that all even weight pattern appear. It follows that the image of the mapping ϕ covers all possible patterns expected. (However, this condition is not always guaranteed. It depends on what coordinates are chosen for $P_i, i = 0, \ldots, 3$ and Q_0.) As a "preprocessing" for our encoder, we store the inverse mapping ϕ^{-1}.

Now, we perform the encoding for given information bits. We set all information symbols in I_i and put zero in Q_0. Then we first regard

$$\check{\boldsymbol{C}} = [\check{P}_0, \check{P}_1, \check{P}_2, \check{P}_3, I_0, I_1, I_2, 0, I_3, I_4, I_5, I_6, I_7, I_8, I_9]$$

as a codeword for $\mathbb{C}$ and employ $\mathbb{C}$-encoder to generate parity symbols $[\check{P}_0, \check{P}_1, \check{P}_2, \check{P}_3]$. Again, this procedure can easily be done by the same encoder to generate the mapping ϕ. Since $[\check{P}_0, \check{P}_1, \check{P}_2, \check{P}_3]$ are not guaranteed to be elements from $\mathcal{S}$, the resulting codeword may look as shown in Figure 7.6.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	$\check{P}_0^{(3)}$	$\check{P}_1^{(3)}$	$\check{P}_2^{(3)}$	$\check{P}_3^{(3)}$	0	0	0	0	0	0	0	0	0	0	0
α^2	$\check{P}_0^{(2)}$	$\check{P}_1^{(2)}$	$\check{P}_2^{(2)}$	$\check{P}_3^{(2)}$	$I_0^{(2)}$	$I_1^{(2)}$	$I_2^{(2)}$	0	$I_3^{(2)}$	$I_4^{(2)}$	$I_5^{(2)}$	$I_6^{(2)}$	$I_7^{(2)}$	$I_8^{(2)}$	$I_9^{(2)}$
α^1	$\check{P}_0^{(1)}$	$\check{P}_1^{(1)}$	$\check{P}_2^{(1)}$	$\check{P}_3^{(1)}$	$I_0^{(1)}$	$I_1^{(1)}$	$I_2^{(1)}$	0	$I_3^{(1)}$	$I_4^{(1)}$	$I_5^{(1)}$	$I_6^{(1)}$	$I_7^{(1)}$	$I_8^{(1)}$	$I_9^{(1)}$
α^0	$\check{P}_0^{(0)}$	$\check{P}_1^{(0)}$	$\check{P}_2^{(0)}$	$\check{P}_3^{(0)}$	$I_0^{(0)}$	$I_1^{(0)}$	$I_2^{(0)}$	0	$I_3^{(0)}$	$I_4^{(0)}$	$I_5^{(0)}$	$I_6^{(0)}$	$I_7^{(0)}$	$I_8^{(0)}$	$I_9^{(0)}$
$\check{\boldsymbol{C}}$	$\check{P}_0$	$\check{P}_1$	$\check{P}_2$	$\check{P}_3$	I_0	I_1	I_2	0	I_3	I_4	I_5	I_6	I_7	I_8	I_9

Figure 7.6: Encoded information components $\check{\boldsymbol{C}}$ using $\mathbb{C}$-encoder.

For example, assume that the information set is

$$[I_0, I_1, I_2, I_3, I_4, I_5, I_6, I_7, I_8, I_9] = [\alpha, \alpha^8, \alpha^5, 0, 0, 0, 0, 0, 0, 0].$$

By simple calculation, we have

$$\alpha x^4 + \alpha^8 x^5 + \alpha^5 x^6 \equiv \alpha + \alpha^7 x + \alpha^5 x^2 + \alpha^{11} x^3 \pmod{g(x)}$$

$$[\check{P}_0, \check{P}_1, \check{P}_2, \check{P}_3] = [\alpha, \alpha^7, \alpha^5, \alpha^{11}].$$

The binary expansion of this codeword is shown in Figure 7.7.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
α^2	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0
α^1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
α^0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
$\check{\boldsymbol{C}}$	α	α^7	α^5	α^{11}	α	α^8	α^5	0	0	0	0	0	0	0	0

Figure 7.7: Encoded codeword as $\mathbb{C}$.

From Figure 7.7, we observe that

$$[\check{P}_0^{(3)}, \check{P}_1^{(3)}, \check{P}_2^{(3)}, \check{P}_3^{(3)}] = [0, 1, 0, 1].$$

But if we look at the Table 7.5, we will find the same pattern $[0, 1, 0, 1]$ in the image of mapping ϕ. In fact, domain of this image is

$$\phi^{-1} : [0, 1, 0, 1] \longrightarrow [1, 0, 0].$$

Thus, we have found that $Q_0 = \alpha$ results the same value of $[P_0^{(3)}, P_1^{(3)}, P_2^{(3)}, P_3^{(3)}]$.

Note that arrays in Figures 7.4 and 7.7 are both codewords of the primal code $\mathbb{C}$, so that the sum of these codewords is also the codeword of $\mathbb{C}$. But since these two codewords have the same pattern in coordinates $[P_0^{(3)}, P_1^{(3)}, P_2^{(3)}, P_3^{(3)}]$, the sum of the codewords has all zeros in these coordinates. It follows that this sum is also a codeword of $\mathbb{C}_{\mathcal{S}}$. In summary,

$$\hat{\boldsymbol{C}} + \check{\boldsymbol{C}} = \boldsymbol{C} \in \mathbb{C}_{\mathcal{S}}.$$

The codeword $\boldsymbol{C}$ is shown in Figure 7.8.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
α^2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
α^1	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0
α^0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
	1	0	α^4	α	α	α^8	α^5	α	0	0	0	0	0	0	0

Figure 7.8: The codeword $\boldsymbol{C} = \hat{\boldsymbol{C}} + \check{\boldsymbol{C}}$ for $\mathbb{C}_{\mathcal{S}}$.

Thus, we have obtained the following codeword in $\mathbb{C}_{\mathcal{S}}$:

(7.11) $$\boldsymbol{C} = [1, 0, \alpha^4, \alpha, \alpha, \alpha^8, \alpha^5, \alpha, 0, 0, 0, 0, 0, 0, 0].$$

Thus, this encoding scheme works perfectly in this case. Note also that this encoding algorithm can be applied for $\mu \geq 2$.

As we have mentioned before, however, this encoding algorithm does not always work. To study this problem more closely, we now consider the general class of shortened codes obtained from arbitrary linear codes.

Let $\mathbb{C}$ be an (n, k) linear code over the finite field $\mathbb{F}$, and let $P \subseteq \{1, 2, \ldots, n\}$ be a subset of coordinate positions with $|P| = p$. Further, let $\mathbb{C}^P$ be a code of length p obtained by *projecting* $\mathbb{C}$ onto P. $\mathbb{C}^P$ is thus the $\bar{P}$-*punctured* code, where $\bar{P} = \{1, 2, \ldots, n\} - P$, and let $\mathbb{C}_P$ be the code of length $n - p$ consisting of those codewords from $\mathbb{C}$, which are identically 0 on P, from which the zero coordinates have been deleted. Thus, $\mathbb{C}_P$ is the P-*shortened* code. We denote the dimensions of $\mathbb{C}^P$ and $\mathbb{C}_P$ by k^P and k_P, respectively. Note that this setup is exactly the same as in Section 4.2, except for the notation. Here is a restatement of Theorem 4.2.1.

7.2.1. Theorem.

$$k^P + k_P = k. \tag{7.12}$$

7.2.2. Corollary. *The coordinate subset P is an information set if and only if $|P| = k$ and $k_P = 0$.*

Proof. $|P| = k$ is obviously necessary. If $|P| = k$, then P is an information set, if and if and only if $\dim(\mathbb{C}^P) = k$, which is true if and only if $k_P = 0$, by Theorem 7.2.1. ∎

Now, let $P, Q \subseteq \{1, 2, \dots, n\}$ be two coordinate subsets. We consider a general encoding scheme for the P-shortened code $\mathbb{C}_P$. First, we assume that the coordinate subset Q is an information set for $\mathbb{C}$. Note that the set Q need not to be disjoint from P. Figure 7.9 illustrates the setup.

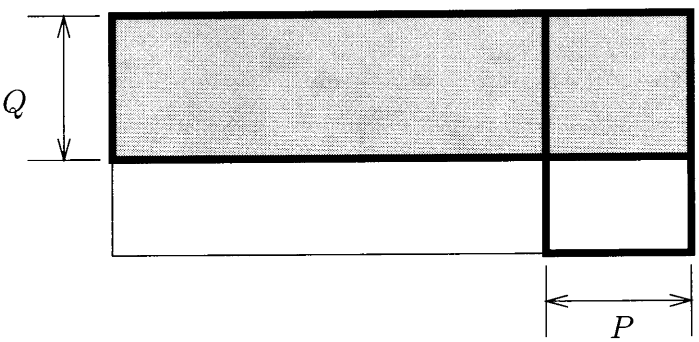


Figure 7.9: The coordinate subsets P and Q.

We are interested in a systematic encoding of the shortened code $\mathbb{C}_P$. By Theorem 7.2.1, $\dim(\mathbb{C}_P) = k - \dim(\mathbb{C}^P) = k - k^P = k_P$. Let Q_1 be a subset of Q of size k_P, which is disjoint from P. We assume $|Q - P| \geq k_p$.

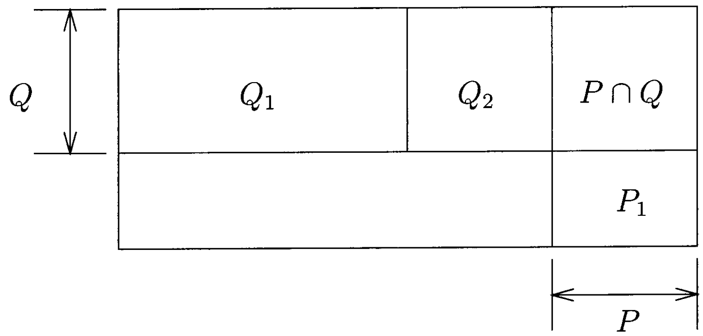


Figure 7.10: Disjoint coordinate subsets Q_1.

Our question is whether or not Q_1 is an information set for $\mathbb{C}_P$. By Corollary 7.2.2, this answer is yes if and only the shortened subcode $\mathbb{C}_{Q_1 \cup P} = \emptyset$, i.e., the set of codewords from $\mathbb{C}_P$ which vanish on Q_1 is $\emptyset$, hence

$$\dim(\mathbb{C}_{Q_1 \cup P}) = 0. \tag{7.13}$$

One way to test the condition $\mathbb{C}_{Q_1 \cup P} = \{0\}$, is to encode all possible information words $Q_2 = I$ using a $\mathbb{C}$-encoder.

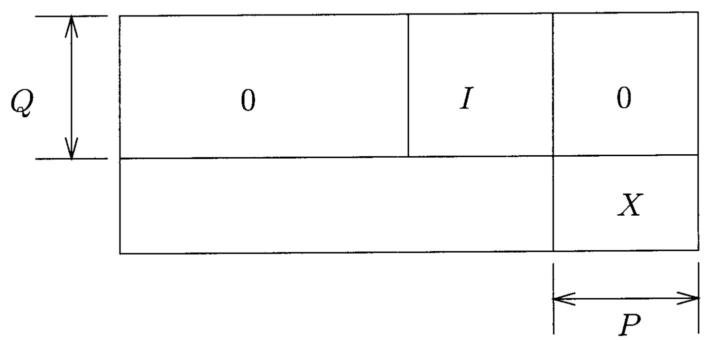


Figure 7.11: Information coordinate test for Q_1.

Clearly, the condition $\mathbb{C}_{Q_1 \cup P} = \emptyset$ holds if and only if the P_1-field of each codeword produced by I, (the X in Figure 7.11), is nonzero unless, of course, $I = 0$.

The remaining problem now is to count the dimension of the P_1-projection of the code $\mathbb{C}_{Q_1 \cup (P \cap Q)}$.

7.2.3. Lemma.

$$\dim(\mathbb{C}^{P_1}_{P\cap Q}) = \dim(\mathbb{C}^{P_1}_{(P\cap Q)\cup Q_1}) = |Q_2|. \tag{7.14}$$

Proof. By, Theorem 7.2.1,

$$\begin{aligned} k^{P_1}_{P\cap Q} &= k_{P\cap Q} - k_{(P\cap Q)\cup P_1} \\ &= k_{P\cap Q} - k_P \\ &= |Q_1| + |Q_2| - |Q_1| \\ &= |Q_2|. \end{aligned}$$

Also,

$$\begin{aligned} k^{P_1}_{(P\cap Q)\cup Q_1} &= k_{(P\cap Q)\cup Q_1} - k_{(P\cap Q)\cup Q_1 \cup P_1} \\ &= |Q_2| - k_{Q_1\cup P} \\ &= |Q_2|, \end{aligned}$$

since Q_1 is an information set for $\mathbb{C}_P$. ∎

Thus any P_1-field that can be obtained by using the Q_1 and Q_2 information fields can also be obtained by using the Q_2-field only. The space of P_1-projections of codewords in $\mathbb{C}_{Q_1\cup(P\cap Q)}$ is the same as the space of P_1-projections of the codewords in $\mathbb{C}_{Q_2\cup(P\cap Q)}$.

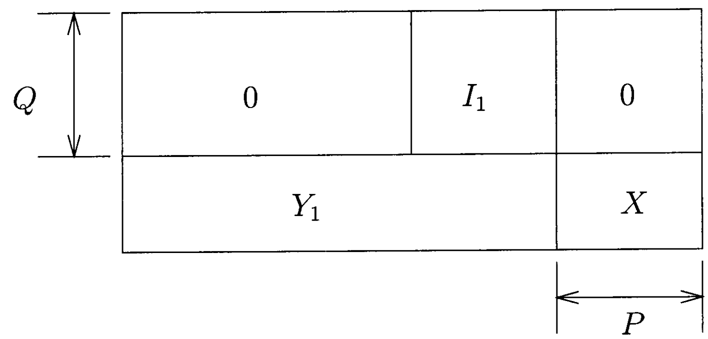
As we mentioned before, the mapping ϕ in our previous example, is one-to-one and spans the same dimension space. Thus, the general encoding algorithm for shortened code certainly implies this special case.

In summary, we can describe an encoding procedure for a general shortened code obtained from an (n, k) linear code.

•General Encoding Algorithm for a Shortened Code

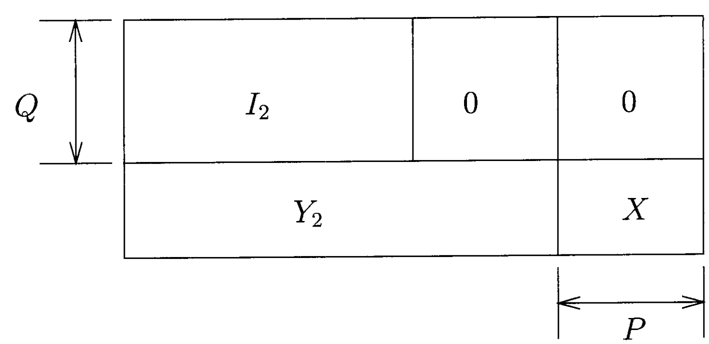
Step-I. Given the shortened positions P, find a set of information coordinates Q and Q_1, for $\mathbb{C}$ and $\mathbb{C}_P$ respectively.

Step-II. Set the coordinates of Q_1 and $P \cap Q$ to be zero, then encode all possible patterns in Q_2 by a $\mathbb{C}$-encoder. Then Q_1 is a proper information set if and only if the image of the mapping $\phi : Q_2 \longrightarrow P_1$ is zero if and only if $I_1 = 0$.



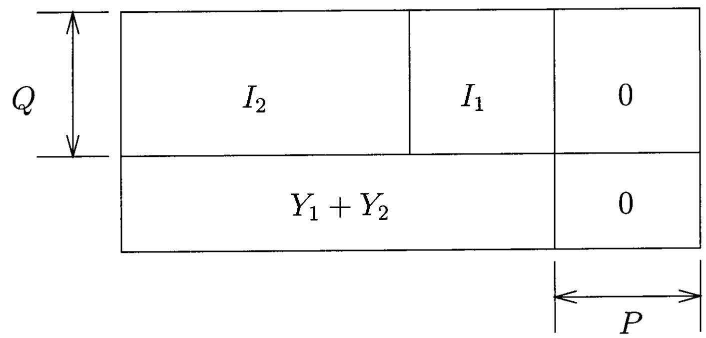
Step-III. Store the inverse mapping $\phi^{-1} : P_1 \longrightarrow Q_2$.

Step-IV. Set the coordinates of Q_2 and $P \cap Q$ to be zero. Encode the given information I_1 in Q_1 using the $\mathbb{C}$-encoder again and look at the resulting sequence X in coordinate set P_1.



Step-V. Use the inverse mapping ϕ^{-1} to find the sequence I_2 in Q_2 which produces the same image X in P_1 as does I_1.

Step-VI. Set I_1 in Q_1 and I_2 in Q_2 and encode it as $\mathbb{C}$ using the $\mathbb{C}$-encoder. This results zeros in P_1 and therefore the sum must be a codeword in $\mathbb{C}_P$.



Note that if we employ a basis to expand SSRS codewords into binary ν-tuples, the expanded code over $GF(2)$ is a shortened code of the expanded primal RS code. Thus, our general encoding algorithm can be applied to SSRS codes.

In practice, the most critical part of the procedure will be the size of mapping table $\phi^{-1} : P_1 \longrightarrow Q$. Thus, the size corresponds to the additional redundancy needed to extend the code length. As long as the size is small enough to implement, this encoding procedure can easily be realized. But in general, as the size of ϕ^{-1} gets large, it is virtually impossible to implement this encoding algorithm. Moreover, there are other difficulties, summarized below.

I. For SSRS codes, we can choose an arbitrary coordinate set for Q, since our primal RS code $\mathbb{C}$ is MDS. But since SSRS codes are no longer MDS, if we choose set Q_1 arbitrarily, Q_1 is not guaranteed to be an information set for $\mathbb{C}_P$.

II. There seems to be no efficient means to find a proper information set Q_1. Basically, we need to check whether the image of ϕ is 0 if and only if $I = 0$, for every choice of the possible coordinates in Q_2. This would be an exhaustive effort, even for a relatively small number of additional parities.

III. In order to search for "good" Q_2's, we need to have a $\mathbb{C}$-encoder. In our case, $\mathbb{C}$ is a RS code. Thus, the easiest encoder would be a polynomial division encoder. But this $\mathbb{C}$-encoder can be applied only when the parity to be generated is an integral number of symbols and consecutively located. This is not always guaranteed.

In fact, Solomon found [26] an example of an SSRS code[2], which is not systematic for any choice of information symbols. We will give an example of this unfortunate phenomenon.

7.2.4. Example. Let $\mathbb{C}$ be a $(15, 9, 7)$ RS code over $GF(2^4)$ with $J = \{11, \ldots, 4\}$. We use the same subspace as the previous example, i.e., $\mathcal{S}$ is spanned by $\mathfrak{B} = \{1, \alpha, \alpha^2\}$. It is easy to see that the binary dimension is $K(\mathbb{C}, \mathcal{S}) = 23$. Thus, $\mathbb{C}_{\mathcal{S}}$ is a $(15, 7\frac{2}{3}, 7+)$ code over $\mathcal{S}$. Our problem is to find proper coordinate subsets Q_1 and Q_2. Of course, Q can be arbitrarily chosen but in order to use the simplest $\mathbb{C}$-encoder, the positions in P_1 should be consecutive, as in the previous example. Without loss of generality, the situation is as in Figure 7.12.

	location														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
α^3	$P_0^{(3)}$	$P_1^{(3)}$	$P_2^{(3)}$	$P_3^{(3)}$	$P_4^{(3)}$	$P_5^{(3)}$	0	0	0	0	0	0	0	0	0
α^2	$X_0^{(2)}$	$X_1^{(2)}$	$X_2^{(2)}$	$X_3^{(2)}$	$X_4^{(2)}$	$X_5^{(2)}$	$Y_0^{(2)}$	$Y_1^{(2)}$	$Y_2^{(2)}$	$Y_3^{(2)}$	$Y_4^{(2)}$	$Y_5^{(2)}$	$Y_6^{(2)}$	$Y_7^{(2)}$	$Y_8^{(2)}$
α^1	$X_0^{(1)}$	$X_1^{(1)}$	$X_2^{(1)}$	$X_3^{(1)}$	$X_4^{(1)}$	$X_5^{(1)}$	$Y_0^{(1)}$	$Y_1^{(1)}$	$Y_2^{(1)}$	$Y_3^{(1)}$	$Y_4^{(1)}$	$Y_5^{(1)}$	$Y_6^{(1)}$	$Y_7^{(1)}$	$Y_8^{(1)}$
α^0	$X_0^{(0)}$	$X_1^{(0)}$	$X_2^{(0)}$	$X_3^{(0)}$	$X_4^{(0)}$	$X_5^{(0)}$	$Y_0^{(0)}$	$Y_1^{(0)}$	$Y_2^{(0)}$	$Y_3^{(0)}$	$Y_4^{(0)}$	$Y_5^{(0)}$	$Y_6^{(0)}$	$Y_7^{(0)}$	$Y_8^{(0)}$

Figure 7.12: $(15, 7\frac{2}{3}, 7+)$ SSRS code $\mathbb{C}_{\mathcal{S}}$ over $\mathcal{S}$.

The question is whether or not we can find a set of 4 coordinates from $(Y_i^{(j)}), i = 0, \ldots, 8, j = 0, 1, 2$ such that the mapping is one-to-one and the image in $[P_0^{(3)}, \ldots, P_5^{(3)}]$ spans 4-dimensional space. But this is impossible, as is easily verified by setting each $Y_i^{(j)}$ to be one and others to be zero once at a time, and encoding using the $\mathbb{C}$-encoder. We can see that there are only 12 distinct nonzero images in $[P_0^{(3)}, \ldots, P_5^{(3)}]$, which do not span a linear 4-dimensional space, so that no combination of 23 coordinates from $Y_i^{(j)}$ can be an information set for $\mathbb{C}_{\mathcal{S}}$. ■

[2]He called the code "non-linear non-binary" at that time.

Chapter 8 Performance

In this Chapter, we discuss the performance of SSRS codes in practice, using the detailed dimension tables in Appendix C and D. First, we will use those tables to discuss the parameters (n, k, d) and q in some specific cases. Then, we will attempt to compare the performance of SSRS codes to that of algebraic geometry (AG) codes. We will see that in some cases, SSRS codes are superior to AG codes. Finally, we will exhibit some infinite sequences of SSRS codes, and give a counterexample to a conjecture about optimal "quasi-MDS" codes.

8.1 The (n, k, d) Parameters

We take an ordinary (n, k_0, d_0) RS code over $GF(2^m)$ to be the primal code $\mathbb{C}(J)$, where $n = 2^m - 1$ and $d_0 = n - k_0 + 1$. Let $\mathcal{S}$ be a ν-dimensional subspace of $GF(2^m)$ and $\mathbb{C}_{\mathcal{S}}$ be an SSRS code of $\mathbb{C}$ with respect to $\mathcal{S}$. For every ν, we compute the binary dimension $K(\mathbb{C}(J), \mathcal{S})$ of the corresponding SSRS codes for all distinct ν-dimensional subspaces. This is achieved by finding a representative subspace from each category, and computing the binary dimension by Theorem 3.1.4.

In this section, we discuss the performance of SSRS codes in terms of code length n, pseudo-dimension k, designed minimum distance d and symbol size $q = 2^\nu$. As we mentioned before, the guaranteed designed minimum distance for an SSRS code is the same as that of the primal RS code, i.e., $d = d_0 = n - k_0 + 1$. The true minimum distance need not be the same as designed minimum distance. But the code can only be decoded up to designed minimum distance, and it is difficult to find the true minimum distance.

For general RS codes, J is chosen to be an arithmetic progression whose increment is relatively prime to n. The binary dimension $K(\mathbb{C}, \mathcal{S})$ depends not only on k_0 and $\mathcal{S}$ but also on the choice of J. This is analogous to the "alternate" RS/BCH codes [2].

Without loss of generality, we assume that J is chosen to be a set of consecutive integers with leading integer J_S. For SSRS codes, the maximum dimension is usually achieved when the leading integer J_S is chosen to be 1. However, this is not always the case.

First, we take $m = 4$ and $\nu = 3$. We start from a $(15, k_0, d_0)$ RS code over $GF(2^4)$ and obtain a $(15, k, d_0^+)$ SSRS code over an 8-letter alphabet. Figure 8.1 gives the relationship between d_0, the designed minimum distance and k, the symbol-wise pseudo-dimension. The plot is almost a straight line and is very close to that of optimal MDS code (Singleton bound). Note that the maximum code length of an optimal RS code over $GF(2^3)$ is 7. SSRS codes enable us to double the code length with little penalty.

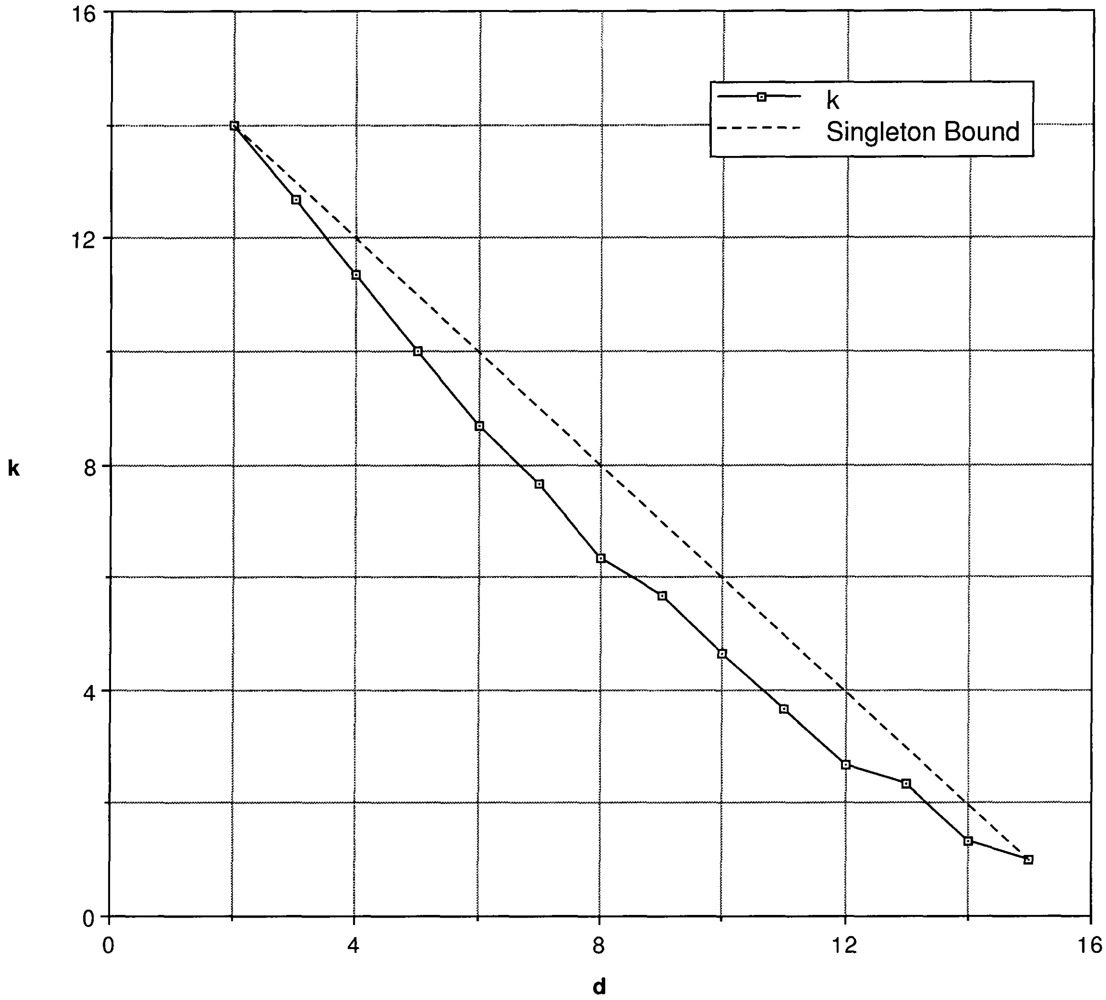


Figure 8.1: The best SSRS codes for $m = 4, n = 15, \nu = 3, q = 8$.

From Figure 8.1, we see that there is a $(15, 7\frac{2}{3}, 7^{+})$ SSRS code over an 8-letter alphabet. If we construct a code with the same code length and designed minimum distance by shortening a GBCH code over $GF(2^3)$ of length 63, we will get a $(15, 2, 7^{+})$ code. Clearly, SSRS codes outperform such shortened GBCH codes.

The next example is for $m = 6$ and $\nu = 4$. We have seen that we only need to examine 3 distinct subspaces, as shown in the table below.

category	basis	cycle	degree	
$\mathbb{G}_0$	$\{1, \alpha, \alpha^2, \alpha^3\}$	6	1	ordinary
$\mathbb{G}_1$	$\{1, \alpha, \alpha^2, \alpha^9\}$	2	1	ordinary
$\mathbb{G}_2$	$\{1, \alpha, \alpha^4, \alpha^{15}\}$	1	1	exceptional
$\mathbb{G}_3$	$\{1, \alpha, \alpha^8, \alpha^{21}\}$	1	2	exceptional

Note that since $\mathbb{G}_0$ and $\mathbb{G}_1$ are both ordinary, it is enough to investigate $\mathbb{G}_0$ and the two cycle 1 categories $\mathbb{G}_2$ and $\mathbb{G}_3$. From Figure 8.2, we can see for any d_0, the maximum dimension is always achieved by either $\mathbb{G}_2$ or $\mathbb{G}_3$.

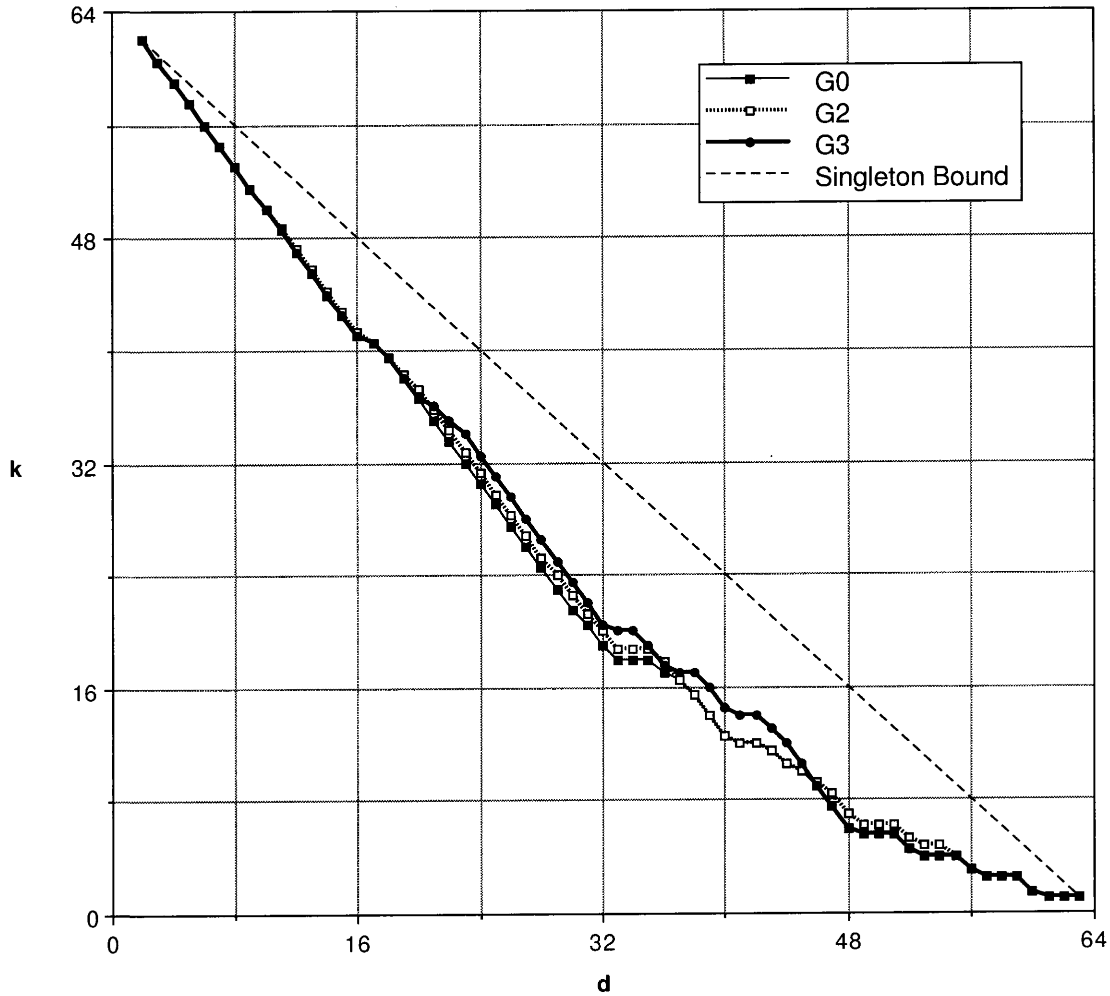


Figure 8.2: The best SSRS codes for $m = 6, n = 63, \nu = 4, q = 16$.

In general, if $\nu \mid m$, subfield subcodes (i.e., GBCH code) are among the SSRS codes. However, as we have seen in Example 3.5.3 in Chapter 3, these GBCH codes are not always the best SSRS codes for $m = 6$ and $\nu = 2$. Figure 8.3 illustrates this fact. The subspace which gives the maximum dimension depends on the minimum distance.

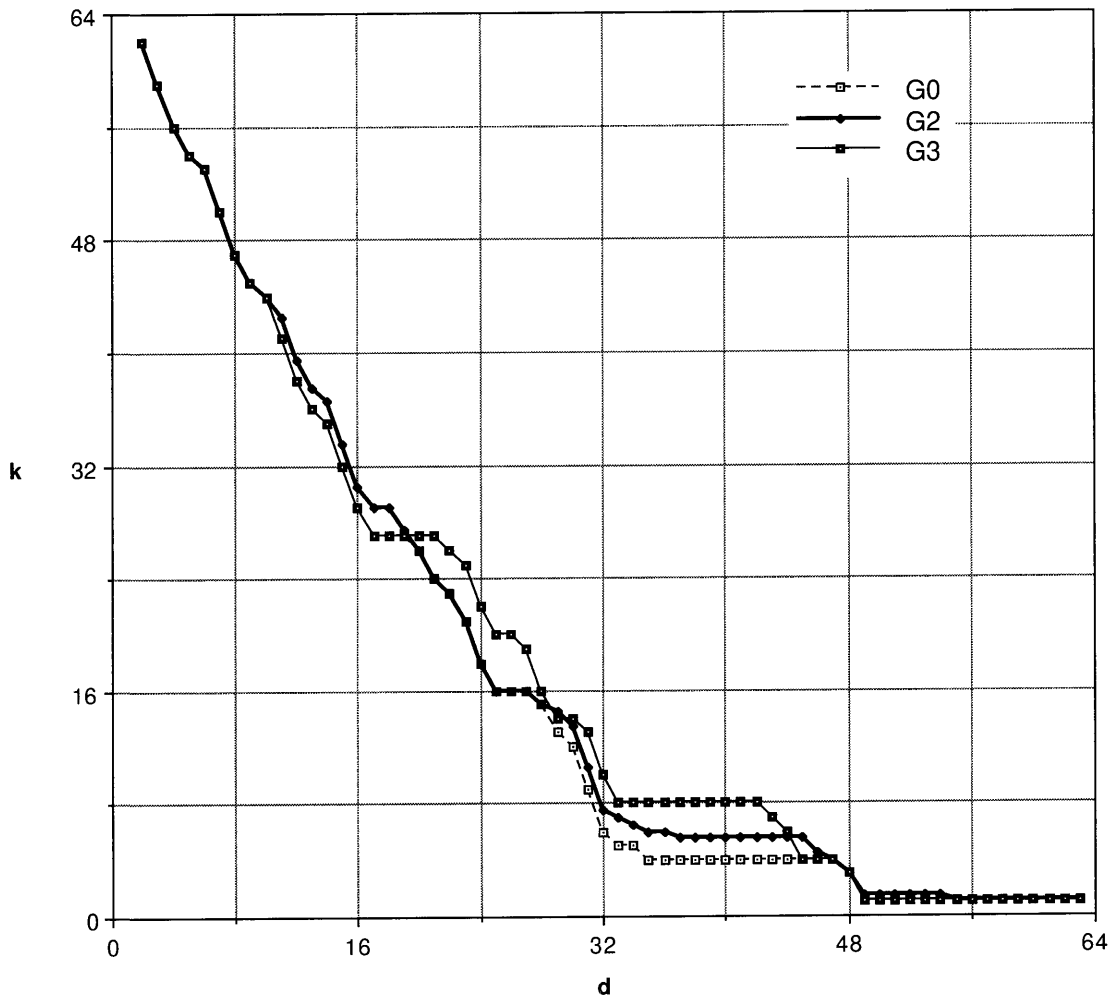


Figure 8.3: The best SSRS codes for $m = 6, n = 63, \nu = 2, q = 4$.

$\mathbb{G}_0$	$\mathfrak{B}_0 = \{1, \alpha\}$	ordinary
$\mathbb{G}_2$	$\mathfrak{B}_2 = \{1, \alpha^9\}$	exceptional
$\mathbb{G}_3$	$\mathfrak{B}_3 = \{1, \alpha^{21}\}$	exceptional,subfield

On the other hand, if $m = 6$ and $\nu = 3$, the subfield $GF(2^3)$ always gives the best dimension as shown in Figure 8.4. Note that in Figures 8.2–8.4, the best dimension is always achieved by the subspaces from the cycle 1 categories.

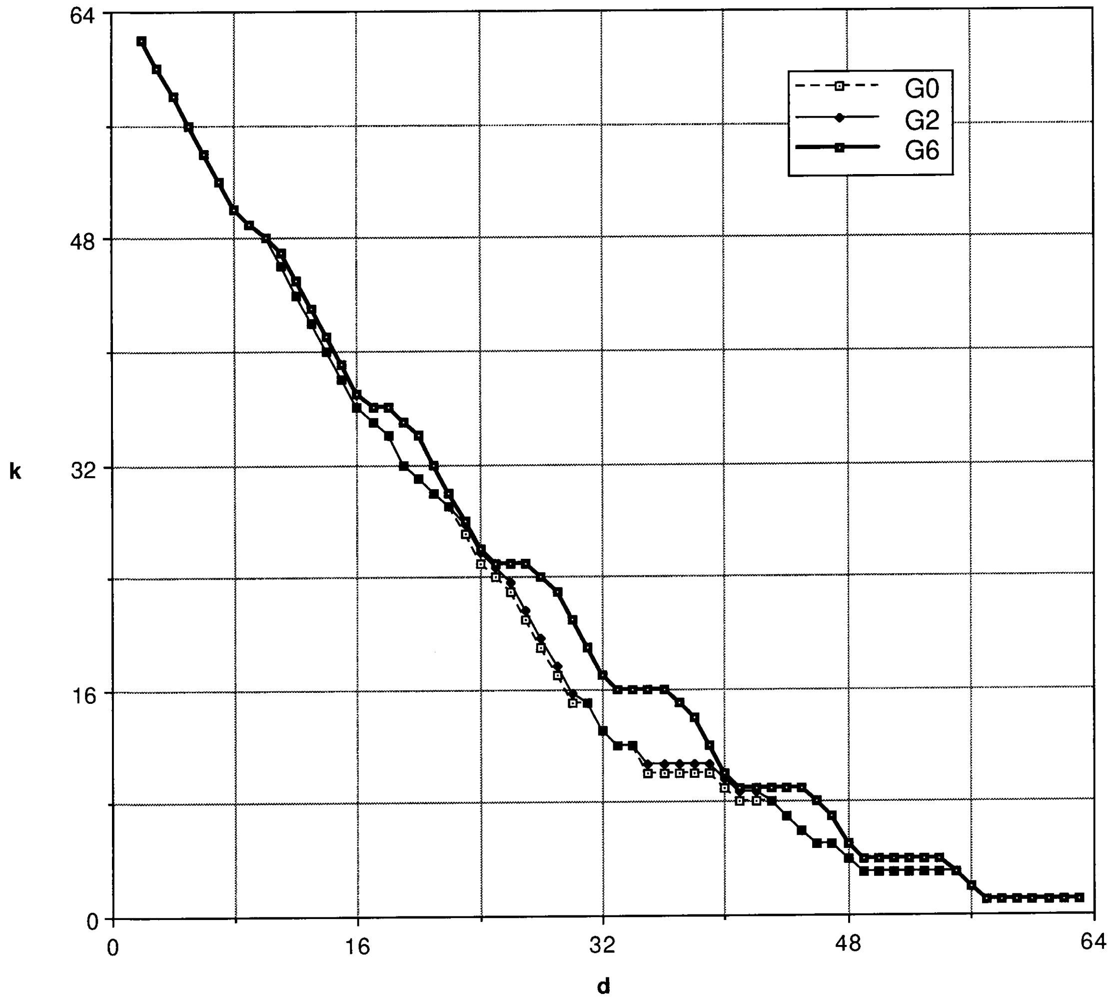


Figure 8.4: The best SSRS codes for $m = 6, n = 63, \nu = 3, q = 8$.

$\mathbb{G}_0$:	$\mathfrak{B}_0 = \{1, \alpha, \alpha^2\}$	ordinary
$\mathbb{G}_2$:	$\mathfrak{B}_2 = \{1, \alpha, \alpha^8\}$	exceptional
$\mathbb{G}_6$:	$\mathfrak{B}_6 = \{1, \alpha^9, \alpha^{18}\}$	exceptional,subfield

In case of $\nu \nmid m$, there exists no subfield subcodes, but still we can obtain SSRS codes for any ν. For $m = 6$, for example, we can construct SSRS codes for $\nu = 1, 4, 5$ as well as for $\nu = 2, 3$, with the same code length $n = 63$. For $\nu = 1$, all codes are equivalent to the primitive BCH code over $GF(2)$. But, the codes for $\nu = 4, 5$, seems to be entirely new in algebraic coding theory. We show the relationship between d_0 and the best SSRS dimension for $\nu = 1, 5$ in Figures 8.5 and 8.6.

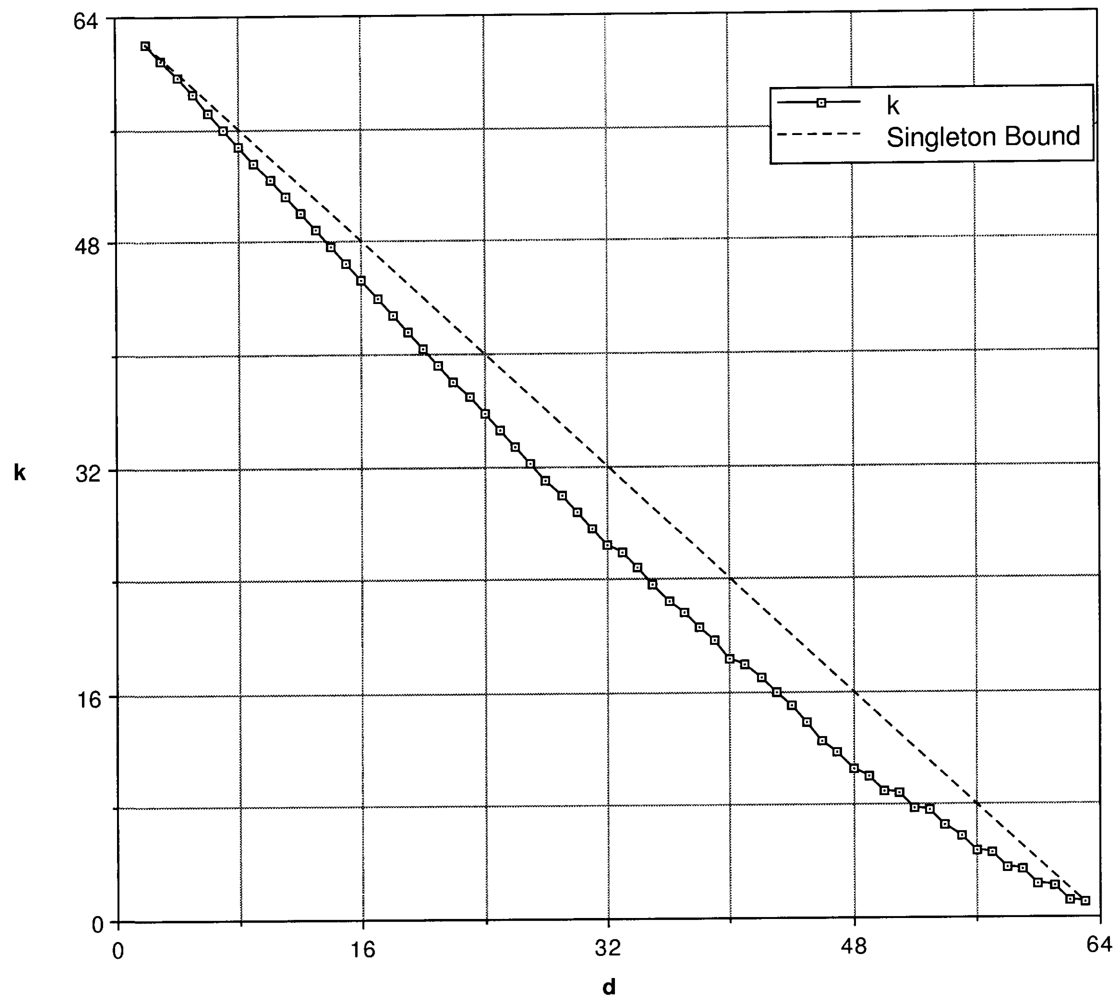


Figure 8.5: The best SSRS codes for $m = 6, n = 63, \nu = 5, q = 32$.

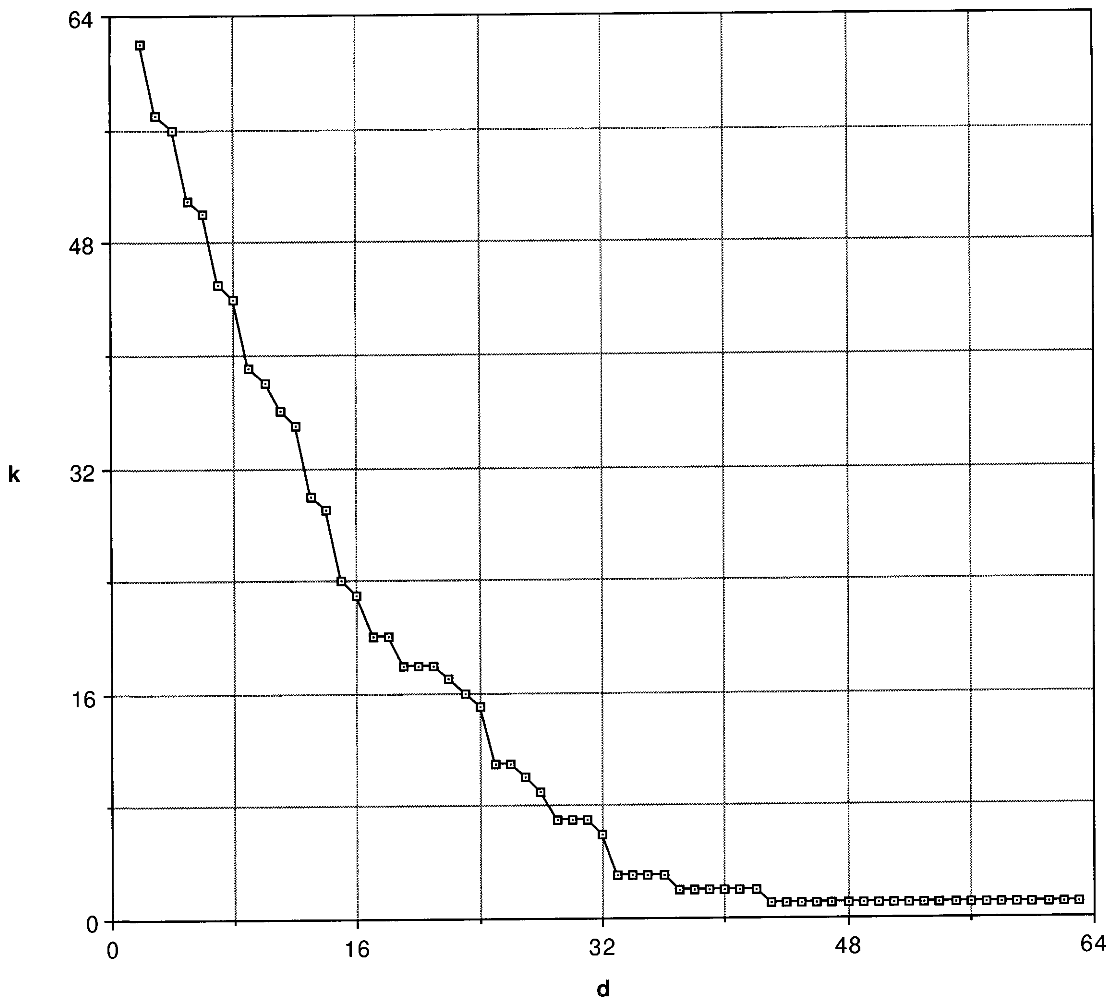


Figure 8.6: The best SSRS codes for $m = 6, n = 63, \nu = 1, q = 2$. (Binary BCH codes.)

To cite just one more example, we choose the primal code to be a $(127, 113, 15)$ RS code over $GF(2^7)$, and $\nu = 3$, with a subspace from the ordinary category $\mathbb{G}_0$ spanned by $\{1, \alpha, \alpha^2\}$. We see from the table in Appendix C that this yields a $(127, 98, 15)$ SSRS code over an 8-letter alphabet. Since $GF(2^7)$ does not contain any subfield except $GF(2)$, there is no corresponding GBCH code in this case. If we start with an ordinary RS code over $GF(8)$, the code length is limited within $n \leq 7$. We can also construct a shortened version of a generalized BCH code of length $n = 511$ over $GF(8)$ with designed minimum distance $d = 15$, but this code results in a much smaller dimension.

Using the algorithm developed in Chapter 6, we can find all self-conjugate subspaces for large m and ν. From the tables in Appendix C and D, we see "experimentally" that these subspaces are always exceptional, and give the best dimension.

For example, for $m = 12, \nu = 8$, we cannot exhaustively classify all 8-dimensional subspaces into categories. But we can find the self-conjugate subspaces. Indeed, $x^{12} - 1$ factors as

$$x^{12} - 1 = (x+1)^4(x^2+x+1)^4$$

over $GF(2)$. Thus, there are 3 distinct factors of degree 4, namely $(x^2+x+1)^2$, $(x+1)^2(x^2+x+1)$ and $(x+1)^4$. Using a normal basis from $GF(2^{12})$, bases for the corresponding self-conjugate subspaces are easily computed:

$$\begin{aligned}
\mathfrak{B}_0 &= \{1, \alpha, \alpha^2, \alpha^3\} \\
\mathfrak{B}_1 &= \{\alpha^{3640}, \alpha^{3185}, \alpha^{2275}, \alpha^{455}\} \\
\mathfrak{B}_2 &= \{\alpha^{2470}, \alpha^{845}, \alpha^{1690}, \alpha^{3380}\} \\
\mathfrak{B}_3 &= \{\alpha^{1638}, \alpha^{3276}, \alpha^{2457}, \alpha^{819}\},
\end{aligned}$$

where α is a primitive root of $GF(2^{12})$ satisfying $\alpha^{12} + \alpha^6 + \alpha + 1 = 0$. Basis $\mathfrak{B}_0$ is an ordinary subspace which gives the lower bound.

If we start with a primal $(4095, k_0, d_0)$ RS code with $J = \{1, 2, \ldots, k_0\}$, we obtain the SSRS codes illustrated in Figure 8.7. We see that there can be a significant dimension increase above the lower bound given by category $\mathbb{B}_0$. Note that these dimensions may not be optimal, since there might be a better choice for J and $\mathcal{S}$.

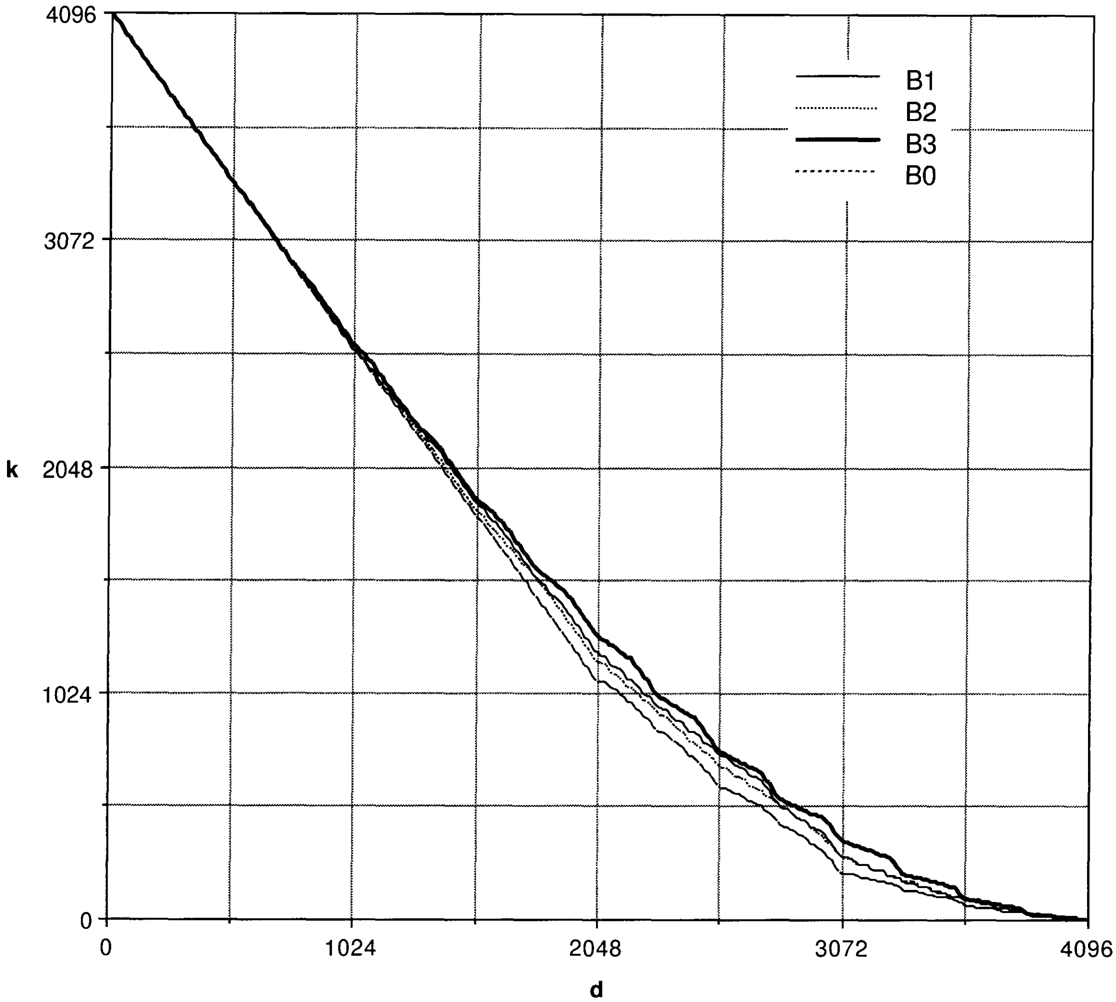


Figure 8.7: Some SSRS codes for $m = 12, n = 4095, \nu = 8, q = 256$.

In Appendix C, we assume that $J_S = 1$ and give tables for $K(\mathbb{C}(J), \mathcal{S})$ for $4 \leq m \leq 12$. For $m = 4, 5, 6, 7, 8$, all distinct subspaces are computed with respect to representative subspaces from distinct categories classified in Appendix A. We also include tables for $m \geq 9$ but these are limited to the range $1 \leq \mu \leq 3$. For large m, we choose representative subspaces from super-categories described in Section 5.4 listed in Appendix B.

In Appendix D, J is chosen to be $\{J_S, J_S + 1, \ldots, J_S + k_0 - 1\}$ and the dimension is maximized with respect to J_S. These tables give the dimension and the value of J_S for which the dimension is maximized.

8.2 Application to Concatenated Codes

SSRS codes may provide an attractive alternative to RS codes in certain practical applications. For example, SSRS codes seem to be suitable as outer codes in concatenated coding schemes with inner convolutional codes.

Concatenated coding systems using an inner convolutional code and an outer RS code, are one of the most efficient schemes, currently known, for the additive white Gaussian noise (AWGN) channels. A common concatenated system which is used for deep space communication is illustrated in Figure 8.8. In concatenated coding systems, a soft input Viterbi decoder for the convolutional code is essential for channels with low signal-to-noise ratio, while a full algebraic decoder for RS code is needed to correct burst-errors from the Viterbi decoder, since a typical error from the Viterbi decoder is a long burst. RS codes can correct such long bursts if an interleaver is introduced.

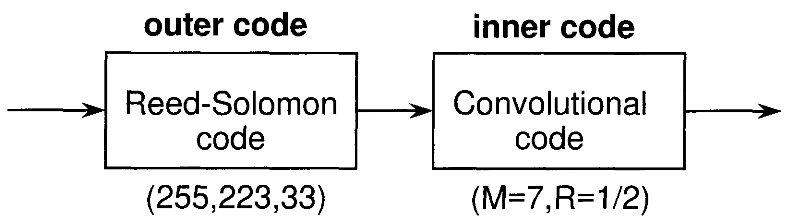


Figure 8.8: Concatenated coding scheme for NASA deep space communication.

However, for such systems, RS code may not be the best choice. Once we fix the constraint length of the inner convolutional code, we may obtain better performance by extending the length of the outer code while keeping the alphabet size fixed.

A famous concatenated coding system is the one used in deep space communication, depicted in Figure 8.8. The system consists of a convolutional code with rate 1/2, constraint length 7 and a NASA standard $(255, 223, 33)$ RS code over $GF(2^8)$. We now compare the performance of this system to ones obtained by replacing the outer RS code by two SSRS codes over the same alphabet size. For $m = 9$ and $\nu = 8$, there are SSRS codes over a 256-symbol alphabet with parameters $(511, 478, 30)$ and

$(511, 465, 42)$. If we replace the NASA standard RS code by these SSRS codes, we can obtain better performance.

Figure 8.9 gives the decoded bit error rate (BER) versus the bit signal-to-noise ratio E_b/N_0 for an AWGN channel. The symbol error rate is given in Figure 8.10. We see that the $(511, 478)$ SSRS code outperforms the standard $(255, 223)$ RS code in the concatenated system by 0.35 dB at $BER = 10^{-5}$.

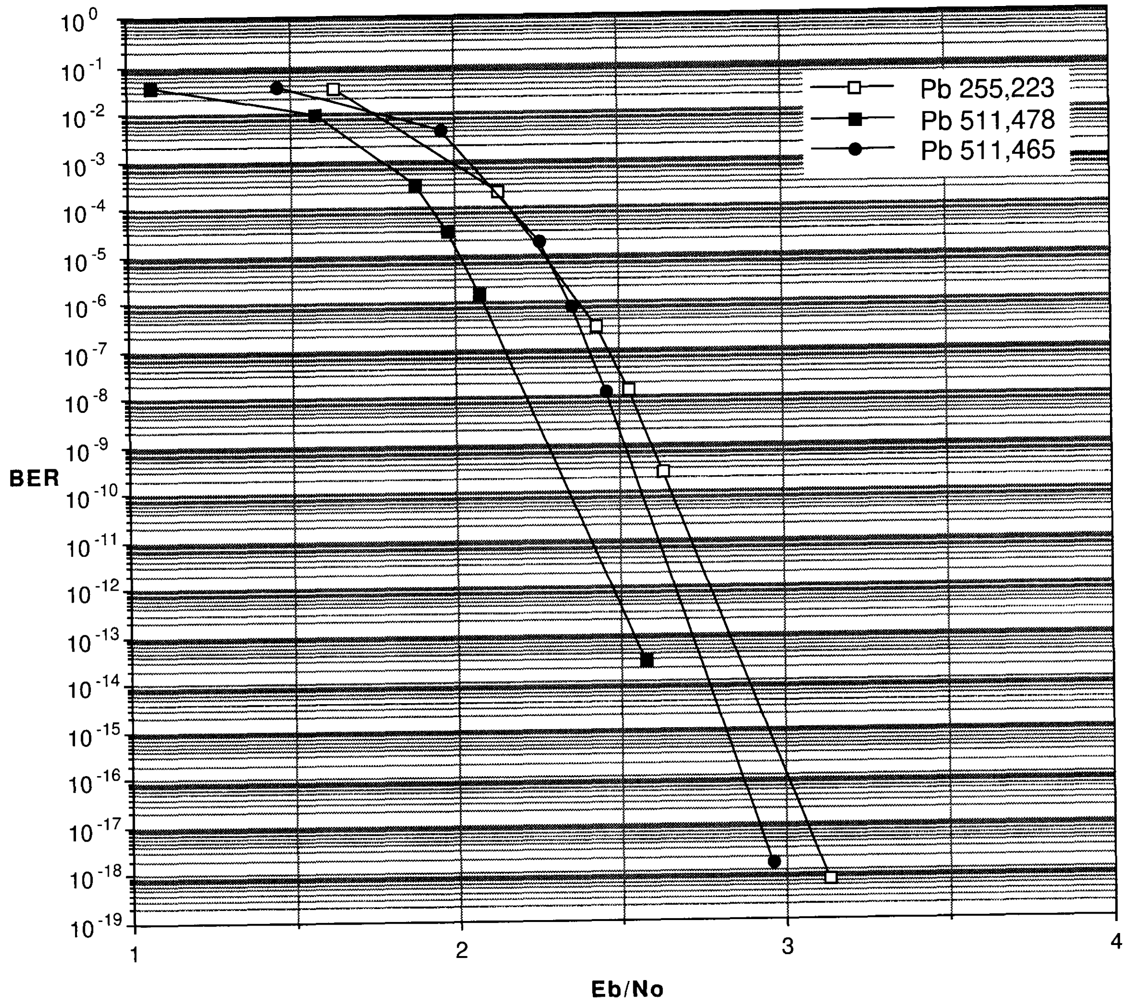


Figure 8.9: Bit error rate versus signal-to-noise ratio E_b/N_0 in a concatenated coding scheme with the $R = 1/2, M = 7$ NASA standard convolutional code. Two SSRS codes, and an RS code, are compared (fixed symbol size $q = 256$). (This figure is based on simulation results of Dr. Fabrizio Pollara at the Jet Propulsion Laboratory, Pasadena, CA.)

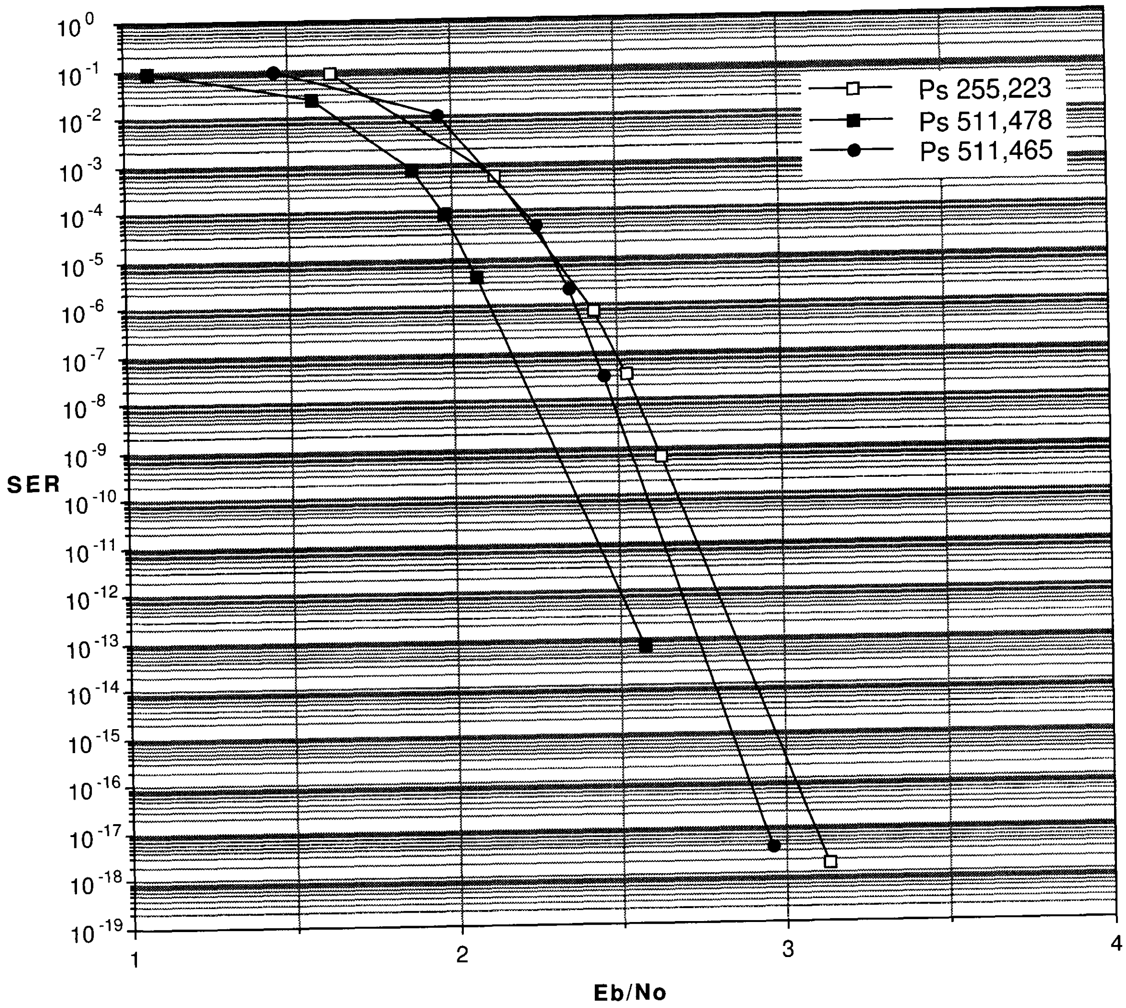


Figure 8.10: Symbol error rate versus signal-to-noise ratio E_b/N_0 in a concatenated coding scheme with the $R = 1/2, M = 7$ NASA standard convolutional code. Two SSRS codes, and an RS code, are compared (fixed symbol size $q = 256$). (This figure is based on simulation results of Dr. Fabrizio Pollara at the Jet Propulsion Laboratory, Pasadena, CA.)

Since SSRS enable us to extend the code length while keeping the alphabet size fixed, there could be SSRS codes which outperform RS code still further. Thus, an extensive search for the "best" SSRS outer code is indicated. In addition, the encoding complexity for these SSRS codes must also be considered.

8.3 Comparison to Algebraic-Geometry Codes

SSRS codes occupy a relatively uninhabited part of coding theory, in that they typically have large alphabet sizes, and code lengths much longer than RS codes with the same alphabet size. The only class of codes with parameters comparable to SSRS codes, that we are aware of, are the algebraic-geometry (AG) codes, and in this section we will attempt to compare the two classes.

First, we briefly review the general construction for AG codes [21][22]. However, it is not our purpose to go into detail, which would requires deep mathematics.

Let X be a non-singular projective curve of genus g over $K = \mathbb{F}_q$. Let $K(X)$ be the function field of X. For a divisor G on X we define the vector space

$$\mathcal{L}(G) = \{f \in K(X) \mid (f) + G \succ 0\} \cup \{0\}. \tag{8.1}$$

Assume $P_1, \dots, P_n$ are K-rational points on the curve X and let $D = P_1 + \cdots + P_n$. Assume G is a divisor on X with support consisting of only k-rational points and disjoint from D. For the range $2g - 2 < \deg(G) < n$, the corresponding AG code is defined as the linear code $\mathbb{C}_{\mathcal{L}}(D, G)$ over $\mathbb{F}_q$ whose codewords are the image of the linear map $\phi : L(G) \to \mathbb{F}_q^m$ defined by

$$\phi(f) = (f(P_1), \dots, f(P_n)). \tag{8.2}$$

This AG code $\mathbb{C}_{\mathcal{L}}(D, G)$ has parameters (n, k, d) with

$$n = \deg(D), \tag{8.3}$$

$$k = \deg(G) - g + 1, \tag{8.4}$$

$$d \geq d^* = n - \deg(G). \tag{8.5}$$

Thus, the dimension k of the AG code is characterized by the genus g of the underlining curve X, and the code length n of the AG code corresponds to the number of rational points on the curve X. Note that if $\deg(G)$ is not in the specified range, the dimension k may be higher than the value predicted by equation (8.4) [31].

These codes are sometimes referred as a "*dual*" AG codes. The original "*primal*" construction for AG codes is done by using *residues*, which requires further knowledge of algebraic geometry. Since the two constructions are essentially dual to each other, we omit discussion of the primal AG codes.

In order to obtain the best AG codes, one should find curves with as many rational points as possible. However, for a given genus g and symbol size q, the number of rational points n_R is upper-bounded by the famous Hasse-Weil bound [1] as follows:

$$n_R \leq q + 1 + \lfloor 2g\sqrt{q} \rfloor. \tag{8.6}$$

Only a few classes of curves which reach the Hasse-Weil bound are known. These include the well-known elliptic curves and Hermitian curves. For our comparison, we will first employ Hermitian curves, since its parameters are easy to compare directly to SSRS codes.

A Hermitian curve exists for $q = p^h$, where p is a prime and h is even. The Hermitian curve is equivalent to the curve

$$X : y^r + y = x^{r+1}, \tag{8.7}$$

where $r = h/2$. It is easy to check that X is non-singular and hence, the genus of X is $g = (r^2 - r)/2$. The codes from the Hermitian curve have been extensively investigated and the basis function for $\mathcal{L}(mO)$ is known, where O is a point at infinity.

For example, let $r = 4, p = 2$. With symbol alphabet size $q = 2^4 = 16$, there exist a Hermitian curve with $n = r^3 + 1 = 65$ rational points. Now we construct a one point algebraic-geometry code $\mathbb{C}_{\mathcal{L}}(D, mO)$, where O is the point at infinity, m is the order at O and the divisor D is the formal sum of all 64 rational points except for the point at infinity. The genus of the curve is $g = (4^2 - 4)/2 = 6$, so we can construct Hermitian $(64, k, 59 - k)$ codes in the range $10 < k < 64$ over the symbol alphabet $GF(16)$.

It is also known that, at high rates and low rates, the true minimum distance of AG codes can be higher than designed minimum distance. Fortunately, the true minimum distance of Hermitian codes has been completely found [31]. It is also known that, with the recent decoding algorithm of Feng and Rao [5], we can decode Hermitian codes up to the true minimum distance [14]. Therefore, for a fair comparison to SSRS codes, we use the true minimum distance of Hermitian codes from [31].

Note that for $m = 6$, the code length of SSRS codes is 63. In order to compare to Hermitian codes with the same code length, we extend the code length of SSRS codes to 64 with the general construction of extended codes. Thus, we can get a $(n+1, k, d+1)$ extended SSRS code from the original (n, k, d) SSRS code. The minimum distance is a *designed* minimum distance. However, since the true minimum distance of SSRS codes is not known, we will use the designed minimum distance for SSRS codes for comparison purposes.

Figure 8.11 shows the dimensions of Hermitian codes and SSRS codes versus the minimum distance for $n = 64$ and $q = 16$. We see that the two are very close and, even at rate $R = k/n = 1/2$, the performance of SSRS codes is close to that of AG codes.

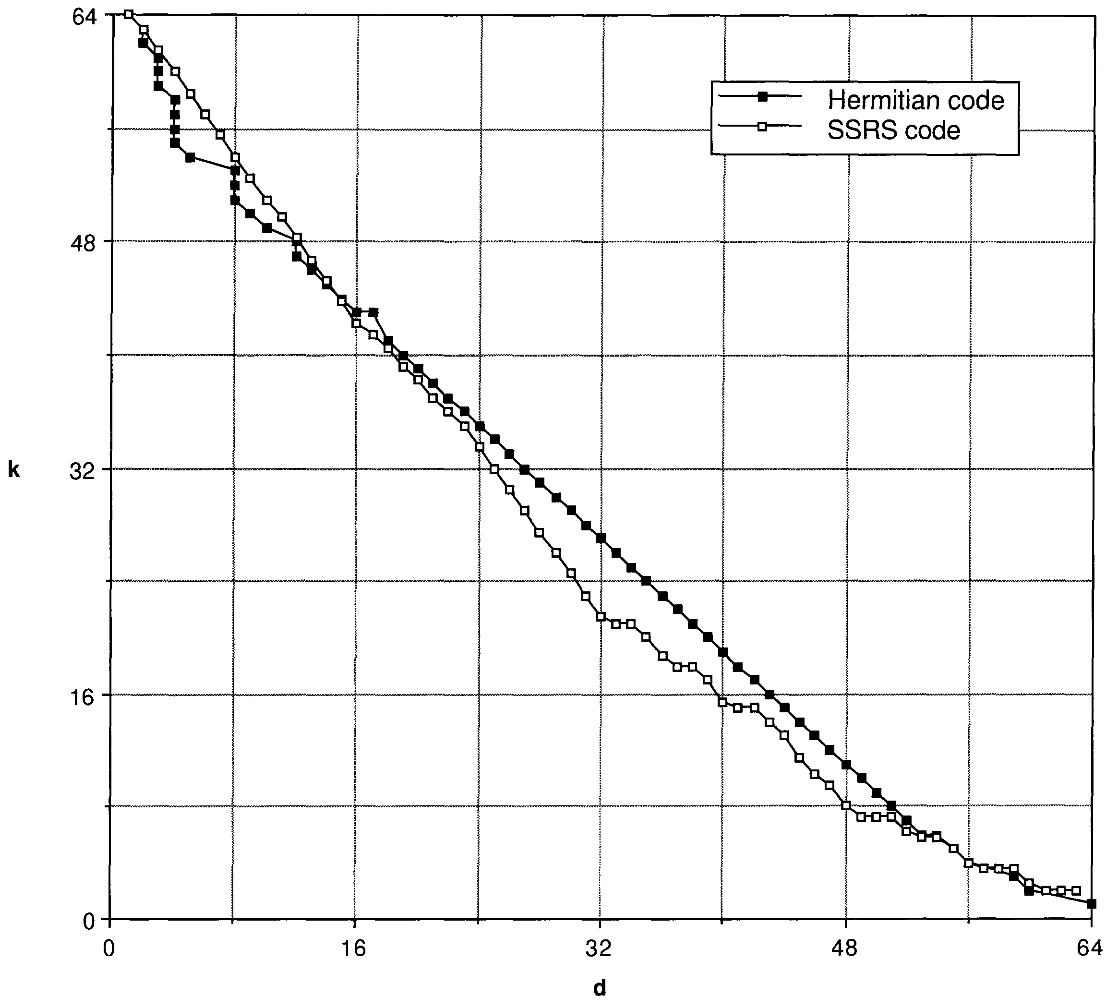


Figure 8.11: Dimension and minimum distance of SSRS codes and Hermitian codes for $q = 16, n = 64$.

Figure 8.12 shows a "zoomed" plot in the high rate area, which is important for many applications. We see that, for $d \leq 15$, SSRS codes are consistently superior to Hermitian codes.

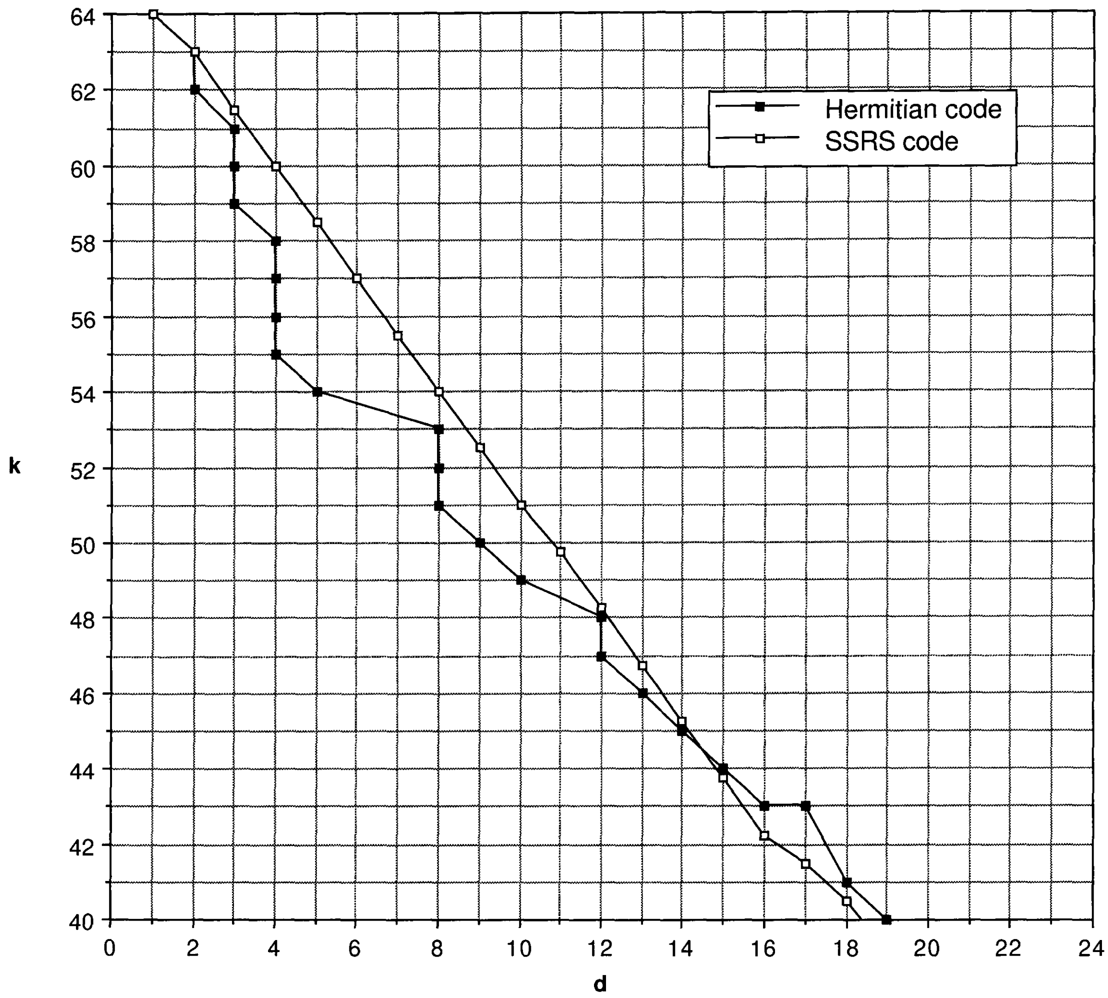


Figure 8.12: High rate Hermitian codes and SSRS codes for $q = 16, n = 64$.

The Hasse-Weil bound says, for $q = 16$, that $n = 64$ (or possibly $n = 65$) is the maximum achievable code length for AG codes from curves of genus 6. To go further, one needs a curve of genus $g > 6$ which also achieves the Hasse-Weil bound. Unfortunately, this is still a research topic and no such curves are known. In contrast, there is virtually no limitation on extending the code length for SSRS codes with a fixed symbol alphabet size. For example, for $q = 16$, if we start from a primal RS code with $m = 7$, SSRS codes of length 127 over $V(2^4)$ can easily be found.

We can also construct codes for $q = 64, n = 512$ and $q = 256, n = 4096$ from Hermitian curves. Figures 8.13 and 8.14 illustrate the performance curve as predicted by the Hasse-Weil bound. We also include the dimensions of SSRS codes with the same q and n.

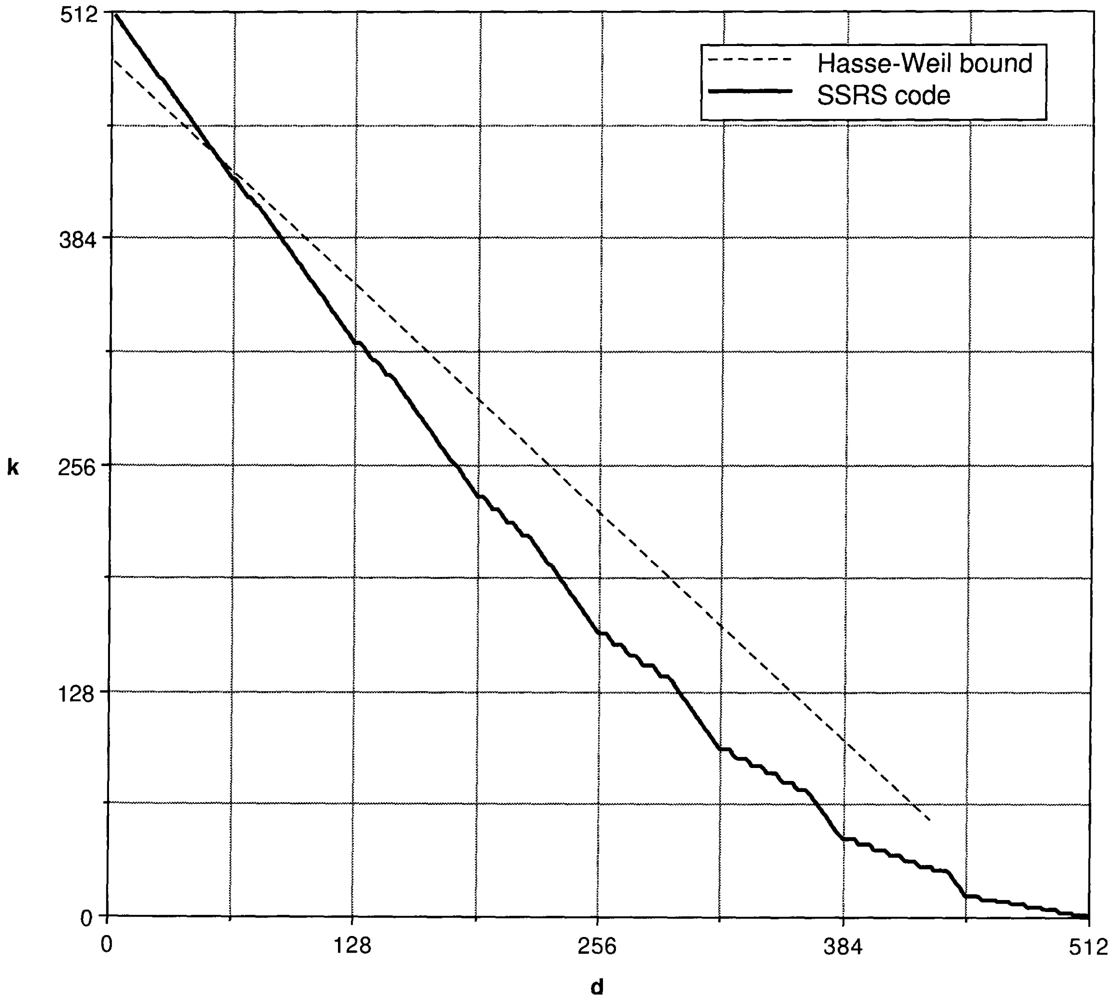


Figure 8.13: Hermitian codes and SSRS codes for $q = 64, n = 512$.

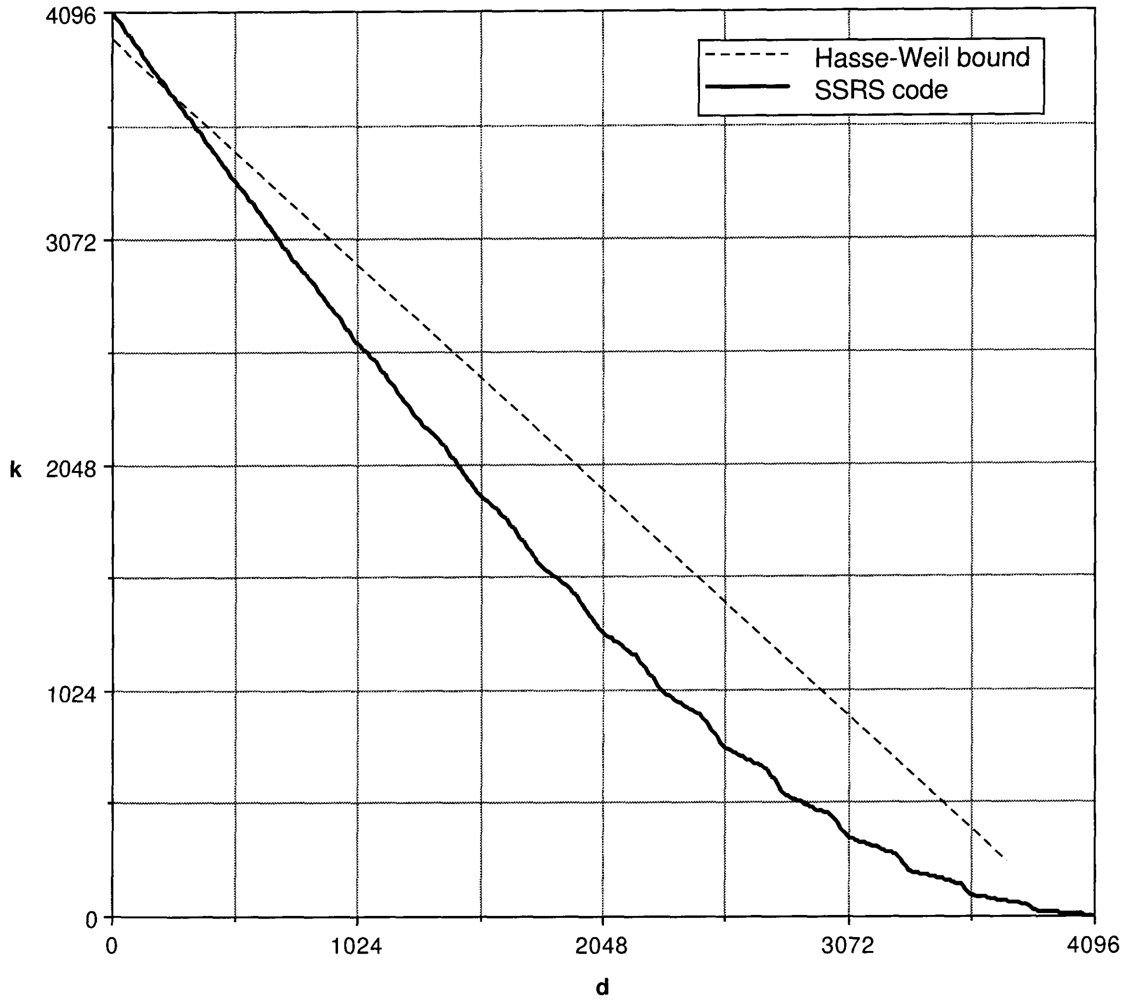


Figure 8.14: Hermitian codes and SSRS codes for $q = 256, n = 4096$.

As the alphabet size increases, Hermitian codes are superior to SSRS codes at most rates. However, only a few curves are known which achieve the Hasse-Weil bound, so there is no guarantee that one can always find optimal AG codes for a given alphabet size and code length. On the other hand, for given m and ν, SSRS codes always exist. Moreover, in the high rate area, SSRS codes are sometimes more attractive than the optimal AG codes.

We should also compare the decoding complexities of these codes. The most efficient decoding algorithm of AG codes, up to designed minimum distance, currently known, is the Feng-Rao algorithm [5] whose computational complexity is about $\mathcal{O}(n^3)$.

On the other hand, decoding of SSRS codes is quite easy and the well-developed decoding algorithms for RS codes can be applied directly. The decoding complexity of RS codes is at most $\mathcal{O}(n \log^2 n)$, but usually it is $\mathcal{O}(n \log n)$ [3].

In conclusion, it seems that, for a given value of n and q, high-rate SSRS codes are sometimes superior to AG codes, and if we consider not only the code parameters but also the decoding complexity of the codes, SSRS codes might be preferable, at least for some applications.

8.4 Remarks

In this section, we derive an infinite family of SSRS codes using the dimension formula Theorem 3.1.4, and make some remarks on a conjecture for quasi-MDS codes [21].

We take an RS code with $J = \{1, \dots, k_0\}$ and construct an SSRS code with $\mu = 1$, i.e., $\nu = m - 1$. For $\mu = 1$, the binary dimension of the SSRS code is exactly the lower bound of Corollary 3.4.1. We restrict the dimension of the primal code to be $k_0 \geq 2^{m-1} - 1$, which ensures that every cyclotomic coset except for the zero coset, is occupied. The binary dimension of such SSRS codes is given by

$$\begin{aligned} K(\mathbb{C}, \mathcal{S}) &= mk_0 - \sum_{\substack{j \in I_n \\ j \neq I_0}} d_j \\ &= mk_0 - (2^m - 2). \end{aligned} \tag{8.8}$$

For convenience, we want this binary dimension to be a multiple of $\nu = m - 1$. This means

$$mk_0 - 2^m + 2 \equiv 0 \pmod{m-1} \tag{8.9}$$

$$k_0 - 2^m + 2 \equiv 0 \pmod{m-1}. \tag{8.10}$$

In terms of the redundancy $r = 2^m - 1 - k_0$, this is

$$r \equiv 1 \pmod{m-1}. \tag{8.11}$$

This is valid for $r \leq 2^{m-1}$ since $k_0 \geq 2^{m-1} - 1$. Thus we have the family given in the table below.

r	k_0	k	d	g^*
1	$2^m - 2$	$2^m - 2$	2	0
m	$2^m - m - 1$	$2^m - m - 2$	$m + 1$	1
$2m - 1$	$2^m - 2m$	$2^m - 2m - 2$	$2m$	2
$3m - 2$	$2^m - 3m + 1$	$2^m - 3m - 2$	$3m - 1$	3
$4m - 3$	$2^m - 4m + 2$	$2^m - 4m - 2$	$4m - 2$	4
$5m - 4$	$2^m - 5m + 3$	$2^m - 5m - 2$	$5m - 3$	5

In the table above, g^* denotes the "*penalty*" which is paid to extend the code length. Penalty $g^* = 0$ corresponds to a MDS code. For example, for the family with $r = m$, we get the following sequence of codes.

m	q	(n, k, d)	n_R
3	4	$(7, 3, 4)$	9
4	8	$(15, 10, 5)$	14
5	16	$(31, 25, 6)$	21
6	32	$(63, 56, 7)$	44
7	64	$(127, 119, 8)$	81

Table 8.1: The sequence of SSRS codes of penalty 1.

We can see from the parameters, that these codes are quasi-MDS (QMDS) codes, which satisfy $d = n - k$. Similarly, for the family with $r = 2m - 1$, i.e., penalty $g^* = 2$, we get the following sequence of codes.

m	q	(n,k,d)	n_R
3	4	$(7,3,4)$	13
4	8	$(15,6,8)$	20
5	16	$(31,20,10)$	33
6	32	$(63,50,12)$	55
7	64	$(127,112,14)$	97

Table 8.2: The sequence of SSRS codes of penalty 2.

The same kind of discussion for $\mu \geq 2$ is also possible. However, the resulting codes may not have the maximum possible dimension.

In reference [21], several research problems are presented about the optimality of AG codes which meet the Hasse-Weil bound. Here is one of them.

8.4.1. Conjecture (Research Problem 10.5 in [21]). *Given an (n,k,d) code over the q symbol alphabet from an algebraic curve that achieves the Hasse-Weil bound, it is impossible to have a code which has parameters $(n,k,\hat{d})$ with $\hat{d} > d$.*

For $g = 1$, the Hasse-Weil bound says

$$n_R \leq q + 1 + \lfloor 2\sqrt{q} \rfloor \leq q + 1 + 2\sqrt{q}. \tag{8.12}$$

When $q = 2^{m-1}$, n_R in equation (8.12) does not exceed $2^m - 1$ as listed in Tables 8.1 and 8.2. Thus, the family of QMDS SSRS codes is certainly a counterexample to Conjecture 8.4.1.

Chapter 9 Conclusion

In this thesis, we discussed a new class of codes, called subspace subcodes of Reed-Solomon (SSRS) codes. We found a formula for the dimension of SSRS codes, and gave several examples which exhibited the importance of this class of codes.

From the dimension formula, we inferred that the dimension depends not only on the primal code itself but also on the subspace onto which the primal code is projected. We also found that *most* subspaces gave the lowest possible dimension, but that there exist a few *exceptional* subspaces which give higher dimension.

We then focused on the investigation of such exceptional subspaces. We gave a subspace classification using two criteria, scalar multiplication, and conjugation. We also exhibited a large class of exceptional subspaces by giving a one-to-one correspondence between cycle 1 categories and binary cyclic codes.

We discussed the encoding of SSRS codes, which was not quite straightforward. We gave a systematic encoding algorithm, which follows from a general discussion of shortened linear codes. The performance of SSRS codes in concatenated coding system was briefly covered. Finally, we discussed the performance of SSRS codes in terms of (n, k, d) and compared them to AG codes. We found that in some cases, high rate SSRS codes could be an attractive alternative, at least for some applications.

However, there is still room for further research. To conclude this thesis, we list some research problems not yet solved.

I. Give a full explanation of why most ν-dimensional subspaces are ordinary. Derive a formula for the number of ordinary subspaces for given m and ν.

II. There should be another criteria for the equivalence of categories, so that we will be able to classify categories into a small number of super-categories.

III. The relationship between the cycle c and the degree d of subspaces must be investigated further. This research might help us derive a formula for the number of categories.

IV. Prove or disprove the conjecture about the existence of a c-conjugate subspace in each category of cycle c.

V. Derive a tighter estimate than Jensen's estimate for the dimension for SSRS codes. This might yield asymptotic properties of SSRS codes.

VI. Systematic encoding should be studied further. Efficient means for finding information coordinate sets is needed. Investigate the condition under which SSRS codes are systematic in a symbol-wise manner.

VII. The most preferable class of SSRS codes for a given inner convolutional code in concatenated coding scheme, should be investigated.

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Appendix A Categories and Classes

In this appendix, we give tables for the categories and classes of ν-dimensional subspaces of $GF(2^m)$. The notations are defined in Chapter 5.

I. For each m, a primitive root α is defined as a root of polynomial $p(x) = 0$ which is displayed in the title of the section.

II. The basis which is listed for each category in the tables, is a basis for a representative subspace from the first class of each category. The notion $\{0, 5\}$ means that the representative subspace from this category is spanned by the basis $\mathfrak{B} = \{\alpha^0, \alpha^5\}$.

III. In class columns, the arrow $\rightarrow$ denotes conjugation. For example, in the table for $m = 4$ and $\nu = 2$, the category 0 consists of two classes 0 and 1. Class 1 is a conjugate of class 0 and vise versa. Thus, the "cycle" of this category is 2.

IV. The mark P means that the category contains a subspace which is spanned by a polynomial basis of the form $\{\beta, \beta^2, \beta^3, \ldots, \beta^\nu\}$, where $\mathrm{ord}(\beta) = m$. In this case, the category is always ordinary.

V. The mark O means that the category is ordinary, i.e., any subspace from the category achieves the lower bound of the dimension for corresponding SSRS codes, while the mark E means that the category is exceptional.

VI. The mark S means that the category contains a subfield $GF(2^\nu)$ of the field $GF(2^m)$. Thus, any SSRS codes corresponding to a subspace from this category is isometric to a generalized BCH code.

VII. For $\nu = 1, m-1$, there exists only one class, and thus one category, so we omit the tables for these cases.

A.1 $m = 4, p(x) = x^4 + x + 1$

A.1.1 $m = 4, \nu = 2$

$m = 4, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1$	$P\,O\,-$
1	$\{0,5\}$	2	$-\,E\,S$

A.2 $m = 5, p(x) = x^5 + x^3 + 1$

A.2.1 $m = 5, \nu = 2$

$m = 5, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1 \to 2 \to 4 \to 3$	$P\,O\,-$

A.2.2 $m = 5, \nu = 3$

$m = 5, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2\}$	$0 \to 1 \to 2 \to 4 \to 3$	$P\,O\,-$

A.3 $m = 6, p(x) = x^6 + x + 1$

A.3.1 $m = 6, \nu = 2$

$m = 6, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1 \to 3 \to 5 \to 9 \to 2$	$P\,O\,-$
1	$\{0,7\}$	$4 \to 7 \to 8$	$P\,O\,-$
2	$\{0,9\}$	6	$-\,E\,-$
3	$\{0,21\}$	10	$-\,E\,S$

A.3.2 $m = 6, \nu = 3$

$m=6,\nu=3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2\}$	$0\to 13\to 21\to 20\to 8\to 1$	$PO-$
1	$\{0,1,4\}$	$2\to 5$	$-O-$
2	$\{0,1,8\}$	$3\to 16\to 10$	$-E-$
3	$\{0,1,9\}$	$4\to 7\to 18\to 12\to 6\to 14$	$-O-$
4	$\{0,1,19\}$	$9\to 17\to 19$	$PO-$
5	$\{0,1,22\}$	$11\to 15$	$-E-$
6	$\{0,9,18\}$	22	$-ES$

A.3.3 $m=6,\nu=4$

$m=6,\nu=4$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2,3\}$	$0\to 1\to 3\to 7\to 9\to 5$	$PO-$
1	$\{0,1,2,9\}$	$2\to 4\to 6$	$PO-$
2	$\{0,1,4,15\}$	8	$-E-$
3	$\{0,1,8,21\}$	10	$-E-$

A.4 $m=7,p(x)=x^7+x^3+1$

A.4.1 $m=7,\nu=2$

$m=7,\nu=2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0\to 1\to 2\to 4\to 8\to 16\to 10$	$PO-$
1	$\{0,5\}$	$3\to 6\to 14\to 13\to 20\to 19\to 17$	$PO-$
2	$\{0,9\}$	$5\to 12\to 9\to 18\to 11\to 7\to 15$	$PO-$

A.4.2 $m=7,\nu=3$

$m=7,\nu=3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2\}$	$0\to 29\to 2\to 31\to 55\to 82\to 10$	$PO-$
1	$\{0,1,3\}$	1	$-E-$
2	$\{0,1,5\}$	$3\to 32\to 56\to 80\to 88\to 26\to 22$	$-O-$
3	$\{0,1,6\}$	$4\to 34\to 60\to 81\to 13\to 46\to 65$	$-O-$
			continued

$m = 7, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
4	$\{0,1,9\}$	$5 \to 36 \to 63 \to 85 \to 27 \to 37 \to 54$	$-O-$
5	$\{0,1,10\}$	$6 \to 38 \to 57 \to 78 \to 23 \to 43 \to 66$	$-O-$
6	$\{0,1,11\}$	$7 \to 40 \to 51 \to 75 \to 91 \to 19 \to 49$	$-O-$
7	$\{0,1,12\}$	$8 \to 42 \to 53 \to 18 \to 48 \to 17 \to 50$	$-O-$
8	$\{0,1,13\}$	$9 \to 44 \to 59 \to 11 \to 33 \to 58 \to 21$	$-O-$
9	$\{0,1,18\}$	$12 \to 35 \to 61 \to 77 \to 71 \to 87 \to 86$	$PO-$
10	$\{0,1,20\}$	$14 \to 39 \to 64 \to 83 \to 74 \to 68 \to 90$	$PO-$
11	$\{0,1,21\}$	$15 \to 41 \to 62 \to 84 \to 70 \to 76 \to 73$	$-O-$
12	$\{0,1,22\}$	$16 \to 30 \to 52 \to 79 \to 72 \to 92 \to 24$	$-O-$
13	$\{0,1,33\}$	$20 \to 47 \to 28 \to 45 \to 67 \to 69 \to 25$	$-O-$
14	$\{0,9,26\}$	89	$-E-$

A.4.3 $m = 7, \nu = 4$

$m = 7, \nu = 4$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2,3\}$	$0 \to 14 \to 13 \to 16 \to 17 \to 22 \to 19$	$PO-$
1	$\{0,1,2,4\}$	1	$-E-$
2	$\{0,1,2,5\}$	$2 \to 25 \to 30 \to 58 \to 77 \to 9 \to 7$	$-O-$
3	$\{0,1,2,10\}$	$3 \to 73 \to 31 \to 45 \to 52 \to 57 \to 36$	$-O-$
4	$\{0,1,2,11\}$	$4 \to 20 \to 15 \to 18 \to 21 \to 23 \to 24$	$-O-$
5	$\{0,1,2,12\}$	$5 \to 92 \to 27 \to 81 \to 54 \to 8 \to 46$	$-O-$
6	$\{0,1,2,13\}$	$6 \to 75 \to 28 \to 64 \to 37 \to 86 \to 43$	$-O-$
7	$\{0,1,2,20\}$	$10 \to 69 \to 29 \to 33 \to 74 \to 44 \to 59$	$-O-$
8	$\{0,1,2,21\}$	$11 \to 62 \to 32 \to 38 \to 70 \to 88 \to 71$	$-O-$
9	$\{0,1,2,22\}$	$12 \to 39 \to 26 \to 61 \to 90 \to 87 \to 42$	$-O-$
10	$\{0,1,5,10\}$	$34 \to 66 \to 65 \to 80 \to 67 \to 53 \to 50$	$PO-$
11	$\{0,1,5,11\}$	$35 \to 49 \to 79 \to 48 \to 85 \to 60 \to 78$	$-O-$
12	$\{0,1,5,24\}$	$40 \to 47 \to 68 \to 56 \to 83 \to 72 \to 76$	$PO-$
13	$\{0,1,5,43\}$	$41 \to 84 \to 91 \to 51 \to 63 \to 82 \to 89$	$-O-$
14	$\{0,1,9,18\}$	55	$-E-$

A.5 $m = 8, p(x) = x^8 + x^4 + x^3 + x^2 + 1$

A.5.1 $m = 8, \nu = 2$

$m = 8, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1 \to 3 \to 7 \to 14 \to 2 \to 5 \to 10$	$P\,O\,-$
1	$\{0,5\}$	$4 \to 9 \to 17 \to 28 \to 41 \to 40 \to 39 \to 38$	$P\,O\,-$
2	$\{0,7\}$	$6 \to 12 \to 21 \to 36$	$P\,O\,-$
3	$\{0,9\}$	$8 \to 13 \to 23 \to 37$	$P\,O\,-$
4	$\{0,13\}$	$11 \to 19 \to 34 \to 20 \to 32 \to 35 \to 27 \to 30$	$P\,O\,-$
5	$\{0,17\}$	$15 \to 24$	$-\,E\,-$
6	$\{0,19\}$	$16 \to 26 \to 25 \to 22 \to 33 \to 29 \to 18 \to 31$	$P\,O\,-$
7	$\{0,85\}$	42	$-\,E\,S$

A.5.2 $m = 8, \nu = 3$

$m = 8, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2\}$	$0 \to 61 \to 160 \to 277 \to 150 \to 115 \to 227 \to 11$	$P\,O\,-$
1	$\{0,1,3\}$	$1 \to 63 \to 164 \to 7 \to 75 \to 146 \to 202 \to 10$	$-\,O\,-$
2	$\{0,1,4\}$	$2 \to 65 \to 166 \to 20 \to 90 \to 154 \to 36 \to 64$	$-\,O\,-$
3	$\{0,1,5\}$	$3 \to 67 \to 169 \to 135 \to 244 \to 138 \to 4 \to 69$	$-\,O\,-$
4	$\{0,1,7\}$	$5 \to 71 \to 54 \to 112 \to 194 \to 12 \to 80 \to 121$	$-\,O\,-$
5	$\{0,1,8\}$	$6 \to 73 \to 123 \to 235 \to 210 \to 24 \to 76 \to 174$	$-\,O\,-$
6	$\{0,1,10\}$	$8 \to 77 \to 175 \to 139 \to 230 \to 122 \to 39 \to 68$	$-\,O\,-$
7	$\{0,1,11\}$	$9 \to 78 \to 178 \to 47 \to 103 \to 147 \to 216 \to 198$	$P\,O\,-$
8	$\{0,1,16\}$	$13 \to 74 \to 173 \to 278$	$P\,O\,-$
9	$\{0,1,17\}$	$14 \to 82 \to 159 \to 240 \to 32 \to 31 \to 108 \to 195$	$-\,O\,-$
10	$\{0,1,18\}$	$15 \to 62 \to 162 \to 280$	$-\,O\,-$
11	$\{0,1,19\}$	$16 \to 83 \to 26 \to 99 \to 197 \to 129 \to 243 \to 155$	$-\,O\,-$
12	$\{0,1,20\}$	$17 \to 84 \to 190 \to 290 \to 369 \to 130 \to 214 \to 328$	$-\,O\,-$
13	$\{0,1,23\}$	$18 \to 87 \to 168 \to 283 \to 144 \to 118 \to 199 \to 55$	$-\,O\,-$
14	$\{0,1,27\}$	$19 \to 88 \to 172 \to 205 \to 151 \to 148 \to 251 \to 50$	$-\,O\,-$
15	$\{0,1,29\}$	$21 \to 92 \to 163 \to 127 \to 238 \to 140 \to 27 \to 101$	$-\,O\,-$
16	$\{0,1,30\}$	$22 \to 94 \to 161 \to 279 \to 366 \to 132 \to 245 \to 341$	$-\,O\,-$
17	$\{0,1,31\}$	$23 \to 95 \to 48 \to 91 \to 187 \to 149 \to 225 \to 119$	$-\,O\,-$
18	$\{0,1,37\}$	$25 \to 34 \to 85 \to 184 \to 295 \to 143 \to 156 \to 246$	$-\,O\,-$
19	$\{0,1,40\}$	$28 \to 102 \to 191 \to 288 \to 356 \to 131 \to 247 \to 298$	$-\,O\,-$
20	$\{0,1,41\}$	$29 \to 93 \to 192 \to 289 \to 42 \to 113 \to 165 \to 281$	$-\,E\,-$
21	$\{0,1,44\}$	$30 \to 105 \to 193 \to 291 \to 372 \to 137 \to 234 \to 338$	$-\,O\,-$
			continued

$m = 8, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
22	$\{0,1,53\}$	$33 \to 79 \to 183 \to 294 \to 368 \to 142 \to 228 \to 334$	$-O-$
23	$\{0,1,55\}$	$35 \to 110 \to 116 \to 229 \to 335 \to 37 \to 66 \to 167$	$-O-$
24	$\{0,1,59\}$	$38 \to 96 \to 188 \to 221 \to 333 \to 125 \to 237 \to 336$	$-O-$
25	$\{0,1,62\}$	$40 \to 111 \to 179 \to 292 \to 373 \to 134 \to 248 \to 342$	$-O-$
26	$\{0,1,65\}$	$41 \to 97 \to 53 \to 70 \to 170 \to 117 \to 231 \to 126$	$-O-$
27	$\{0,1,74\}$	$43 \to 114 \to 176 \to 286 \to 355 \to 133 \to 242 \to 307$	$-O-$
28	$\{0,1,77\}$	$44 \to 100 \to 180 \to 284 \to 367 \to 136 \to 232 \to 337$	$PO-$
29	$\{0,1,78\}$	$45 \to 106 \to 182 \to 285 \to 371 \to 157 \to 241 \to 343$	$-O-$
30	$\{0,1,79\}$	$46 \to 107 \to 185 \to 211 \to 320 \to 128 \to 209 \to 332$	$-O-$
31	$\{0,1,86\}$	$49 \to 104 \to 189 \to 257 \to 352 \to 145 \to 249 \to 254$	$-E-$
32	$\{0,1,89\}$	$51 \to 109 \to 52 \to 89 \to 177 \to 120 \to 233 \to 141$	$-O-$
33	$\{0,1,118\}$	$56 \to 98 \to 196 \to 282 \to 370 \to 152 \to 250 \to 339$	$-O-$
34	$\{0,1,119\}$	$57 \to 60 \to 86 \to 181 \to 293 \to 124 \to 158 \to 236$	$-O-$
35	$\{0,1,135\}$	$58 \to 72 \to 171 \to 287$	$-O-$
36	$\{0,1,143\}$	$59 \to 81 \to 186 \to 296 \to 256 \to 153 \to 239 \to 340$	$-O-$
37	$\{0,5,14\}$	$200 \to 201 \to 303 \to 255 \to 306 \to 272 \to 305 \to 270$	$-O-$
38	$\{0,5,18\}$	$203 \to 319 \to 376 \to 314 \to 315 \to 345 \to 217 \to 309$	$-O-$
39	$\{0,5,19\}$	$204 \to 321 \to 377 \to 264 \to 212 \to 323 \to 379 \to 275$	$-O-$
40	$\{0,5,31\}$	$206 \to 325 \to 213 \to 265 \to 354 \to 215 \to 331 \to 258$	$-O-$
41	$\{0,5,43\}$	$207 \to 329 \to 302 \to 223 \to 324 \to 378 \to 312 \to 365$	$-O-$
42	$\{0,5,44\}$	$208 \to 330 \to 346 \to 271 \to 316 \to 220 \to 327 \to 268$	$-O-$
43	$\{0,5,79\}$	$218 \to 326 \to 313 \to 226 \to 322 \to 375 \to 308 \to 363$	$-O-$
44	$\{0,5,80\}$	$219 \to 274 \to 299 \to 359$	$-O-$
45	$\{0,5,93\}$	$222 \to 253$	$-E-$
46	$\{0,5,123\}$	$224 \to 297 \to 357 \to 276 \to 350 \to 311 \to 362 \to 263$	$-O-$
47	$\{0,7,14\}$	$252 \to 349 \to 380 \to 266$	$PO-$
48	$\{0,7,30\}$	$259 \to 353 \to 301 \to 361 \to 260 \to 351 \to 310 \to 358$	$PO-$
49	$\{0,7,37\}$	$261 \to 262 \to 317 \to 360 \to 267 \to 269 \to 318 \to 344$	$-O-$
50	$\{0,7,85\}$	$273 \to 347 \to 304 \to 364$	$-E-$
51	$\{0,9,26\}$	$300 \to 348$	$-E-$
52	$\{0,17,34\}$	374	$-E-$

A.5.3 $m = 8, \nu = 4$

$m=8,\nu=4$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2,3\}$	$0\to515\to757\to181\to651\to705\to778\to235$	$P\,O\,-$
1	$\{0,1,2,4\}$	$1\to3\to517\to87\to271\to669\to266\to4$	$-\,O\,-$
2	$\{0,1,2,5\}$	$2\to516\to731\to134\to535\to397\to110\to255$	$-\,O\,-$
3	$\{0,1,2,8\}$	$5\to518\to346\to192\to555\to66\to556\to65$	$-\,E\,-$
4	$\{0,1,2,9\}$	$6\to477\to495\to337\to236\to45\to544\to267$	$-\,O\,-$
5	$\{0,1,2,10\}$	$7\to520\to750\to717\to237\to31\to485\to90$	$-\,O\,-$
6	$\{0,1,2,11\}$	$8\to203\to438\to286\to614\to707\to148\to217$	$-\,O\,-$
7	$\{0,1,2,12\}$	$9\to30\to541\to315\to190\to655\to753\to114$	$-\,E\,-$
8	$\{0,1,2,16\}$	$10\to41\to545\to146\to198\to56\to547\to160$	$-\,O\,-$
9	$\{0,1,2,17\}$	$11\to519\to436\to161\to290\to278\to442\to254$	$-\,O\,-$
10	$\{0,1,2,18\}$	$12\to425\to611\to250\to33\to78\to570\to180$	$-\,O\,-$
11	$\{0,1,2,19\}$	$13\to471\to60\to553\to69\to389\to584\to259$	$-\,O\,-$
12	$\{0,1,2,20\}$	$14\to522\to209\to660\to482\to473\to593\to200$	$-\,E\,-$
13	$\{0,1,2,29\}$	$15\to525\to277\to388\to561\to59\to304\to265$	$-\,O\,-$
14	$\{0,1,2,30\}$	$16\to527\to141\to437\to368\to578\to112\to253$	$-\,E\,-$
15	$\{0,1,2,31\}$	$17\to528\to106\to591\to739\to708\to785\to268$	$-\,O\,-$
16	$\{0,1,2,38\}$	$18\to22\to523\to711\to746\to710\to338\to256$	$-\,O\,-$
17	$\{0,1,2,40\}$	$19\to126\to206\to85\to587\to310\to679\to257$	$-\,O\,-$
18	$\{0,1,2,41\}$	$20\to526\to758\to496\to297\to644\to411\to264$	$-\,E\,-$
19	$\{0,1,2,54\}$	$21\to521\to718\to743\to736\to449\to432\to258$	$-\,O\,-$
20	$\{0,1,2,57\}$	$23\to512\to72\to172\to640\to385\to617\to260$	$-\,O\,-$
21	$\{0,1,2,62\}$	$24\to352\to202\to609\to755\to706\to481\to261$	$-\,O\,-$
22	$\{0,1,2,78\}$	$25\to370\to693\to765\to744\to709\to751\to262$	$-\,E\,-$
23	$\{0,1,2,80\}$	$26\to356\to690\to771\to405\to232\to580\to263$	$-\,E\,-$
24	$\{0,1,2,81\}$	$27\to524\to73\to573\to113\to223\to96\to270$	$-\,O\,-$
25	$\{0,1,2,97\}$	$28\to464\to689\to282\to463\to374\to153\to269$	$-\,E\,-$
26	$\{0,1,3,4\}$	$29\to540\to716\to139\to565\to82\to152\to247$	$-\,O\,-$
27	$\{0,1,3,7\}$	$32\to532\to188\to135\to289\to285\to249\to37$	$-\,O\,-$
28	$\{0,1,3,9\}$	$34\to543\to395\to184\to251\to50\to446\to64$	$-\,O\,-$
29	$\{0,1,3,10\}$	$35\to240\to49\to194\to654\to193\to506\to199$	$-\,O\,-$
30	$\{0,1,3,11\}$	$36\to418\to381\to197\to610\to121\to605\to89$	$-\,O\,-$
31	$\{0,1,3,15\}$	$38\to417\to597\to137$	$P\,O\,-$
32	$\{0,1,3,16\}$	$39\to542\to766\to182$	$-\,E\,-$
33	$\{0,1,3,17\}$	$40\to484\to458\to187\to426\to312\to175\to159$	$-\,E\,-$
34	$\{0,1,3,20\}$	$42\to546\to178\to179\to349\to685\to348\to244$	$-\,O\,-$
			continued

$m = 8, \nu = 4$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
35	$\{0,1,3,23\}$	$43 \to 548 \to 157 \to 185 \to 508 \to 401 \to 554 \to 63$	$P\,O\,-$
36	$\{0,1,3,30\}$	$44 \to 552 \to 756 \to 183 \to 652 \to 412 \to 676 \to 248$	$-\,O\,-$
37	$\{0,1,3,39\}$	$46 \to 444 \to 398 \to 189 \to 653 \to 342 \to 632 \to 238$	$-\,O\,-$
38	$\{0,1,3,41\}$	$47 \to 551 \to 767 \to 195 \to 353 \to 683 \to 768 \to 239$	$-\,E\,-$
39	$\{0,1,3,44\}$	$48 \to 550 \to 748 \to 111 \to 599 \to 98 \to 415 \to 246$	$-\,O\,-$
40	$\{0,1,3,57\}$	$51 \to 127 \to 434 \to 100 \to 58 \to 568 \to 92 \to 241$	$-\,E\,-$
41	$\{0,1,3,59\}$	$52 \to 407 \to 563 \to 61 \to 234 \to 451 \to 391 \to 242$	$-\,O\,-$
42	$\{0,1,3,61\}$	$53 \to 422 \to 201 \to 186 \to 165 \to 154 \to 626 \to 243$	$-\,E\,-$
43	$\{0,1,3,78\}$	$54 \to 549 \to 480 \to 191 \to 204 \to 659 \to 317 \to 252$	$-\,O\,-$
44	$\{0,1,3,79\}$	$55 \to 358 \to 319 \to 196 \to 656 \to 727 \to 118 \to 245$	$-\,O\,-$
45	$\{0,1,4,5\}$	$57 \to 567 \to 763 \to 276 \to 671 \to 729 \to 109 \to 564$	$-\,E\,-$
46	$\{0,1,4,10\}$	$62 \to 569 \to 325 \to 357 \to 445 \to 697 \to 327 \to 529$	$-\,E\,-$
47	$\{0,1,4,16\}$	$67 \to 205$	$-\,E\,-$
48	$\{0,1,4,17\}$	$68 \to 571 \to 452 \to 369 \to 472 \to 447 \to 314 \to 307$	$-\,O\,-$
49	$\{0,1,4,19\}$	$70 \to 494 \to 361 \to 292$	$-\,E\,-$
50	$\{0,1,4,20\}$	$71 \to 572 \to 167 \to 393 \to 133 \to 603 \to 102 \to 372$	$-\,O\,-$
51	$\{0,1,4,31\}$	$74 \to 575 \to 430 \to 119 \to 602 \to 86 \to 377 \to 560$	$-\,O\,-$
52	$\{0,1,4,40\}$	$75 \to 431 \to 376 \to 387 \to 174 \to 592 \to 211 \to 557$	$-\,O\,-$
53	$\{0,1,4,41\}$	$76 \to 574 \to 341 \to 384 \to 443 \to 704 \to 460 \to 562$	$-\,E\,-$
54	$\{0,1,4,44\}$	$77 \to 328 \to 537 \to 390 \to 694 \to 220 \to 221 \to 558$	$-\,O\,-$
55	$\{0,1,4,55\}$	$79 \to 576 \to 712 \to 394 \to 634 \to 487 \to 499 \to 359$	$-\,E\,-$
56	$\{0,1,4,57\}$	$80 \to 142 \to 623 \to 383 \to 382 \to 633 \to 283 \to 559$	$-\,O\,-$
57	$\{0,1,4,61\}$	$81 \to 275 \to 208 \to 386 \to 151 \to 624 \to 498 \to 566$	$-\,O\,-$
58	$\{0,1,4,79\}$	$83 \to 577 \to 421 \to 392 \to 222 \to 664 \to 467 \to 459$	$-\,E\,-$
59	$\{0,1,5,6\}$	$84 \to 586 \to 88 \to 225 \to 666 \to 740 \to 130 \to 607$	$-\,O\,-$
60	$\{0,1,5,16\}$	$91 \to 136 \to 210 \to 462 \to 302 \to 648 \to 115 \to 500$	$-\,E\,-$
61	$\{0,1,5,18\}$	$93 \to 530 \to 231 \to 350 \to 330 \to 343 \to 117 \to 228$	$-\,O\,-$
62	$\{0,1,5,19\}$	$94 \to 486 \to 169 \to 641 \to 723 \to 747 \to 128 \to 360$	$-\,O\,-$
63	$\{0,1,5,20\}$	$95 \to 589 \to 737 \to 726 \to 779 \to 457 \to 120 \to 604$	$-\,O\,-$
64	$\{0,1,5,32\}$	$97 \to 367 \to 294 \to 158 \to 638 \to 501 \to 116 \to 598$	$-\,O\,-$
65	$\{0,1,5,39\}$	$99 \to 163 \to 396 \to 439 \to 318 \to 379 \to 122 \to 600$	$-\,O\,-$
66	$\{0,1,5,54\}$	$101 \to 590 \to 311 \to 680 \to 754 \to 752 \to 131 \to 373$	$P\,O\,-$
67	$\{0,1,5,59\}$	$103 \to 509 \to 702 \to 489 \to 613 \to 738 \to 124 \to 601$	$-\,O\,-$
68	$\{0,1,5,62\}$	$104 \to 409 \to 699 \to 745 \to 741 \to 233 \to 132 \to 455$	$-\,E\,-$
69	$\{0,1,5,74\}$	$105 \to 588 \to 488 \to 364 \to 465 \to 637 \to 129 \to 316$	$-\,O\,-$
70	$\{0,1,5,86\}$	$107 \to 433 \to 448 \to 687 \to 335 \to 682 \to 123 \to 606$	$-\,E\,-$
			continued

$m = 8, \nu = 4$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
71	$\{0,1,5,96\}$	$108 \to 274 \to 670 \to 719 \to 145 \to 628 \to 125 \to 608$	$-O-$
72	$\{0,1,7,15\}$	$138 \to 621 \to 478 \to 149 \to 629 \to 280 \to 305 \to 215$	$-O-$
73	$\{0,1,7,18\}$	$140 \to 279$	$-E-$
74	$\{0,1,7,23\}$	$143 \to 492 \to 303 \to 650 \to 288 \to 273 \to 218 \to 155$	$-O-$
75	$\{0,1,7,29\}$	$144 \to 627 \to 177 \to 642 \to 735 \to 287 \to 450 \to 424$	$-E-$
76	$\{0,1,7,41\}$	$147 \to 622 \to 503 \to 334 \to 470 \to 281 \to 672 \to 732$	$-E-$
77	$\{0,1,7,53\}$	$150 \to 272 \to 378 \to 323$	$-E-$
78	$\{0,1,7,79\}$	$156 \to 625 \to 456 \to 703 \to 777 \to 284 \to 365 \to 668$	$-O-$
79	$\{0,1,8,18\}$	$162 \to 404 \to 229 \to 667$	$-O-$
80	$\{0,1,8,20\}$	$164 \to 321 \to 531 \to 759$	$-E-$
81	$\{0,1,8,30\}$	$166 \to 375 \to 616 \to 725 \to 722 \to 429 \to 344 \to 380$	$-E-$
82	$\{0,1,8,37\}$	$168 \to 491 \to 615 \to 772 \to 720 \to 336 \to 657 \to 441$	$P\,O-$
83	$\{0,1,8,39\}$	$170 \to 639 \to 402 \to 585 \to 764 \to 427 \to 658 \to 715$	$-O-$
84	$\{0,1,8,44\}$	$171 \to 643 \to 734 \to 354 \to 684 \to 428 \to 410 \to 212$	$-O-$
85	$\{0,1,8,57\}$	$173 \to 423 \to 630 \to 400$	$P\,O-$
86	$\{0,1,8,81\}$	$176 \to 362 \to 691 \to 399 \to 696 \to 347 \to 226 \to 662$	$-O-$
87	$\{0,1,10,30\}$	$207 \to 324 \to 538 \to 749 \to 309 \to 326 \to 371 \to 595$	$-O-$
88	$\{0,1,10,62\}$	$213 \to 631 \to 773 \to 728 \to 413 \to 635 \to 504 \to 596$	$-O-$
89	$\{0,1,10,74\}$	$214 \to 661 \to 468 \to 581 \to 770 \to 227 \to 490 \to 594$	$-O-$
90	$\{0,1,10,86\}$	$216 \to 513 \to 674 \to 230 \to 665 \to 733 \to 505 \to 419$	$-E-$
91	$\{0,1,11,17\}$	$219 \to 663 \to 416 \to 420 \to 483 \to 474 \to 355 \to 673$	$-O-$
92	$\{0,1,11,29\}$	$224 \to 612 \to 414 \to 475 \to 340 \to 681 \to 313 \to 619$	$-E-$
93	$\{0,1,16,20\}$	$291 \to 363 \to 692 \to 713 \to 299 \to 507 \to 408 \to 579$	$-O-$
94	$\{0,1,16,29\}$	$293 \to 345 \to 582 \to 742 \to 296 \to 649 \to 406 \to 675$	$-O-$
95	$\{0,1,16,39\}$	$295 \to 647 \to 403 \to 695 \to 301 \to 645 \to 775 \to 730$	$-O-$
96	$\{0,1,16,62\}$	$298 \to 331 \to 534 \to 760$	$-E-$
97	$\{0,1,16,74\}$	$300 \to 646 \to 774 \to 788$	$-O-$
98	$\{0,1,17,27\}$	$306 \to 678 \to 721 \to 724 \to 479 \to 476 \to 333 \to 514$	$-O-$
99	$\{0,1,17,30\}$	$308 \to 366 \to 583 \to 339 \to 351 \to 440 \to 700 \to 453$	$-O-$
100	$\{0,1,18,31\}$	$320 \to 536 \to 511 \to 618 \to 322 \to 493 \to 688 \to 510$	$-E-$
101	$\{0,1,18,62\}$	$329 \to 539 \to 761 \to 784 \to 332 \to 533 \to 762 \to 786$	$-O-$
102	$\{0,1,37,57\}$	$435 \to 466 \to 686 \to 497 \to 620 \to 714 \to 469 \to 701$	$-O-$
103	$\{0,1,40,77\}$	$454 \to 677 \to 776 \to 789$	$-E-$
104	$\{0,1,41,72\}$	$461 \to 698 \to 769 \to 787$	$-E-$
105	$\{0,1,59,78\}$	$502 \to 636$	$-E-$
106	$\{0,5,14,31\}$	$780 \to 782$	$-E-$
			continued

$m=8,\nu=4$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
107	$\{0,5,14,44\}$	$781 \to 783$	$-E-$
108	$\{0,17,34,51\}$	790	$-ES$

A.6 $m=9, p(x)=x^9+x^5+1$

A.6.1 $m=9,\nu=2$

$m=9,\nu=2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1 \to 3 \to 6 \to 12 \to 25 \to 47 \to 78 \to 48$	$PO-$
1	$\{0,3\}$	$2 \to 4 \to 8 \to 18 \to 23 \to 44 \to 75 \to 71 \to 37$	$PO-$
2	$\{0,7\}$	$5 \to 10 \to 22 \to 19 \to 39 \to 69 \to 46 \to 11 \to 24$	$PO-$
3	$\{0,11\}$	$7 \to 16 \to 34 \to 63 \to 82 \to 79 \to 51 \to 9 \to 20$	$PO-$
4	$\{0,17\}$	$13 \to 27 \to 50 \to 29 \to 54 \to 26 \to 49 \to 58 \to 60$	$PO-$
5	$\{0,19\}$	$14 \to 30 \to 55 \to 83 \to 66 \to 64 \to 81 \to 77 \to 35$	$PO-$
6	$\{0,21\}$	$15 \to 32 \to 59 \to 72 \to 31 \to 56 \to 84 \to 80 \to 74$	$PO-$
7	$\{0,23\}$	$17 \to 36 \to 65 \to 33 \to 61 \to 41 \to 45 \to 76 \to 62$	$PO-$
8	$\{0,27\}$	$21 \to 42 \to 40 \to 70 \to 57 \to 43 \to 73 \to 68 \to 52$	$PO-$
9	$\{0,35\}$	$28 \to 38 \to 67$	$PO-$
10	$\{0,73\}$	53	$-E-$

A.6.2 $m=9,\nu=3$

$m=9,\nu=3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2\}$	$0 \to 125 \to 3 \to 130 \to 359 \to 662 \to 1099 \to 1484 \to 105$	$PO-$
1	$\{0,1,3\}$	$1 \to 127 \to 4 \to 131 \to 362 \to 665 \to 1102 \to 1470 \to 95$	$-O-$
2	$\{0,1,4\}$	$2 \to 129 \to 356 \to 655 \to 558 \to 962 \to 772 \to 89 \to 224$	$-O-$
3	$\{0,1,7\}$	$5 \to 133 \to 366 \to 654 \to 1091 \to 1479 \to 1147 \to 1062 \to 329$	$-O-$
4	$\{0,1,8\}$	$6 \to 135 \to 369 \to 661 \to 1097 \to 1483 \to 51 \to 199 \to 360$	$-O-$
5	$\{0,1,11\}$	$7 \to 139 \to 379 \to 686 \to 1122 \to 1474 \to 54 \to 205 \to 382$	$-O-$
6	$\{0,1,12\}$	$8 \to 141 \to 381 \to 691 \to 1125 \to 1478 \to 1169 \to 314 \to 288$	$-O-$
7	$\{0,1,13\}$	$9 \to 143 \to 353 \to 647 \to 1081 \to 1362 \to 1035 \to 99 \to 175$	$-O-$
8	$\{0,1,14\}$	$10 \to 145 \to 355 \to 653 \to 586 \to 994 \to 1042 \to 25 \to 172$	$-O-$
9	$\{0,1,15\}$	$11 \to 147 \to 372$	$-E-$
10	$\{0,1,16\}$	$12 \to 149 \to 392 \to 701 \to 1124 \to 26 \to 174 \to 422 \to 694$	$-O-$
11	$\{0,1,17\}$	$13 \to 151 \to 395 \to 708 \to 1127 \to 123 \to 179 \to 431 \to 689$	$-E-$
12	$\{0,1,20\}$	$14 \to 155 \to 403 \to 715 \to 1093 \to 120 \to 153 \to 399 \to 663$	$-O-$
		continued	

$m=9,\nu=3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
13	$\{0,1,21\}$	$15 \to 157 \to 406 \to 718 \to 1078 \to 118 \to 137 \to 374 \to 679$	$-O-$
14	$\{0,1,22\}$	$16 \to 159 \to 409 \to 681 \to 1088 \to 1477 \to 906 \to 1208 \to 798$	$-O-$
15	$\{0,1,23\}$	$17 \to 161 \to 300 \to 536 \to 880 \to 1329 \to 949 \to 1302 \to 763$	$-O-$
16	$\{0,1,24\}$	$18 \to 144 \to 385 \to 666 \to 1104 \to 1067 \to 285 \to 524 \to 853$	$-O-$
17	$\{0,1,25\}$	$19 \to 164 \to 413 \to 723 \to 121 \to 163 \to 351 \to 546 \to 883$	$-O-$
18	$\{0,1,26\}$	$20 \to 128 \to 354 \to 651 \to 1021 \to 1456 \to 606 \to 987 \to 79$	$-O-$
19	$\{0,1,27\}$	$21 \to 132 \to 364 \to 273 \to 510 \to 871 \to 1050 \to 1450 \to 587$	$-O-$
20	$\{0,1,28\}$	$22 \to 148 \to 386 \to 698 \to 1107 \to 1025 \to 261 \to 491 \to 835$	$-O-$
21	$\{0,1,29\}$	$23 \to 150 \to 394 \to 695 \to 1128 \to 279 \to 486 \to 557 \to 960$	$-O-$
22	$\{0,1,30\}$	$24 \to 170 \to 103 \to 232 \to 448 \to 254 \to 481 \to 848 \to 1020$	$-O-$
23	$\{0,1,33\}$	$27 \to 176 \to 424 \to 722 \to 92 \to 237 \to 373 \to 678 \to 1113$	$-O-$
24	$\{0,1,34\}$	$28 \to 177 \to 426 \to 730 \to 1076 \to 1471 \to 62 \to 215 \to 396$	$-O-$
25	$\{0,1,35\}$	$29 \to 178 \to 427 \to 713 \to 1084 \to 936 \to 1148 \to 776 \to 1165$	$-O-$
26	$\{0,1,38\}$	$30 \to 180 \to 432 \to 726 \to 1103 \to 900 \to 349 \to 528 \to 884$	$-O-$
27	$\{0,1,39\}$	$31 \to 181 \to 398 \to 706 \to 1105 \to 802 \to 1227 \to 1520 \to 1213$	$-E-$
28	$\{0,1,40\}$	$32 \to 182 \to 434 \to 674 \to 96 \to 183 \to 389 \to 702 \to 1111$	$-O-$
29	$\{0,1,41\}$	$33 \to 184 \to 435 \to 677 \to 57 \to 213 \to 451 \to 247 \to 466$	$-E-$
30	$\{0,1,43\}$	$34 \to 186 \to 438 \to 664 \to 250 \to 472 \to 796 \to 1272 \to 1244$	$-O-$
31	$\{0,1,44\}$	$35 \to 188 \to 429 \to 705 \to 1090 \to 888 \to 1173 \to 778 \to 1269$	$-E-$
32	$\{0,1,45\}$	$36 \to 189 \to 440 \to 709 \to 1108 \to 941 \to 1146 \to 797 \to 1267$	$-O-$
33	$\{0,1,46\}$	$37 \to 190 \to 378 \to 684 \to 1120 \to 1222 \to 1487 \to 324 \to 495$	$-O-$
34	$\{0,1,47\}$	$38 \to 71 \to 158 \to 244 \to 460 \to 745 \to 1259 \to 1443 \to 1295$	$-O-$
35	$\{0,1,48\}$	$39 \to 126 \to 352 \to 645 \to 568 \to 263 \to 494 \to 836 \to 49$	$-E-$
36	$\{0,1,49\}$	$40 \to 193 \to 443 \to 731 \to 1092 \to 293 \to 489 \to 620 \to 1007$	$-O-$
37	$\{0,1,50\}$	$41 \to 195 \to 446 \to 643 \to 1012 \to 640 \to 969 \to 1066 \to 1359$	$-O-$
38	$\{0,1,51\}$	$42 \to 196 \to 447 \to 648 \to 1083 \to 631 \to 978 \to 1136 \to 1182$	$-O-$
39	$\{0,1,54\}$	$43 \to 165 \to 414 \to 717 \to 889 \to 1366 \to 780 \to 1274 \to 1135$	$-E-$
40	$\{0,1,55\}$	$44 \to 166 \to 415 \to 727 \to 564 \to 966 \to 1287 \to 1338 \to 1417$	$-O-$
41	$\{0,1,58\}$	$45 \to 201 \to 391 \to 699 \to 291 \to 521 \to 882 \to 1313 \to 1332$	$-O-$
42	$\{0,1,59\}$	$46 \to 202 \to 358 \to 660 \to 281 \to 518 \to 854 \to 1322 \to 286$	$-O-$
43	$\{0,1,60\}$	$47 \to 203 \to 450 \to 649 \to 1085 \to 1475 \to 1393 \to 1029 \to 1226$	$-O-$
44	$\{0,1,61\}$	$48 \to 204 \to 408 \to 656 \to 1094 \to 760 \to 1228 \to 1032 \to 1465$	$-O-$
45	$\{0,1,63\}$	$50 \to 138 \to 377 \to 245 \to 462 \to 637 \to 984 \to 1432 \to 1352$	$-O-$
46	$\{0,1,65\}$	$52 \to 87 \to 162 \to 70 \to 223 \to 457 \to 728 \to 1129 \to 1335$	$-O-$
47	$\{0,1,66\}$	$53 \to 86 \to 187 \to 439 \to 729 \to 739 \to 1254 \to 1529 \to 1486$	$-O-$
48	$\{0,1,70\}$	$55 \to 206 \to 452 \to 246 \to 464 \to 825 \to 1315 \to 1218 \to 1505$	$-O-$
49	$\{0,1,71\}$	$56 \to 200 \to 363 \to 644 \to 1013 \to 1419 \to 1034 \to 1466 \to 618$	$-O-$
50	$\{0,1,75\}$	$58 \to 191 \to 411 \to 687 \to 1123 \to 896 \to 1178 \to 795 \to 1276$	$-O-$
51	$\{0,1,76\}$	$59 \to 214 \to 412 \to 692 \to 1115 \to 1482 \to 1185 \to 1176 \to 1394$	$PO-$
52	$\{0,1,79\}$	$60 \to 167 \to 416 \to 703 \to 1077 \to 892 \to 1369 \to 765 \to 1255$	$-O-$
53	$\{0,1,80\}$	$61 \to 168 \to 393 \to 75 \to 227 \to 365 \to 668 \to 1086 \to 1398$	$-O-$
54	$\{0,1,82\}$	$63 \to 216 \to 441 \to 712 \to 1117 \to 1177 \to 950 \to 1365 \to 774$	$-O-$
55	$\{0,1,83\}$	$64 \to 217 \to 445 \to 697 \to 1121 \to 1395 \to 935 \to 1380 \to 770$	$-O-$
			continued

$m=9, \nu=3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
56	$\{0,1,84\}$	$65 \to 218 \to 375 \to 680 \to 1116 \to 266 \to 498 \to 818 \to 1309$	$-O-$
57	$\{0,1,86\}$	$66 \to 219 \to 453 \to 102 \to 242 \to 436 \to 732 \to 1118 \to 573$	$-O-$
58	$\{0,1,87\}$	$67 \to 220 \to 456 \to 720 \to 1098 \to 1045 \to 1399 \to 605 \to 967$	$-O-$
59	$\{0,1,88\}$	$68 \to 221 \to 423 \to 721 \to 350 \to 529 \to 296 \to 533 \to 816$	$-O-$
60	$\{0,1,89\}$	$69 \to 222 \to 425 \to 724 \to 904 \to 1378 \to 757 \to 1265 \to 1186$	$-O-$
61	$\{0,1,93\}$	$72 \to 160 \to 410 \to 719 \to 1126 \to 1188 \to 920 \to 1301 \to 773$	$-O-$
62	$\{0,1,97\}$	$73 \to 225 \to 402 \to 669 \to 111 \to 239 \to 400 \to 704 \to 1082$	$-O-$
63	$\{0,1,98\}$	$74 \to 212 \to 433 \to 676 \to 943 \to 1388 \to 751 \to 890 \to 1368$	$-O-$
64	$\{0,1,103\}$	$76 \to 229 \to 301 \to 537 \to 815 \to 1171 \to 282 \to 520 \to 876$	$-O-$
65	$\{0,1,106\}$	$77 \to 228 \to 298 \to 535 \to 885 \to 1327 \to 1453 \to 1515 \to 913$	$-O-$
66	$\{0,1,107\}$	$78 \to 154 \to 401 \to 714 \to 1110 \to 1233 \to 1216 \to 1141 \to 1496$	$PO-$
67	$\{0,1,114\}$	$80 \to 140 \to 380 \to 688 \to 1080 \to 1073 \to 1391 \to 609 \to 976$	$-E-$
68	$\{0,1,115\}$	$81 \to 231 \to 387 \to 700 \to 1130 \to 1030 \to 1281 \to 584 \to 970$	$-O-$
69	$\{0,1,116\}$	$82 \to 197 \to 390 \to 297 \to 534 \to 822 \to 1312 \to 1437 \to 1509$	$-O-$
70	$\{0,1,117\}$	$83 \to 198 \to 428 \to 292 \to 530 \to 878 \to 1318 \to 1238 \to 1290$	$-E-$
71	$\{0,1,118\}$	$84 \to 233 \to 430 \to 683 \to 1095 \to 911 \to 1382 \to 783 \to 1202$	$-O-$
72	$\{0,1,121\}$	$85 \to 234 \to 367 \to 670 \to 1106 \to 1476 \to 1063 \to 318 \to 552$	$-E-$
73	$\{0,1,125\}$	$88 \to 235 \to 376 \to 682 \to 625 \to 1014 \to 1423 \to 1353 \to 1160$	$-O-$
74	$\{0,1,132\}$	$90 \to 226 \to 357 \to 657 \to 807 \to 269 \to 504 \to 866 \to 808$	$-O-$
75	$\{0,1,136\}$	$91 \to 236 \to 370 \to 675 \to 1109 \to 1480 \to 1143 \to 315 \to 523$	$-O-$
76	$\{0,1,141\}$	$93 \to 238 \to 384 \to 696 \to 1100 \to 948 \to 316 \to 551 \to 826$	$-O-$
77	$\{0,1,149\}$	$94 \to 241 \to 407 \to 556 \to 957 \to 1421 \to 1346 \to 1033 \to 336$	$-O-$
78	$\{0,1,156\}$	$97 \to 207 \to 361 \to 646 \to 1079 \to 785 \to 1271 \to 1069 \to 1458$	$-O-$
79	$\{0,1,157\}$	$98 \to 208 \to 418 \to 652 \to 951 \to 1381 \to 794 \to 1253 \to 348$	$-O-$
80	$\{0,1,166\}$	$100 \to 142 \to 383 \to 693 \to 1089 \to 1016 \to 1407 \to 588 \to 972$	$-O-$
81	$\{0,1,169\}$	$101 \to 156 \to 404 \to 716 \to 1114 \to 1481 \to 1231 \to 1151 \to 907$	$-O-$
82	$\{0,1,180\}$	$104 \to 185 \to 437 \to 725 \to 1119 \to 1221 \to 1519 \to 1237 \to 1201$	$-O-$
83	$\{0,1,194\}$	$106 \to 134 \to 368 \to 578 \to 985 \to 1433 \to 1334 \to 1538 \to 323$	$-E-$
84	$\{0,1,195\}$	$107 \to 194 \to 444 \to 650 \to 1087 \to 272 \to 508 \to 850 \to 1316$	$-O-$
85	$\{0,1,196\}$	$108 \to 169 \to 419 \to 658 \to 1096 \to 1472 \to 1501 \to 1204 \to 1410$	$-O-$
86	$\{0,1,199\}$	$109 \to 146 \to 388 \to 671 \to 921 \to 577 \to 248 \to 468 \to 817$	$-O-$
87	$\{0,1,201\}$	$110 \to 136 \to 371 \to 595 \to 1002 \to 1428 \to 1351 \to 1239 \to 1294$	$-O-$
88	$\{0,1,210\}$	$112 \to 230 \to 449 \to 707 \to 1112 \to 276 \to 513 \to 874 \to 752$	$-O-$
89	$\{0,1,211\}$	$113 \to 192 \to 442 \to 711 \to 1131 \to 893 \to 1370 \to 789 \to 1149$	$-O-$
90	$\{0,1,228\}$	$114 \to 171 \to 420 \to 685 \to 255 \to 483 \to 849 \to 1198 \to 1415$	$-O-$
91	$\{0,1,234\}$	$115 \to 210 \to 421 \to 667 \to 252 \to 477 \to 591 \to 997 \to 1424$	$-O-$
92	$\{0,1,235\}$	$116 \to 211 \to 455 \to 672 \to 1101 \to 1473 \to 1289 \to 307 \to 499$	$-O-$
93	$\{0,1,236\}$	$117 \to 240 \to 405 \to 673 \to 1046 \to 1468 \to 589 \to 973 \to 746$	$-E-$
94	$\{0,1,273\}$	$119 \to 152 \to 397 \to 710 \to 1018 \to 1157 \to 593 \to 1000 \to 1420$	$-E-$
95	$\{0,1,287\}$	$122 \to 173 \to 417 \to 690 \to 561 \to 309 \to 538 \to 813 \to 1240$	$-O-$
96	$\{0,1,324\}$	$124 \to 209 \to 454 \to 659 \to 253 \to 479 \to 843 \to 891 \to 260$	$-O-$
97	$\{0,3,6\}$	$243 \to 458 \to 812 \to 1306 \to 952 \to 1387 \to 777 \to 1260 \to 275$	$PO-$
98	$\{0,3,15\}$	$249 \to 470 \to 610 \to 991 \to 1434 \to 1344 \to 1397 \to 313 \to 549$	$-O-$
			continued

$m = 9, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
99	$\{0,3,17\}$	$251 \to 474 \to 824 \to 1314 \to 1449 \to 283 \to 522 \to 847 \to 601$	$-O-$
100	$\{0,3,24\}$	$256 \to 484 \to 833 \to 1323 \to 1436 \to 1284 \to 334 \to 338 \to 527$	$-O-$
101	$\{0,3,25\}$	$257 \to 485 \to 781 \to 750 \to 1026 \to 1459 \to 619 \to 999 \to 790$	$-O-$
102	$\{0,3,27\}$	$258 \to 488 \to 828 \to 1320 \to 1452 \to 1532 \to 305 \to 463 \to 823$	$-O-$
103	$\{0,3,28\}$	$259 \to 471 \to 834 \to 1142 \to 1071 \to 1015 \to 623 \to 555 \to 953$	$PO-$
104	$\{0,3,31\}$	$262 \to 476 \to 841 \to 635 \to 954 \to 1058 \to 628 \to 617 \to 1011$	$-O-$
105	$\{0,3,33\}$	$264 \to 496 \to 859 \to 1280 \to 1138 \to 1495 \to 1526 \to 1195 \to 1070$	$-E-$
106	$\{0,3,34\}$	$265 \to 497 \to 860 \to 1330 \to 1027 \to 1461 \to 622 \to 993 \to 1137$	$-O-$
107	$\{0,3,37\}$	$267 \to 500 \to 863 \to 1331 \to 1435 \to 1401 \to 1043 \to 1409 \to 581$	$-O-$
108	$\{0,3,38\}$	$268 \to 502 \to 864 \to 741 \to 566 \to 968 \to 570 \to 965 \to 1180$	$-O-$
109	$\{0,3,41\}$	$270 \to 506 \to 312 \to 512 \to 734 \to 1247 \to 1023 \to 902 \to 563$	$-O-$
110	$\{0,3,42\}$	$271 \to 507 \to 869 \to 1059 \to 1299 \to 629 \to 977 \to 926 \to 1217$	$-O-$
111	$\{0,3,45\}$	$274 \to 511 \to 872 \to 1308 \to 1052 \to 1024 \to 632 \to 614 \to 958$	$-O-$
112	$\{0,3,49\}$	$277 \to 503 \to 830 \to 1321 \to 1440 \to 910 \to 1376 \to 786 \to 1252$	$-E-$
113	$\{0,3,51\}$	$278 \to 515 \to 295 \to 492 \to 858 \to 346 \to 469 \to 831 \to 636$	$-O-$
114	$\{0,3,57\}$	$280 \to 490 \to 857 \to 914 \to 1364 \to 768 \to 1158 \to 1413 \to 1390$	$PO-$
115	$\{0,3,63\}$	$284 \to 517 \to 879$	$-E-$
116	$\{0,3,66\}$	$287 \to 519 \to 881 \to 615 \to 1010 \to 1022 \to 1360 \to 585 \to 992$	$-O-$
117	$\{0,3,71\}$	$289 \to 465 \to 827 \to 1307 \to 1439 \to 1051 \to 1462 \to 624 \to 995$	$-E-$
118	$\{0,3,73\}$	$290 \to 509 \to 870 \to 1159 \to 1446 \to 1039 \to 1467 \to 608 \to 1009$	$-E-$
119	$\{0,3,81\}$	$294 \to 299 \to 480 \to 845 \to 1245 \to 897 \to 1372 \to 787 \to 1256$	$-O-$
120	$\{0,3,100\}$	$302 \to 487 \to 321 \to 545 \to 604 \to 1006 \to 1427 \to 1361 \to 343$	$-O-$
121	$\{0,3,105\}$	$303 \to 542 \to 304 \to 544 \to 865 \to 1300 \to 1416 \to 923 \to 1367$	$-E-$
122	$\{0,3,116\}$	$306 \to 467 \to 829 \to 308 \to 531 \to 838 \to 925 \to 1374 \to 767$	$-O-$
123	$\{0,3,121\}$	$310 \to 548 \to 583 \to 990 \to 1418 \to 1340 \to 322 \to 525 \to 840$	$-O-$
124	$\{0,3,123\}$	$311 \to 482 \to 820 \to 1311 \to 1447 \to 319 \to 543 \to 852 \to 562$	$-O-$
125	$\{0,3,148\}$	$317 \to 532 \to 844 \to 919 \to 1140 \to 756 \to 1168 \to 1492 \to 1408$	$-O-$
126	$\{0,3,153\}$	$320 \to 514 \to 832 \to 331 \to 547 \to 875 \to 1193 \to 1442 \to 1225$	$-E-$
127	$\{0,3,162\}$	$325 \to 501 \to 861 \to 1317 \to 782 \to 1275 \to 791 \to 1150 \to 1197$	$-O-$
128	$\{0,3,165\}$	$326 \to 553 \to 851 \to 931 \to 1385 \to 748 \to 945 \to 1386 \to 764$	$-O-$
129	$\{0,3,168\}$	$327 \to 478 \to 842 \to 1326 \to 1156 \to 1132 \to 1220 \to 1510 \to 1506$	$PO-$
130	$\{0,3,169\}$	$328 \to 539 \to 868 \to 1236 \to 1438 \to 1516 \to 1488 \to 1167 \to 1494$	$-O-$
131	$\{0,3,175\}$	$330 \to 516 \to 873 \to 1328 \to 1304 \to 1179 \to 1040 \to 1463 \to 626$	$-O-$
132	$\{0,3,179\}$	$332 \to 526 \to 877 \to 933 \to 1389 \to 755 \to 1134 \to 1493 \to 1404$	$-E-$
133	$\{0,3,180\}$	$333 \to 550 \to 819 \to 1310 \to 1445 \to 1283 \to 1536 \to 930 \to 1187$	$-O-$
134	$\{0,3,193\}$	$335 \to 459 \to 814 \to 735 \to 1248 \to 771 \to 1235 \to 1521 \to 1055$	$-O-$
135	$\{0,3,196\}$	$337 \to 461 \to 821 \to 806 \to 1257 \to 1403 \to 1400 \to 1540 \to 1164$	$-O-$
136	$\{0,3,201\}$	$339 \to 473 \to 837 \to 1215 \to 1448 \to 341 \to 541 \to 862 \to 1324$	$-O-$
137	$\{0,3,204\}$	$340 \to 554 \to 855 \to 1319 \to 1451 \to 1405 \to 922 \to 1384 \to 810$	$-O-$
138	$\{0,3,209\}$	$342 \to 540 \to 846 \to 1325 \to 1441 \to 1531 \to 1209 \to 1511 \to 1537$	$-O-$
139	$\{0,3,212\}$	$344 \to 505 \to 867 \to 1170 \to 1444 \to 1031 \to 1210 \to 575 \to 981$	$-O-$
140	$\{0,3,233\}$	$345 \to 493 \to 856 \to 759 \to 582 \to 989 \to 1426 \to 1349 \to 1402$	$-O-$
141	$\{0,3,273\}$	$347 \to 475 \to 839$	$-E-$

continued

$m = 9, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
142	$\{0,7,21\}$	$559 \to 963 \to 1175 \to 1342 \to 1285 \to 1508 \to 1041 \to 1064 \to 590$	$-E-$
143	$\{0,7,22\}$	$560 \to 964 \to 603 \to 996 \to 1211 \to 944 \to 886 \to 737 \to 733$	$PO-$
144	$\{0,7,28\}$	$565 \to 955 \to 1194 \to 1343 \to 898 \to 1061 \to 799 \to 599 \to 1004$	$-O-$
145	$\{0,7,30\}$	$567 \to 641 \to 974 \to 1336 \to 1333 \to 1291 \to 1490 \to 1036 \to 1053$	$-O-$
146	$\{0,7,33\}$	$569 \to 800 \to 1190 \to 1337 \to 912 \to 1017 \to 805 \to 592 \to 942$	$-E-$
147	$\{0,7,37\}$	$571 \to 621 \to 956 \to 1133 \to 1181 \to 1513 \to 1161 \to 1047 \to 1044$	$-O-$
148	$\{0,7,38\}$	$572 \to 975 \to 1214$	$-E-$
149	$\{0,7,44\}$	$574 \to 979 \to 1429 \to 1345 \to 1541 \to 928 \to 887 \to 633 \to 738$	$-O-$
150	$\{0,7,46\}$	$576 \to 982 \to 1065 \to 1298 \to 580 \to 988 \to 1241 \to 1075 \to 1303$	$-O-$
151	$\{0,7,51\}$	$579 \to 986 \to 596 \to 961 \to 1422 \to 937 \to 1242 \to 769 \to 1243$	$-O-$
152	$\{0,7,81\}$	$594 \to 1001 \to 1144 \to 1347 \to 1392 \to 1152 \to 1282 \to 1056 \to 1469$	$-O-$
153	$\{0,7,86\}$	$597 \to 971 \to 932 \to 1354 \to 749 \to 1246 \to 1184 \to 1054 \to 1454$	$-E-$
154	$\{0,7,88\}$	$598 \to 1003 \to 1163 \to 1356 \to 905 \to 1379 \to 753 \to 1019 \to 1455$	$-O-$
155	$\{0,7,90\}$	$600 \to 743 \to 1258 \to 1358 \to 1234 \to 1523 \to 1203 \to 938 \to 947$	$-O-$
156	$\{0,7,93\}$	$602 \to 980 \to 1430 \to 1350 \to 1534 \to 1205 \to 1172 \to 1048 \to 1196$	$-O-$
157	$\{0,7,102\}$	$607 \to 779 \to 1264 \to 895 \to 929 \to 792 \to 740 \to 1038 \to 918$	$-O-$
158	$\{0,7,113\}$	$611 \to 638 \to 998 \to 1296 \to 1341 \to 1517 \to 1155 \to 1060 \to 1037$	$-O-$
159	$\{0,7,114\}$	$612 \to 1005 \to 1425 \to 1357 \to 1229 \to 1522 \to 1230 \to 1057 \to 1219$	$-O-$
160	$\{0,7,118\}$	$613 \to 927 \to 634 \to 736 \to 1250 \to 1339 \to 1518 \to 1049 \to 1457$	$-O-$
161	$\{0,7,125\}$	$616 \to 1008 \to 744 \to 1251 \to 788 \to 1270 \to 1200 \to 1068 \to 1460$	$-O-$
162	$\{0,7,152\}$	$627 \to 959 \to 1305 \to 934 \to 1383 \to 762 \to 1199 \to 1028 \to 1464$	$-O-$
163	$\{0,7,175\}$	$630 \to 758 \to 1266 \to 1355 \to 1535 \to 1192 \to 1223 \to 1074 \to 894$	$-O-$
164	$\{0,7,235\}$	$639 \to 747 \to 1261 \to 1348 \to 1153 \to 1414 \to 1412 \to 1072 \to 939$	$-O-$
165	$\{0,7,303\}$	$642 \to 983 \to 1431 \to 1162 \to 1139 \to 908 \to 915 \to 742 \to 754$	$-O-$
166	$\{0,11,95\}$	$761 \to 1268 \to 940 \to 1371 \to 793 \to 1273 \to 809 \to 903 \to 1377$	$-O-$
167	$\{0,11,106\}$	$766 \to 1263 \to 1530 \to 1191 \to 901 \to 1375 \to 775 \to 946 \to 1363$	$-O-$
168	$\{0,11,150\}$	$784 \to 803 \to 1277 \to 1212 \to 899 \to 1373 \to 801 \to 916 \to 924$	$-O-$
169	$\{0,11,209\}$	$804 \to 1249 \to 1527 \to 1502 \to 1525 \to 1406 \to 1183 \to 909 \to 1293$	$-O-$
170	$\{0,11,325\}$	$811 \to 1262 \to 1528 \to 1174 \to 1206 \to 1512 \to 1507 \to 917 \to 1279$	$-O-$
171	$\{0,17,70\}$	$1145 \to 1497 \to 1189 \to 1485 \to 1286 \to 1491 \to 1411 \to 1154 \to 1297$	$-O-$
172	$\{0,17,166\}$	$1166 \to 1498 \to 1489$	$-E-$
173	$\{0,19,196\}$	$1207 \to 1292 \to 1278 \to 1503 \to 1396 \to 1524 \to 1500 \to 1539 \to 1533$	$PO-$
174	$\{0,21,70\}$	$1224 \to 1504 \to 1499$	$PO-$
175	$\{0,21,107\}$	$1232 \to 1514 \to 1288$	$-E-$
176	$\{0,73,146\}$	1542	$-ES$

A.7 $m = 10, p(x) = x^{10} + x^3 + 1$

A.7.1 $m = 10, \nu = 2$

$m = 10, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1 \to 3 \to 6 \to 12 \to 26 \to 54 \to 102 \to 15 \to 32$	$P\,O\,-$
1	$\{0,3\}$	$2 \to 5 \to 9 \to 19 \to 41 \to 80 \to 137 \to 101 \to 158 \to 4$	$P\,O\,-$
2	$\{0,9\}$	$7 \to 14 \to 30 \to 62 \to 59 \to 109 \to 163 \to 103 \to 66 \to 122$	$P\,O\,-$
3	$\{0,11\}$	$8 \to 17 \to 37 \to 72 \to 38 \to 74 \to 130 \to 20 \to 43 \to 84$	$P\,O\,-$
4	$\{0,13\}$	$10 \to 21 \to 45 \to 88 \to 75 \to 131 \to 127 \to 167 \to 159 \to 120$	$P\,O\,-$
5	$\{0,15\}$	$11 \to 24 \to 51 \to 98 \to 152 \to 36 \to 18 \to 39 \to 76 \to 133$	$P\,O\,-$
6	$\{0,17\}$	$13 \to 28 \to 58 \to 107 \to 110 \to 139 \to 55 \to 73 \to 129 \to 116$	$P\,O\,-$
7	$\{0,21\}$	$16 \to 35 \to 69 \to 125 \to 150 \to 97 \to 68 \to 124 \to 61 \to 113$	$P\,O\,-$
8	$\{0,27\}$	$22 \to 47 \to 91 \to 146 \to 142 \to 121 \to 94 \to 149 \to 144 \to 87$	$P\,O\,-$
9	$\{0,29\}$	$23 \to 44 \to 86 \to 141 \to 118 \to 79 \to 136 \to 134 \to 160 \to 155$	$P\,O\,-$
10	$\{0,31\}$	$25 \to 53 \to 31 \to 64 \to 117$	$P\,O\,-$
11	$\{0,33\}$	$27 \to 56 \to 104 \to 83 \to 138$	$-\,E\,-$
12	$\{0,35\}$	$29 \to 60 \to 111 \to 93 \to 148 \to 81 \to 106 \to 162 \to 157 \to 49$	$P\,O\,-$
13	$\{0,39\}$	$33 \to 57 \to 105 \to 161 \to 108 \to 42 \to 82 \to 63 \to 115 \to 151$	$P\,O\,-$
14	$\{0,41\}$	$34 \to 67 \to 123 \to 169 \to 166 \to 165 \to 95 \to 85 \to 140 \to 71$	$P\,O\,-$
15	$\{0,47\}$	$40 \to 78 \to 135 \to 90 \to 145 \to 46 \to 52 \to 100 \to 156 \to 128$	$P\,O\,-$
16	$\{0,55\}$	$48 \to 92 \to 126 \to 153 \to 114 \to 50 \to 96 \to 99 \to 154 \to 65$	$P\,O\,-$
17	$\{0,85\}$	$70 \to 119 \to 168 \to 164 \to 147$	$P\,O\,-$
18	$\{0,93\}$	$77 \to 89 \to 143 \to 112 \to 132$	$P\,O\,-$
19	$\{0,341\}$	170	$-\,E\,S$

A.7.2 $m = 10, \nu = 3$

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1,2\}$	$0 \to 253 \to 736 \to 1413 \to 2580 \to 4468 \to 1666 \to 2989 \to 2756 \to 33$	$P\,O\,-$
1	$\{0,1,3\}$	$1 \to 255 \to 738 \to 1418 \to 2592 \to 4482 \to 5942 \to 3184 \to 3102 \to 32$	$-\,O\,-$
2	$\{0,1,4\}$	$2 \to 257 \to 741 \to 1425 \to 2604 \to 4497 \to 3186 \to 3832 \to 41 \to 332$	$-\,O\,-$
3	$\{0,1,5\}$	$3 \to 6 \to 262 \to 751 \to 1450 \to 2644 \to 3150 \to 1636 \to 15 \to 282$	$-\,O\,-$
4	$\{0,1,6\}$	$4 \to 254 \to 5 \to 260 \to 747 \to 1442 \to 2630 \to 4526 \to 1096 \to 659$	$-\,O\,-$
5	$\{0,1,9\}$	$7 \to 264 \to 755 \to 1458 \to 2608 \to 3133 \to 5020 \to 222 \to 265 \to 757$	$-\,O\,-$
6	$\{0,1,12\}$	$8 \to 268 \to 765 \to 1470 \to 2656 \to 2765 \to 4670 \to 1059 \to 658 \to 1402$	$-\,O\,-$
7	$\{0,1,13\}$	$9 \to 270 \to 769 \to 1476 \to 228 \to 471 \to 863 \to 1041 \to 504 \to 1203$	$-\,O\,-$
8	$\{0,1,14\}$	$10 \to 272 \to 773 \to 1481 \to 2578 \to 4350 \to 5876 \to 6204 \to 1121 \to 723$	$-\,O\,-$
9	$\{0,1,15\}$	$11 \to 274 \to 776 \to 1487 \to 2683 \to 4556 \to 3565 \to 5429 \to 1122 \to 520$	$-\,O\,-$
10	$\{0,1,16\}$	$12 \to 276 \to 780 \to 1493 \to 2691 \to 1844 \to 54 \to 356 \to 889 \to 1612$	$-\,O\,-$
11	$\{0,1,17\}$	$13 \to 278 \to 784 \to 1468 \to 2674 \to 4549 \to 214 \to 441 \to 742 \to 1429$	$-\,O\,-$
12	$\{0,1,18\}$	$14 \to 280 \to 786 \to 1455 \to 2650 \to 4541 \to 3371 \to 5037 \to 3182 \to 1717$	$-\,O\,-$
13	$\{0,1,22\}$	$16 \to 286 \to 795 \to 1496 \to 2693 \to 4557 \to 3792 \to 2780 \to 3183 \to 1925$	$-\,O\,-$
14	$\{0,1,23\}$	$17 \to 288 \to 798 \to 1503 \to 2563 \to 4334 \to 3842 \to 5628 \to 3112 \to 1841$	$-\,O\,-$
15	$\{0,1,24\}$	$18 \to 290 \to 802 \to 1527 \to 2535 \to 4333 \to 1010 \to 590 \to 1337 \to 1128$	$-\,O\,-$
16	$\{0,1,25\}$	$19 \to 292 \to 737 \to 628 \to 1311 \to 2186 \to 976 \to 526 \to 186 \to 480$	$-\,O\,-$
17	$\{0,1,26\}$	$20 \to 294 \to 809 \to 1415 \to 2585 \to 27 \to 308 \to 829 \to 1513 \to 2318$	$-\,O\,-$
18	$\{0,1,27\}$	$21 \to 296 \to 813 \to 1535 \to 2678 \to 4552 \to 4078 \to 3249 \to 3148 \to 2227$	$-\,O\,-$
19	$\{0,1,28\}$	$22 \to 298 \to 816 \to 1538 \to 2685 \to 4207 \to 5640 \to 1069 \to 660 \to 1294$	$-\,O\,-$
20	$\{0,1,29\}$	$23 \to 300 \to 818 \to 1542 \to 2739 \to 1032 \to 626 \to 968 \to 506 \to 1208$	$-\,O\,-$
			continued

$m=10, \nu=3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
21	$\{0,1,30\}$	$24 \to 302 \to 821 \to 1546 \to 2743 \to 3543 \to 2428 \to 4286 \to 3101 \to 2568$	$-O-$
22	$\{0,1,31\}$	$25 \to 304 \to 824 \to 1549 \to 2669 \to 3530 \to 5407 \to 4939 \to 3193 \to 2412$	$-O-$
23	$\{0,1,32\}$	$26 \to 306 \to 827 \to 1541 \to 2737$	$-E-$
24	$\{0,1,34\}$	$28 \to 310 \to 833 \to 1516 \to 2711 \to 2419 \to 4273 \to 2293 \to 3140 \to 2915$	$-O-$
25	$\{0,1,35\}$	$29 \to 312 \to 837 \to 1433 \to 2617 \to 4483 \to 3805 \to 1665 \to 2987 \to 2026$	$-O-$
26	$\{0,1,36\}$	$30 \to 314 \to 785 \to 1502 \to 2698 \to 1787 \to 2847 \to 4729 \to 1758 \to 2948$	$-O-$
27	$\{0,1,37\}$	$31 \to 316 \to 787 \to 1505 \to 2703 \to 1060 \to 553 \to 1158 \to 512 \to 1222$	$-O-$
28	$\{0,1,42\}$	$34 \to 320 \to 850 \to 1569 \to 2221 \to 3917 \to 2565 \to 4359 \to 3185 \to 3362$	$-O-$
29	$\{0,1,43\}$	$35 \to 267 \to 763 \to 1467 \to 2672 \to 2431 \to 4290 \to 2022 \to 3151 \to 2862$	$-O-$
30	$\{0,1,44\}$	$36 \to 269 \to 767 \to 1474 \to 1093 \to 692 \to 1410 \to 2197 \to 1910 \to 3485$	$-O-$
31	$\{0,1,45\}$	$37 \to 324 \to 832 \to 1556 \to 2688 \to 237 \to 392 \to 931 \to 1525 \to 2722$	$-O-$
32	$\{0,1,46\}$	$38 \to 325 \to 842 \to 1566 \to 2751 \to 4147 \to 1915 \to 3490 \to 3171 \to 3638$	$-O-$
33	$\{0,1,47\}$	$39 \to 327 \to 860 \to 1478 \to 1181 \to 540 \to 1273 \to 2153 \to 3081 \to 2429$	$-O-$
34	$\{0,1,48\}$	$40 \to 329 \to 864 \to 1484 \to 2680 \to 983 \to 541 \to 1275 \to 2155 \to 3714$	$-O-$
35	$\{0,1,51\}$	$42 \to 334 \to 740 \to 1423 \to 2601 \to 4492 \to 5379 \to 5259 \to 3176 \to 2367$	$-O-$
36	$\{0,1,52\}$	$43 \to 335 \to 868 \to 1595 \to 2629 \to 4524 \to 5945 \to 4241 \to 2345 \to 4028$	$-O-$
37	$\{0,1,53\}$	$44 \to 337 \to 869 \to 1431 \to 2615 \to 4510 \to 1138 \to 700 \to 1353 \to 2161$	$-O-$
38	$\{0,1,54\}$	$45 \to 339 \to 871 \to 1471 \to 2472 \to 4328 \to 2775 \to 3593 \to 3187 \to 4043$	$-O-$
39	$\{0,1,55\}$	$46 \to 340 \to 872 \to 1543 \to 2636 \to 4125 \to 3309 \to 5218 \to 3114 \to 1939$	$-O-$
40	$\{0,1,56\}$	$47 \to 341 \to 873 \to 1598 \to 2748 \to 4479 \to 1026 \to 593 \to 1340 \to 2200$	$-O-$
41	$\{0,1,57\}$	$48 \to 343 \to 876 \to 1600 \to 2408 \to 4256 \to 1124 \to 724 \to 1152 \to 720$	$-O-$
42	$\{0,1,58\}$	$49 \to 345 \to 148 \to 467 \to 805 \to 216 \to 390 \to 928 \to 1523 \to 2719$	$-O-$
43	$\{0,1,59\}$	$50 \to 347 \to 879 \to 1605 \to 2600 \to 3636 \to 5441 \to 6109 \to 3158 \to 1779$	$-O-$
44	$\{0,1,60\}$	$51 \to 349 \to 881 \to 1607 \to 2747 \to 4477 \to 5170 \to 2265 \to 2523 \to 4339$	$-O-$
45	$\{0,1,61\}$	$52 \to 351 \to 774 \to 1483 \to 2679 \to 4553 \to 139 \to 338 \to 870 \to 1562$	$-O-$
46	$\{0,1,62\}$	$53 \to 353 \to 886 \to 1521 \to 2717 \to 2401 \to 3526 \to 5402 \to 3128 \to 4448$	$-O-$
47	$\{0,1,65\}$	$55 \to 358 \to 891 \to 1613 \to 142 \to 424 \to 845 \to 1136 \to 629 \to 1314$	$-O-$
48	$\{0,1,66\}$	$56 \to 360 \to 759 \to 1462 \to 2581 \to 4393 \to 5926 \to 3887 \to 3100 \to 4593$	$-O-$
49	$\{0,1,67\}$	$57 \to 362 \to 851 \to 1501 \to 2593 \to 4484 \to 1704 \to 2998 \to 2870 \to 988$	$-O-$
50	$\{0,1,68\}$	$58 \to 364 \to 897 \to 1453 \to 2605 \to 4498 \to 1733 \to 3050 \to 2796 \to 4659$	$-O-$
51	$\{0,1,69\}$	$59 \to 366 \to 898 \to 1494 \to 2614 \to 3111 \to 1658 \to 116 \to 437 \to 952$	$-O-$
52	$\{0,1,71\}$	$60 \to 369 \to 853 \to 1573 \to 2631 \to 1932 \to 2286 \to 3994 \to 1003 \to 578$	$-O-$
53	$\{0,1,72\}$	$61 \to 311 \to 835 \to 1558 \to 2645 \to 4475 \to 5936 \to 1701 \to 3028 \to 4895$	$-O-$
54	$\{0,1,73\}$	$62 \to 313 \to 839 \to 1560 \to 2607 \to 3304 \to 3160 \to 1802 \to 246 \to 411$	$-O-$
55	$\{0,1,74\}$	$63 \to 371 \to 893 \to 1614 \to 2584 \to 4472 \to 5932 \to 2543 \to 3084 \to 1056$	$-O-$
56	$\{0,1,75\}$	$64 \to 372 \to 895 \to 1604 \to 2597 \to 4489 \to 1708 \to 2931 \to 3087 \to 99$	$-O-$
57	$\{0,1,79\}$	$65 \to 374 \to 907 \to 1609 \to 2684 \to 4528 \to 5786 \to 3124 \to 3175 \to 225$	$-O-$
58	$\{0,1,82\}$	$66 \to 373 \to 739 \to 1420 \to 2596 \to 2369 \to 4032 \to 5713 \to 3188 \to 4986$	$-O-$
59	$\{0,1,83\}$	$67 \to 377 \to 892 \to 1565 \to 1097 \to 581 \to 1279 \to 2158 \to 1007 \to 585$	$-O-$
60	$\{0,1,85\}$	$68 \to 378 \to 912 \to 1591 \to 2621 \to 3196 \to 4648 \to 115 \to 434 \to 950$	$-O-$
61	$\{0,1,88\}$	$69 \to 359 \to 793 \to 1514 \to 1738 \to 2531 \to 4316 \to 1907 \to 3096 \to 4992$	$-O-$
62	$\{0,1,89\}$	$70 \to 361 \to 894 \to 1615 \to 2587 \to 4476 \to 5937 \to 1155 \to 701 \to 1231$	$-O-$
63	$\{0,1,90\}$	$71 \to 384 \to 922 \to 1445 \to 2635 \to 1873 \to 3447 \to 5338 \to 3161 \to 5006$	$-O-$
64	$\{0,1,92\}$	$72 \to 387 \to 856 \to 1578 \to 1780 \to 2927 \to 2246 \to 3955 \to 1940 \to 3501$	$-O-$
65	$\{0,1,93\}$	$73 \to 389 \to 822 \to 1504 \to 2702 \to 4559 \to 138 \to 456 \to 783 \to 1499$	$-O-$
66	$\{0,1,94\}$	$74 \to 391 \to 812 \to 1427 \to 2609 \to 4502 \to 5938 \to 2856 \to 3189 \to 5035$	$-O-$
67	$\{0,1,95\}$	$75 \to 393 \to 815 \to 1537 \to 2712 \to 4148 \to 2405 \to 4013 \to 3156 \to 1788$	$-O-$
68	$\{0,1,96\}$	$76 \to 395 \to 251 \to 466 \to 957 \to 513 \to 1224 \to 2086 \to 3165 \to 5032$	$-O-$
69	$\{0,1,98\}$	$77 \to 315 \to 841 \to 1564 \to 2746 \to 4469 \to 5931 \to 6019 \to 3152 \to 5029$	$-O-$
70	$\{0,1,99\}$	$78 \to 317 \to 843 \to 1568 \to 2732 \to 4485 \to 3855 \to 1809 \to 3042 \to 1952$	$-O-$
71	$\{0,1,100\}$	$79 \to 258 \to 743 \to 1432 \to 2561 \to 4263 \to 5874 \to 4604 \to 3132 \to 4970$	$-O-$
72	$\{0,1,101\}$	$80 \to 259 \to 745 \to 1438 \to 2624 \to 4509 \to 1091 \to 620 \to 1367 \to 2205$	$-O-$
73	$\{0,1,102\}$	$81 \to 400 \to 939 \to 1469 \to 2676 \to 4517 \to 123 \to 433 \to 752 \to 1452$	$-O-$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
74	$\{0,1,103\}$	$82 \to 271 \to 771 \to 1167 \to 711 \to 1407 \to 2128 \to 3746 \to 3134 \to 2330$	$-O-$
75	$\{0,1,104\}$	$83 \to 273 \to 775 \to 1485 \to 2681 \to 4535 \to 5935 \to 2287 \to 2509 \to 4331$	$-O-$
76	$\{0,1,106\}$	$84 \to 402 \to 901 \to 1422 \to 2599 \to 1891 \to 3468 \to 5313 \to 3190 \to 4971$	$-O-$
77	$\{0,1,107\}$	$85 \to 403 \to 942 \to 1463 \to 2664 \to 3647 \to 2298 \to 3229 \to 3197 \to 1790$	$-O-$
78	$\{0,1,108\}$	$86 \to 404 \to 875 \to 1599 \to 1690 \to 3019 \to 4864 \to 3797 \to 3110 \to 5005$	$-O-$
79	$\{0,1,111\}$	$87 \to 405 \to 917 \to 1606 \to 2612 \to 4505 \to 5808 \to 4784 \to 3215 \to 2909$	$-O-$
80	$\{0,1,112\}$	$88 \to 406 \to 919 \to 1620 \to 2690 \to 1120 \to 544 \to 1280 \to 2159 \to 3686$	$-O-$
81	$\{0,1,113\}$	$89 \to 408 \to 930 \to 1577 \to 2697 \to 1170 \to 729 \to 1374 \to 1828 \to 3062$	$-O-$
82	$\{0,1,114\}$	$90 \to 410 \to 949 \to 1581 \to 2738 \to 990 \to 555 \to 1297 \to 1629 \to 2936$	$-O-$
83	$\{0,1,115\}$	$91 \to 231 \to 493 \to 836 \to 1559 \to 2694 \to 4478 \to 4150 \to 3179 \to 2901$	$-O-$
84	$\{0,1,116\}$	$92 \to 322 \to 854 \to 1574 \to 2731 \to 4547 \to 5946 \to 6074 \to 3166 \to 5022$	$-O-$
85	$\{0,1,118\}$	$93 \to 363 \to 896 \to 215 \to 474 \to 959 \to 1515 \to 2710 \to 3191 \to 5011$	$-O-$
86	$\{0,1,119\}$	$94 \to 412 \to 951 \to 1586 \to 2610 \to 3341 \to 3252 \to 5201 \to 3203 \to 1771$	$-O-$
87	$\{0,1,120\}$	$95 \to 382 \to 920 \to 1621 \to 2720 \to 2522 \to 4354 \to 2439 \to 3089 \to 4982$	$-O-$
88	$\{0,1,121\}$	$96 \to 415 \to 937 \to 1623 \to 2752 \to 3886 \to 5613 \to 2569 \to 1868 \to 3439$	$-O-$
89	$\{0,1,122\}$	$97 \to 417 \to 855 \to 1576 \to 2661 \to 4520 \to 1902 \to 3477 \to 3177 \to 4051$	$-O-$
90	$\{0,1,123\}$	$98 \to 418 \to 857 \to 1580 \to 2753 \to 1801 \to 3013 \to 4439 \to 3090 \to 3650$	$-O-$
91	$\{0,1,125\}$	$100 \to 420 \to 953 \to 1449 \to 2642 \to 1177 \to 623 \to 1363 \to 1762 \to 3073$	$-O-$
92	$\{0,1,126\}$	$101 \to 421 \to 932 \to 1457 \to 2654 \to 3234 \to 5180 \to 2474 \to 3178 \to 3651$	$-O-$
93	$\{0,1,127\}$	$102 \to 422 \to 908 \to 503 \to 1201 \to 2049 \to 1871 \to 3442 \to 3211 \to 3535$	$-O-$
94	$\{0,1,129\}$	$103 \to 318 \to 847 \to 188 \to 396 \to 882 \to 1570 \to 2744 \to 2382 \to 4027$	$-O-$
95	$\{0,1,130\}$	$104 \to 319 \to 849 \to 1414 \to 2582 \to 1847 \to 3410 \to 5303 \to 3139 \to 5021$	$-O-$
96	$\{0,1,131\}$	$105 \to 426 \to 954 \to 1419 \to 2594 \to 4486 \to 1862 \to 1836 \to 3127 \to 4133$	$-O-$
97	$\{0,1,132\}$	$106 \to 376 \to 909 \to 1426 \to 2606 \to 4499 \to 1887 \to 3463 \to 3082 \to 4973$	$-O-$
98	$\{0,1,134\}$	$107 \to 348 \to 834 \to 1436 \to 2620 \to 4471 \to 3272 \to 5213 \to 3192 \to 4980$	$-O-$
99	$\{0,1,135\}$	$108 \to 428 \to 838 \to 1443 \to 2632 \to 4488 \to 5476 \to 6177 \to 3167 \to 4174$	$-O-$
100	$\{0,1,136\}$	$109 \to 430 \to 859 \to 1451 \to 2646 \to 4536 \to 113 \to 379 \to 914 \to 1477$	$-O-$
101	$\{0,1,137\}$	$110 \to 291 \to 804 \to 1459 \to 2640 \to 4532 \to 5074 \to 2917 \to 2572 \to 4310$	$-O-$
102	$\{0,1,138\}$	$111 \to 293 \to 807 \to 1461 \to 2662 \to 1631 \to 2940 \to 4838 \to 3136 \to 2423$	$-O-$
103	$\{0,1,139\}$	$112 \to 346 \to 830 \to 1464 \to 2668 \to 1799 \to 2815 \to 4716 \to 3098 \to 4387$	$-O-$
104	$\{0,1,142\}$	$114 \to 307 \to 828 \to 1482 \to 2677 \to 2534 \to 4360 \to 5724 \to 3130 \to 5018$	$-O-$
105	$\{0,1,148\}$	$117 \to 427 \to 904 \to 1428 \to 2611 \to 4504 \to 4431 \to 3566 \to 3224 \to 5033$	$-O-$
106	$\{0,1,151\}$	$118 \to 401 \to 940 \to 1489 \to 2687 \to 1773 \to 2929 \to 4047 \to 3218 \to 4934$	$-O-$
107	$\{0,1,156\}$	$119 \to 439 \to 899 \to 1539 \to 2622 \to 4519 \to 5856 \to 5134 \to 3170 \to 5030$	$-O-$
108	$\{0,1,158\}$	$120 \to 261 \to 749 \to 1446 \to 2637 \to 4530 \to 5242 \to 2823 \to 3085 \to 4978$	$-O-$
109	$\{0,1,159\}$	$121 \to 399 \to 938 \to 1550 \to 2715 \to 4036 \to 2889 \to 4741 \to 3145 \to 4969$	$-O-$
110	$\{0,1,164\}$	$122 \to 440 \to 902 \to 1563 \to 2634 \to 4500 \to 2506 \to 4348 \to 3222 \to 4995$	$PO-$
111	$\{0,1,166\}$	$124 \to 425 \to 756 \to 1416 \to 2588 \to 4407 \to 5928 \to 4616 \to 3094 \to 4989$	$-O-$
112	$\{0,1,169\}$	$125 \to 442 \to 803 \to 1466 \to 2671 \to 4512 \to 5823 \to 3375 \to 3080 \to 2392$	$-O-$
113	$\{0,1,170\}$	$126 \to 444 \to 806 \to 1529 \to 2729 \to 4507 \to 5828 \to 4223 \to 3097 \to 4994$	$-O-$
114	$\{0,1,171\}$	$127 \to 446 \to 840 \to 1561 \to 2749 \to 4493 \to 5944 \to 3142 \to 2771 \to 244$	$-O-$
115	$\{0,1,174\}$	$128 \to 447 \to 944 \to 1583 \to 2250 \to 1634 \to 2944 \to 4845 \to 3107 \to 4979$	$-O-$
116	$\{0,1,175\}$	$129 \to 409 \to 948 \to 1585 \to 2725 \to 4539 \to 2905 \to 4038 \to 3147 \to 4972$	$-O-$
117	$\{0,1,178\}$	$130 \to 451 \to 962 \to 1587 \to 2643 \to 4534 \to 1015 \to 600 \to 1346 \to 2087$	$-O-$
118	$\{0,1,179\}$	$131 \to 452 \to 965 \to 1592 \to 2727 \to 4508 \to 5943 \to 1130 \to 511 \to 1220$	$-O-$
119	$\{0,1,180\}$	$132 \to 385 \to 923 \to 1596 \to 1946 \to 3475 \to 5314 \to 6148 \to 3181 \to 2271$	$PO-$
120	$\{0,1,181\}$	$133 \to 305 \to 826 \to 1552 \to 1942 \to 2418 \to 4270 \to 2375 \to 2294 \to 3999$	$-O-$
121	$\{0,1,182\}$	$134 \to 380 \to 916 \to 217 \to 328 \to 862 \to 1528 \to 2660 \to 2223 \to 3921$	$-O-$
122	$\{0,1,183\}$	$135 \to 381 \to 918 \to 1597 \to 2721 \to 2354 \to 4012 \to 5686 \to 3159 \to 4974$	$-O-$
123	$\{0,1,184\}$	$136 \to 449 \to 963 \to 1589 \to 2616 \to 4513 \to 3355 \to 3551 \to 3120 \to 4087$	$-O-$
124	$\{0,1,185\}$	$137 \to 450 \to 884 \to 1435 \to 2619 \to 4516 \to 2851 \to 3652 \to 3083 \to 4975$	$-O-$
125	$\{0,1,190\}$	$140 \to 397 \to 935 \to 1610 \to 2745 \to 3205 \to 5027 \to 238 \to 266 \to 760$	$-O-$
126	$\{0,1,192\}$	$141 \to 423 \to 910 \to 722 \to 502 \to 1198 \to 2042 \to 3680 \to 3172 \to 3580$	$-O-$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
127	$\{0,1,194\}$	$143 \to 435 \to 905 \to 1491 \to 2583 \to 4470 \to 240 \to 285 \to 744 \to 1434$	$-O-$
128	$\{0,1,195\}$	$144 \to 277 \to 782 \to 1497 \to 2595 \to 4487 \to 4415 \to 5924 \to 3194 \to 3813$	$-O-$
129	$\{0,1,199\}$	$145 \to 454 \to 867 \to 1593 \to 2633 \to 4527 \to 4599 \to 2918 \to 3209 \to 4976$	$-O-$
130	$\{0,1,202\}$	$146 \to 463 \to 966 \to 1618 \to 2663 \to 2409 \to 4257 \to 2452 \to 1835 \to 3392$	$-O-$
131	$\{0,1,204\}$	$147 \to 465 \to 801 \to 710 \to 1310 \to 2184 \to 3722 \to 4200 \to 2241 \to 3949$	$-O-$
132	$\{0,1,208\}$	$149 \to 468 \to 861 \to 1567 \to 2692 \to 4249 \to 1919 \to 3226 \to 3091 \to 3907$	$-O-$
133	$\{0,1,211\}$	$150 \to 431 \to 946 \to 1000 \to 574 \to 1246 \to 2122 \to 3764 \to 3221 \to 4977$	$-O-$
134	$\{0,1,212\}$	$151 \to 470 \to 906 \to 534 \to 1262 \to 2141 \to 3709 \to 5530 \to 3122 \to 5014$	$-O-$
135	$\{0,1,217\}$	$152 \to 321 \to 852 \to 1555 \to 2728 \to 3354 \to 5178 \to 1824 \to 3049 \to 4871$	$-O-$
136	$\{0,1,223\}$	$153 \to 448 \to 762 \to 1465 \to 2670 \to 3788 \to 4749 \to 5572 \to 2016 \to 3429$	$-O-$
137	$\{0,1,224\}$	$154 \to 365 \to 766 \to 1472 \to 1182 \to 516 \to 1230 \to 2097 \to 1878 \to 3453$	$-O-$
138	$\{0,1,225\}$	$155 \to 469 \to 960 \to 1553 \to 1180 \to 703 \to 1213 \to 2069 \to 3086 \to 3525$	$-O-$
139	$\{0,1,227\}$	$156 \to 477 \to 921 \to 1588 \to 2591 \to 1807 \to 3051 \to 3332 \to 3219 \to 4367$	$-O-$
140	$\{0,1,228\}$	$157 \to 453 \to 964 \to 1590 \to 2750 \to 4501 \to 4093 \to 5681 \to 3117 \to 4798$	$-O-$
141	$\{0,1,232\}$	$158 \to 479 \to 956 \to 1506 \to 2705 \to 4537 \to 5934 \to 4187 \to 3198 \to 2878$	$-O-$
142	$\{0,1,236\}$	$159 \to 350 \to 883 \to 1441 \to 2628 \to 4141 \to 3235 \to 5182 \to 3208 \to 5036$	$-O-$
143	$\{0,1,239\}$	$160 \to 283 \to 790 \to 1509 \to 2701 \to 4042 \to 4968 \to 6096 \to 3143 \to 4424$	$-O-$
144	$\{0,1,240\}$	$161 \to 284 \to 792 \to 1512 \to 2709 \to 4544 \to 2430 \to 2018 \to 3204 \to 3318$	$-O-$
145	$\{0,1,241\}$	$162 \to 443 \to 958 \to 1511 \to 2708 \to 4546 \to 2510 \to 4266 \to 3088 \to 4981$	$-O-$
146	$\{0,1,242\}$	$163 \to 445 \to 913 \to 1571 \to 2665$	$-E-$
147	$\{0,1,243\}$	$164 \to 464 \to 967 \to 1619 \to 2675 \to 4506 \to 3103 \to 4997 \to 173 \to 486$	$-O-$
148	$\{0,1,247\}$	$165 \to 299 \to 817 \to 1540 \to 2736 \to 4555 \to 4770 \to 5555 \to 3174 \to 4983$	$-O-$
149	$\{0,1,248\}$	$166 \to 301 \to 820 \to 1544 \to 2740 \to 4558 \to 1816 \to 3075 \to 3137 \to 4963$	$-O-$
150	$\{0,1,250\}$	$167 \to 483 \to 779 \to 1492 \to 2272 \to 3637 \to 2440 \to 4301 \to 3118 \to 2465$	$-O-$
151	$\{0,1,254\}$	$168 \to 485 \to 500 \to 1195 \to 2035 \to 3667 \to 3092 \to 4985 \to 170 \to 357$	$-O-$
152	$\{0,1,255\}$	$169 \to 256 \to 499 \to 1194 \to 2030 \to 3659 \to 5497 \to 6183 \to 3162 \to 4984$	$PO-$
153	$\{0,1,260\}$	$171 \to 375 \to 733 \to 1381 \to 2214 \to 3707 \to 4052 \to 5765 \to 3168 \to 5024$	$-O-$
154	$\{0,1,261\}$	$172 \to 484 \to 731 \to 1379 \to 2219 \to 3780 \to 5244 \to 3596 \to 3093 \to 4987$	$-O-$
155	$\{0,1,263\}$	$174 \to 432 \to 748 \to 1444 \to 1823 \to 2001 \to 3523 \to 5349 \to 3106 \to 4988$	$-O-$
156	$\{0,1,269\}$	$175 \to 367 \to 770 \to 1163 \to 587 \to 1334 \to 2123 \to 2903 \to 3095 \to 4990$	$-O-$
157	$\{0,1,271\}$	$176 \to 419 \to 777 \to 1488 \to 2686 \to 4514 \to 4204 \to 5653 \to 3126 \to 4991$	$-O-$
158	$\{0,1,272\}$	$177 \to 489 \to 781 \to 1495 \to 2657 \to 4521 \to 2778 \to 4129 \to 3121 \to 5012$	$-O-$
159	$\{0,1,278\}$	$178 \to 323 \to 796 \to 1518 \to 2716 \to 2754 \to 4656 \to 6004 \to 3146 \to 5025$	$PO-$
160	$\{0,1,279\}$	$179 \to 492 \to 799 \to 1522 \to 2589 \to 2879 \to 4725 \to 3841 \to 3214 \to 4993$	$-O-$
161	$\{0,1,282\}$	$180 \to 476 \to 810 \to 1532 \to 2700 \to 1637 \to 2950 \to 4852 \to 3123 \to 5015$	$-O-$
162	$\{0,1,284\}$	$181 \to 275 \to 778 \to 1490 \to 2689 \to 4197 \to 3802 \to 5608 \to 3220 \to 1848$	$-O-$
163	$\{0,1,285\}$	$182 \to 436 \to 819 \to 1498 \to 2695 \to 4551 \to 2317 \to 4011 \to 1079 \to 680$	$-O-$
164	$\{0,1,287\}$	$183 \to 473 \to 825 \to 1551 \to 2726 \to 3531 \to 5408 \to 4917 \to 3180 \to 2499$	$-O-$
165	$\{0,1,293\}$	$184 \to 458 \to 754 \to 1456 \to 2652 \to 4511 \to 5590 \to 4123 \to 3099 \to 4914$	$-O-$
166	$\{0,1,294\}$	$185 \to 413 \to 758 \to 1460 \to 2659 \to 4518 \to 5948 \to 5563 \to 3163 \to 1642$	$-O-$
167	$\{0,1,313\}$	$187 \to 481 \to 877 \to 1601 \to 2696 \to 3849 \to 1962 \to 3393 \to 1948 \to 3511$	$-O-$
168	$\{0,1,331\}$	$189 \to 279 \to 732 \to 1380 \to 2076 \to 3721 \to 3314 \to 5234 \to 3135 \to 4996$	$-O-$
169	$\{0,1,336\}$	$190 \to 263 \to 753 \to 1454 \to 2648 \to 4540 \to 3243 \to 3640 \to 3223 \to 5028$	$-O-$
170	$\{0,1,337\}$	$191 \to 490 \to 794 \to 1517 \to 2699 \to 4523 \to 3350 \to 5216 \to 3104 \to 4998$	$-O-$
171	$\{0,1,338\}$	$192 \to 330 \to 846 \to 1530 \to 2704 \to 4533 \to 4179 \to 4055 \to 3113 \to 5007$	$-O-$
172	$\{0,1,339\}$	$193 \to 331 \to 865 \to 1582 \to 2706 \to 1920 \to 3460 \to 5342 \to 3116 \to 4999$	$-O-$
173	$\{0,1,340\}$	$194 \to 462 \to 911 \to 1617 \to 2658 \to 4490 \to 5804 \to 6154 \to 3155 \to 5016$	$-O-$
174	$\{0,1,342\}$	$195 \to 370 \to 903 \to 1575 \to 2638 \to 4444 \to 5913 \to 4942 \to 3109 \to 5004$	$-E-$
175	$\{0,1,343\}$	$196 \to 309 \to 831 \to 1554 \to 2649 \to 2864 \to 4733 \to 5784 \to 3138 \to 5000$	$-O-$
176	$\{0,1,347\}$	$197 \to 461 \to 924 \to 1608 \to 2651 \to 4542 \to 5149 \to 5056 \to 3157 \to 5001$	$-O-$
177	$\{0,1,348\}$	$198 \to 333 \to 866 \to 1584 \to 2735 \to 4554 \to 3583 \to 5433 \to 3119 \to 5009$	$-O-$
178	$\{0,1,349\}$	$199 \to 497 \to 927 \to 1572 \to 2501 \to 4343 \to 2830 \to 4720 \to 3105 \to 4459$	$-O-$
179	$\{0,1,354\}$	$200 \to 455 \to 929 \to 1602 \to 2742 \to 4473 \to 3655 \to 5123 \to 3108 \to 5003$	$-O-$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
180	$\{0,1,355\}$	$201 \to 487 \to 764 \to 1424 \to 2602 \to 2874 \to 4738 \to 2487 \to 3216 \to 5002$	$-O-$
181	$\{0,1,356\}$	$202 \to 488 \to 768 \to 1475 \to 1157 \to 608 \to 1317 \to 2193 \to 3129 \to 5017$	$-O-$
182	$\{0,1,359\}$	$203 \to 303 \to 823 \to 1548 \to 2667 \to 4529 \to 5805 \to 6123 \to 3169 \to 4040$	$-O-$
183	$\{0,1,360\}$	$204 \to 386 \to 925 \to 1622 \to 2734 \to 4525 \to 5940 \to 5366 \to 3217 \to 2235$	$-O-$
184	$\{0,1,362\}$	$205 \to 475 \to 936 \to 1526 \to 2723 \to 4494 \to 5141 \to 2297 \to 2228 \to 3931$	$-O-$
185	$\{0,1,363\}$	$206 \to 498 \to 943 \to 1473 \to 2009 \to 3522 \to 5327 \to 2388 \to 3200 \to 2349$	$-O-$
186	$\{0,1,366\}$	$207 \to 429 \to 945 \to 1447 \to 2639 \to 4531 \to 5939 \to 5469 \to 3195 \to 5013$	$-O-$
187	$\{0,1,370\}$	$208 \to 416 \to 915 \to 1603 \to 2713 \to 4560 \to 5933 \to 5163 \to 3149 \to 5026$	$-O-$
188	$\{0,1,372\}$	$209 \to 368 \to 900 \to 1616 \to 2625 \to 4491 \to 5139 \to 2843 \to 3207 \to 5031$	$-O-$
189	$\{0,1,383\}$	$210 \to 355 \to 888 \to 969 \to 508 \to 1214 \to 2070 \to 2855 \to 2410 \to 4259$	$-O-$
190	$\{0,1,387\}$	$211 \to 472 \to 808 \to 1421 \to 2598$	$-O-$
191	$\{0,1,389\}$	$212 \to 438 \to 890 \to 1034 \to 550 \to 1290 \to 2119 \to 3761 \to 2570 \to 4293$	$-O-$
192	$\{0,1,390\}$	$213 \to 482 \to 955 \to 1437 \to 2586 \to 4474 \to 5730 \to 4618 \to 2551 \to 4311$	$-O-$
193	$\{0,1,410\}$	$218 \to 344 \to 848 \to 1533 \to 2718 \to 4094 \to 5546 \to 4056 \to 3141 \to 3239$	$-O-$
194	$\{0,1,414\}$	$219 \to 388 \to 926 \to 1547 \to 2647 \to 4538 \to 4391 \to 5811 \to 3199 \to 3259$	$-O-$
195	$\{0,1,417\}$	$220 \to 491 \to 797 \to 1520 \to 2666 \to 2379 \to 4010 \to 5708 \to 2357 \to 3950$	$-O-$
196	$\{0,1,423\}$	$221 \to 494 \to 844 \to 1531 \to 2730 \to 4515 \to 5947 \to 6022 \to 3164 \to 5008$	$-O-$
197	$\{0,1,425\}$	$223 \to 394 \to 933 \to 1545 \to 2741 \to 2231 \to 3937 \to 5702 \to 3115 \to 4425$	$-O-$
198	$\{0,1,428\}$	$224 \to 342 \to 874 \to 1579 \to 2714 \to 2541 \to 4352 \to 5807 \to 3125 \to 3322$	$-O-$
199	$\{0,1,446\}$	$226 \to 287 \to 746 \to 1440 \to 2627 \to 4522 \to 2554 \to 1842 \to 3201 \to 5023$	$-O-$
200	$\{0,1,447\}$	$227 \to 289 \to 800 \to 1524 \to 1627 \to 2932 \to 4827 \to 1870 \to 3210 \to 5010$	$-O-$
201	$\{0,1,454\}$	$229 \to 478 \to 934 \to 1500 \to 2623 \to 1086 \to 690 \to 1404 \to 2038 \to 3672$	$-O-$
202	$\{0,1,458\}$	$230 \to 407 \to 947 \to 1439 \to 2626 \to 4069 \to 3899 \to 5619 \to 3202 \to 1954$	$-O-$
203	$\{0,1,472\}$	$232 \to 383 \to 772 \to 1479 \to 1941 \to 3451 \to 5319 \to 5841 \to 3144 \to 2352$	$-O-$
204	$\{0,1,475\}$	$233 \to 352 \to 885 \to 1594 \to 2733 \to 4561 \to 4421 \to 1786 \to 2923 \to 4815$	$-O-$
205	$\{0,1,476\}$	$234 \to 354 \to 887 \to 1611 \to 2603 \to 4495 \to 5060 \to 5997 \to 2471 \to 4326$	$-O-$
206	$\{0,1,496\}$	$235 \to 495 \to 878 \to 1486 \to 2682 \to 4550 \to 4364 \to 5912 \to 3213 \to 5034$	$-O-$
207	$\{0,1,505\}$	$236 \to 326 \to 858 \to 1519 \to 2653 \to 4543 \to 5279 \to 2316 \to 3131 \to 5019$	$-O-$
208	$\{0,1,530\}$	$239 \to 281 \to 788 \to 1507 \to 2673 \to 4548 \to 4071 \to 4210 \to 3206 \to 4435$	$-O-$
209	$\{0,1,538\}$	$241 \to 295 \to 811 \to 1534 \to 2724 \to 4496 \to 5480 \to 1064 \to 665 \to 1351$	$-O-$
210	$\{0,1,539\}$	$242 \to 297 \to 814 \to 1536 \to 2655 \to 4545 \to 1188 \to 648 \to 1204 \to 2052$	$-O-$
211	$\{0,1,564\}$	$243 \to 336 \to 750 \to 1448 \to 2641 \to 4481 \to 5075 \to 4409 \to 3153 \to 4959$	$-O-$
212	$\{0,1,612\}$	$245 \to 398 \to 791 \to 1510 \to 2707 \to 4503 \to 2787 \to 4697 \to 1662 \to 2984$	$-O-$
213	$\{0,1,632\}$	$247 \to 414 \to 761 \to 1417 \to 2590 \to 4480 \to 5941 \to 2527 \to 3212 \to 3548$	$-O-$
214	$\{0,1,700\}$	$248 \to 457 \to 961 \to 1557 \to 2618 \to 4198 \to 3864 \to 5600 \to 3154 \to 1929$	$-O-$
215	$\{0,1,703\}$	$249 \to 459 \to 789 \to 1508 \to 973 \to 521 \to 1239 \to 2111 \to 1754 \to 2985$	$-O-$
216	$\{0,1,706\}$	$250 \to 460 \to 941 \to 1480 \to 2397 \to 1657 \to 2979 \to 3358 \to 3173 \to 2443$	$-O-$
217	$\{0,1,827\}$	$252 \to 496 \to 880 \to 1430 \to 2613 \to 987 \to 551 \to 1292 \to 1625 \to 2926$	$-O-$
218	$\{0,3,15\}$	$501 \to 543 \to 1278 \to 2110 \to 3756 \to 2469 \to 3616 \to 1011 \to 592 \to 1140$	$-O-$
219	$\{0,3,21\}$	$505 \to 1206 \to 2057 \to 2261 \to 3958 \to 4181 \to 5654 \to 3831 \to 5624 \to 1040$	$-O-$
220	$\{0,3,25\}$	$507 \to 1212 \to 2067 \to 1831 \to 3383 \to 5288 \to 3649 \to 5364 \to 6163 \to 1142$	$-O-$
221	$\{0,3,27\}$	$509 \to 1216 \to 2074 \to 3720 \to 3230 \to 5176 \to 1175 \to 707 \to 1336 \to 1038$	$-O-$
222	$\{0,3,28\}$	$510 \to 1218 \to 2077 \to 1854 \to 3420 \to 5285 \to 3537 \to 996 \to 566 \to 970$	$-O-$
223	$\{0,3,33\}$	$514 \to 1226 \to 2090 \to 3698 \to 994$	$-O-$
224	$\{0,3,34\}$	$515 \to 1228 \to 2093 \to 3742 \to 5537 \to 1968 \to 1134 \to 589 \to 1293 \to 971$	$-O-$
225	$\{0,3,36\}$	$517 \to 1232 \to 2046 \to 1838 \to 3397 \to 4619 \to 5974 \to 5381 \to 1821 \to 972$	$-O-$
226	$\{0,3,37\}$	$518 \to 1234 \to 2102 \to 3738 \to 5531 \to 4906 \to 4180 \to 4081 \to 4404 \to 1043$	$-O-$
227	$\{0,3,39\}$	$519 \to 1236 \to 2054 \to 3695 \to 1643 \to 2958 \to 4860 \to 6067 \to 1757 \to 1068$	$-O-$
228	$\{0,3,44\}$	$522 \to 1242 \to 2089 \to 3736 \to 5523 \to 3811 \to 5614 \to 3305 \to 1927 \to 974$	$-O-$
229	$\{0,3,45\}$	$523 \to 1244 \to 2118 \to 3730 \to 5544 \to 4070 \to 1921 \to 3409 \to 5093 \to 1174$	$-O-$
230	$\{0,3,46\}$	$524 \to 1196 \to 2037 \to 2575 \to 4337 \to 2555 \to 4288 \to 4799 \to 1702 \to 975$	$-O-$
231	$\{0,3,47\}$	$525 \to 1247 \to 2099 \to 3666 \to 5507 \to 3867 \to 5635 \to 3261 \to 1843 \to 1183$	$-O-$
232	$\{0,3,49\}$	$527 \to 1249 \to 2050 \to 2560 \to 4327 \to 5113 \to 5493 \to 4590 \to 5273 \to 1067$	$-O-$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
233	$\{0,3,51\}$	$528 \to 1252 \to 2131 \to 3745 \to 5451 \to 1031 \to 624 \to 1256 \to 2134 \to 1184$	$- O -$
234	$\{0,3,52\}$	$529 \to 1254 \to 2058 \to 3699 \to 5524 \to 3818 \to 5617 \to 6046 \to 2015 \to 977$	$- O -$
235	$\{0,3,53\}$	$530 \to 1207 \to 1833 \to 3389 \to 4462 \to 2537 \to 2533 \to 4357 \to 5870 \to 1185$	$- O -$
236	$\{0,3,54\}$	$531 \to 1257 \to 2114 \to 3724 \to 2919 \to 3911 \to 5605 \to 4132 \to 1965 \to 978$	$- O -$
237	$\{0,3,55\}$	$532 \to 1258 \to 2136 \to 3664 \to 5505 \to 4933 \to 1987 \to 3292 \to 2344 \to 1050$	$- O -$
238	$\{0,3,56\}$	$533 \to 1260 \to 2139 \to 2525 \to 4300 \to 2243 \to 1061 \to 661 \to 1403 \to 979$	$- O -$
239	$\{0,3,58\}$	$535 \to 1263 \to 2142 \to 3758 \to 5486 \to 1035 \to 632 \to 1274 \to 2154 \to 980$	$- O -$
240	$\{0,3,59\}$	$536 \to 1265 \to 2078 \to 3723 \to 5539 \to 4464 \to 1023 \to 613 \to 1339 \to 1072$	$- O -$
241	$\{0,3,60\}$	$537 \to 1267 \to 2014 \to 3524 \to 3556 \to 5423 \to 5057 \to 5567 \to 2502 \to 981$	$- O -$
242	$\{0,3,61\}$	$538 \to 1269 \to 2149 \to 3702 \to 5444 \to 1094 \to 631 \to 1341 \to 2166 \to 1002$	$P O -$
243	$\{0,3,62\}$	$539 \to 1271 \to 2151 \to 3777 \to 4373 \to 5799 \to 2456 \to 4317 \to 2343 \to 982$	$- O -$
244	$\{0,3,65\}$	$542 \to 1276 \to 2156 \to 3778 \to 2764 \to 4669 \to 4250 \to 5684 \to 4941 \to 1118$	$- O -$
245	$\{0,3,68\}$	$545 \to 1282 \to 2162 \to 3779 \to 2805 \to 3315 \to 5211 \to 6131 \to 2916 \to 984$	$- O -$
246	$\{0,3,69\}$	$546 \to 1284 \to 2116 \to 3681 \to 1795 \to 2986 \to 1737 \to 3029 \to 4816 \to 1018$	$- O -$
247	$\{0,3,70\}$	$547 \to 1286 \to 2112 \to 2239 \to 3602 \to 1825 \to 3053 \to 4837 \to 2436 \to 985$	$- O -$
248	$\{0,3,71\}$	$548 \to 1288 \to 2167 \to 3734 \to 1171 \to 565 \to 1313 \to 2160 \to 2859 \to 1045$	$- O -$
249	$\{0,3,72\}$	$549 \to 1229 \to 2095 \to 3693 \to 4417 \to 2491 \to 1772 \to 1759 \to 3072 \to 986$	$- O -$
250	$\{0,3,75\}$	$552 \to 1235 \to 2103 \to 3750 \to 2904 \to 4740 \to 1720 \to 1624 \to 2922 \to 1178$	$P O -$
251	$\{0,3,82\}$	$554 \to 1243 \to 2117 \to 3747 \to 2890 \to 3319 \to 5236 \to 1700 \to 3027 \to 989$	$- O -$
252	$\{0,3,85\}$	$556 \to 1298 \to 2173 \to 3752 \to 4388 \to 5791 \to 1685 \to 3016 \to 4882 \to 1105$	$- O -$
253	$\{0,3,88\}$	$557 \to 1277 \to 2157 \to 3771 \to 3557 \to 5424 \to 6085 \to 1966 \to 2529 \to 991$	$- O -$
254	$\{0,3,91\}$	$558 \to 1283 \to 1705 \to 3032 \to 3819 \to 4460 \to 2254 \to 1840 \to 3401 \to 1065$	$- O -$
255	$\{0,3,92\}$	$559 \to 1304 \to 2176 \to 2882 \to 4718 \to 5816 \to 4793 \to 5274 \to 3641 \to 992$	$- E -$
256	$\{0,3,93\}$	$560 \to 1306 \to 2172 \to 3689 \to 3276 \to 1890 \to 3467 \to 5147 \to 6115 \to 1159$	$- O -$
257	$\{0,3,94\}$	$561 \to 1307 \to 2073 \to 3719 \to 5512 \to 4243 \to 2251 \to 3962 \to 3248 \to 993$	$- O -$
258	$\{0,3,95\}$	$562 \to 1309 \to 2126 \to 3767 \to 5538 \to 4185 \to 5659 \to 5262 \to 3607 \to 1106$	$- O -$
259	$\{0,3,97\}$	$563 \to 1312 \to 2082 \to 3729 \to 5542 \to 4755 \to 5910 \to 3365 \to 5177 \to 1141$	$- O -$
260	$\{0,3,98\}$	$564 \to 1233 \to 2100 \to 3749 \to 3895 \to 4159 \to 5494 \to 1906 \to 3483 \to 995$	$- O -$
261	$\{0,3,101\}$	$567 \to 1237 \to 2107 \to 3754 \to 5094 \to 5979 \to 2303 \to 2880 \to 4701 \to 1173$	$- O -$
262	$\{0,3,102\}$	$568 \to 1315 \to 2181 \to 2576 \to 4344 \to 3274 \to 5214 \to 4630 \to 3606 \to 997$	$- O -$
263	$\{0,3,103\}$	$569 \to 625 \to 1373 \to 2105 \to 3751 \to 5352 \to 6159 \to 5959 \to 3848 \to 1123$	$- O -$
264	$\{0,3,104\}$	$570 \to 1318 \to 2101 \to 2758 \to 4662 \to 5818 \to 4795 \to 2346 \to 3978 \to 998$	$- O -$
265	$\{0,3,105\}$	$571 \to 1319 \to 2143 \to 3673 \to 5358 \to 4209 \to 5668 \to 3908 \to 3231 \to 1166$	$- O -$
266	$\{0,3,106\}$	$572 \to 1199 \to 2044 \to 3683 \to 1039 \to 637 \to 1376 \to 2085 \to 3733 \to 999$	$- O -$
267	$\{0,3,107\}$	$573 \to 1321 \to 2196 \to 3765 \to 5525 \to 4796 \to 6041 \to 2395 \to 3995 \to 1092$	$- O -$
268	$\{0,3,110\}$	$575 \to 1197 \to 2040 \to 3677 \to 1896 \to 3472 \to 4428 \to 5164 \to 3879 \to 1001$	$- O -$
269	$\{0,3,111\}$	$576 \to 1322 \to 2145 \to 2424 \to 4280 \to 5881 \to 5829 \to 4802 \to 4100 \to 1169$	$- O -$
270	$\{0,3,113\}$	$577 \to 1210 \to 2063 \to 3710 \to 5503 \to 5903 \to 5734 \to 5900 \to 3376 \to 1150$	$- O -$
271	$\{0,3,115\}$	$579 \to 1324 \to 2133 \to 3770 \to 4099 \to 1005 \to 582 \to 1327 \to 2138 \to 1165$	$- O -$
272	$\{0,3,116\}$	$580 \to 1326 \to 1723 \to 3040 \to 4820 \to 6059 \to 2378 \to 3956 \to 3335 \to 1004$	$- O -$
273	$\{0,3,120\}$	$583 \to 1285 \to 2163 \to 3536 \to 5122 \to 6113 \to 3307 \to 2524 \to 4346 \to 1006$	$- O -$
274	$\{0,3,121\}$	$584 \to 1329 \to 2187 \to 3781 \to 5501 \to 4054 \to 5769 \to 4783 \to 5854 \to 1108$	$- O -$
275	$\{0,3,124\}$	$586 \to 1332 \to 2194 \to 1933 \to 3498 \to 4932 \to 5893 \to 1075 \to 664 \to 1008$	$- O -$
276	$\{0,3,126\}$	$588 \to 1335 \to 2208 \to 2413 \to 4264 \to 5086 \to 1126 \to 599 \to 1211 \to 1009$	$- O -$
277	$\{0,3,129\}$	$591 \to 1238 \to 2108 \to 1626 \to 2930 \to 2411 \to 4261 \to 1671 \to 2978 \to 1114$	$- O -$
278	$\{0,3,132\}$	$594 \to 1241 \to 2115 \to 1650 \to 2967 \to 4868 \to 4057 \to 5754 \to 4647 \to 1012$	$- O -$
279	$\{0,3,133\}$	$595 \to 1342 \to 2209 \to 2772 \to 1148 \to 730 \to 1378 \to 2096 \to 3743 \to 1049$	$- O -$
280	$\{0,3,134\}$	$596 \to 1343 \to 2094 \to 3660 \to 5278 \to 3547 \to 1905 \to 3481 \to 4368 \to 1013$	$- O -$
281	$\{0,3,135\}$	$597 \to 1299 \to 2150 \to 3645 \to 4747 \to 6034 \to 6054 \to 2478 \to 3232 \to 1186$	$- O -$
282	$\{0,3,136\}$	$598 \to 1345 \to 2210 \to 2547 \to 4361 \to 5564 \to 4072 \to 2871 \to 1639 \to 1014$	$- O -$
283	$\{0,3,139\}$	$601 \to 1251 \to 2129 \to 1710 \to 3035 \to 4896 \to 2829 \to 2767 \to 4673 \to 1129$	$- O -$
284	$\{0,3,140\}$	$602 \to 1217 \to 2075 \to 2825 \to 4700 \to 6009 \to 5101 \to 5839 \to 4772 \to 1016$	$- O -$
285	$\{0,3,141\}$	$603 \to 1348 \to 2098 \to 3665 \to 5506 \to 1730 \to 2000 \to 3432 \to 5334 \to 1030$	$- O -$
			continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
286	$\{0,3,142\}$	$604 \to 1305 \to 2178 \to 3668 \to 4242 \to 5648 \to 2811 \to 4713 \to 4576 \to 1017$	$-\ O\ -$
287	$\{0,3,143\}$	$605 \to 1300 \to 2175 \to 3674 \to 5511 \to 6101 \to 5800 \to 5746 \to 4780 \to 1054$	$-\ O\ -$
288	$\{0,3,146\}$	$606 \to 1352 \to 2211 \to 2255 \to 3538 \to 5413 \to 3296 \to 2817 \to 2552 \to 1019$	$-\ O\ -$
289	$\{0,3,150\}$	$607 \to 1308 \to 2182 \to 3703 \to 5527 \to 1715 \to 3031 \to 4824 \to 3833 \to 1020$	$-\ O\ -$
290	$\{0,3,153\}$	$609 \to 1354 \to 2206 \to 3715 \to 4748 \to 1677 \to 2947 \to 4847 \to 2861 \to 1145$	$-\ O\ -$
291	$\{0,3,156\}$	$610 \to 1355 \to 2207 \to 3691 \to 2779 \to 4686 \to 1714 \to 2942 \to 2875 \to 1021$	$-\ O\ -$
292	$\{0,3,158\}$	$611 \to 1350 \to 2168 \to 3671 \to 4058 \to 5771 \to 4392 \to 5157 \to 4931 \to 1022$	$-\ O\ -$
293	$\{0,3,165\}$	$612 \to 1137 \to 673 \to 1328 \to 2084 \to 3731 \to 5269 \to 3544 \to 5417 \to 1063$	$-\ O\ -$
294	$\{0,3,168\}$	$614 \to 1357 \to 1189 \to 650 \to 1358 \to 2217 \to 3757 \to 3328 \to 1956 \to 1024$	$-\ O\ -$
295	$\{0,3,169\}$	$615 \to 1323 \to 2065 \to 3237 \to 5185 \to 4140 \to 3866 \to 4781 \to 6044 \to 1070$	$-\ O\ -$
296	$\{0,3,174\}$	$616 \to 1359 \to 2106 \to 3753 \to 5518 \to 6185 \to 4137 \to 5760 \to 5143 \to 1025$	$-\ O\ -$
297	$\{0,3,178\}$	$617 \to 1362 \to 2212 \to 3696 \to 5521 \to 5487 \to 5726 \to 3279 \to 5181 \to 1027$	$-\ O\ -$
298	$\{0,3,180\}$	$618 \to 1364 \to 1761 \to 3071 \to 1960 \to 3514 \to 4371 \to 1916 \to 3479 \to 1028$	$-\ O\ -$
299	$\{0,3,181\}$	$619 \to 1366 \to 2121 \to 3763 \to 4466 \to 5860 \to 4936 \to 6089 \to 2376 \to 1187$	$-\ O\ -$
300	$\{0,3,184\}$	$621 \to 1360 \to 2218 \to 3766 \to 5510 \to 5043 \to 4806 \to 3568 \to 2351 \to 1029$	$-\ O\ -$
301	$\{0,3,185\}$	$622 \to 1302 \to 2148 \to 3774 \to 5535 \to 2278 \to 3914 \to 5687 \to 6180 \to 1119$	$-\ O\ -$
302	$\{0,3,191\}$	$627 \to 1261 \to 2140 \to 3773 \to 2244 \to 3953 \to 1995 \to 3519 \to 2329 \to 1131$	$-\ O\ -$
303	$\{0,3,194\}$	$630 \to 1371 \to 2169 \to 3776 \to 2029 \to 3518 \to 5290 \to 3550 \to 5351 \to 1033$	$-\ O\ -$
304	$\{0,3,201\}$	$633 \to 1369 \to 2179 \to 3337 \to 2366 \to 2806 \to 4568 \to 5968 \to 5124 \to 1146$	$-\ O\ -$
305	$\{0,3,202\}$	$634 \to 1347 \to 2135 \to 1149 \to 728 \to 1372 \to 2185 \to 3679 \to 4062 \to 1036$	$-\ O\ -$
306	$\{0,3,204\}$	$635 \to 1382 \to 2064 \to 3711 \to 4769 \to 2863 \to 3366 \to 4232 \to 5683 \to 1037$	$-\ O\ -$
307	$\{0,3,205\}$	$636 \to 1384 \to 2080 \to 3662 \to 5500 \to 6184 \to 4128 \to 5772 \to 1691 \to 1098$	$-\ O\ -$
308	$\{0,3,211\}$	$638 \to 1386 \to 2216 \to 3755 \to 3898 \to 2795 \to 2386 \to 1970 \to 3437 \to 1110$	$-\ O\ -$
309	$\{0,3,214\}$	$639 \to 1389 \to 2092 \to 3740 \to 5513 \to 5097 \to 4746 \to 4199 \to 5663 \to 1042$	$-\ O\ -$
310	$\{0,3,217\}$	$640 \to 1240 \to 2113 \to 3759 \to 5533 \to 2906 \to 4728 \to 5066 \to 6000 \to 1076$	$-\ O\ -$
311	$\{0,3,220\}$	$641 \to 1245 \to 2120 \to 3270 \to 5212 \to 6132 \to 6139 \to 2334 \to 3951 \to 1044$	$-\ O\ -$
312	$\{0,3,226\}$	$642 \to 1331 \to 2036 \to 3669 \to 5509 \to 3876 \to 5631 \to 3336 \to 1992 \to 1046$	$-\ O\ -$
313	$\{0,3,227\}$	$643 \to 1255 \to 2132 \to 3744 \to 1104$	$-\ O\ -$
314	$\{0,3,230\}$	$644 \to 1320 \to 2195 \to 3687 \to 5519 \to 2341 \to 4018 \to 4048 \to 5762 \to 1047$	$-\ O\ -$
315	$\{0,3,232\}$	$645 \to 1368 \to 2164 \to 3769 \to 5499 \to 5836 \to 4812 \to 4227 \to 5682 \to 1048$	$-\ O\ -$
316	$\{0,3,235\}$	$646 \to 1266 \to 2144 \to 3772 \to 5532 \to 5111 \to 3373 \to 4155 \to 4601 \to 1179$	$-\ O\ -$
317	$\{0,3,238\}$	$647 \to 1272 \to 2152 \to 3760 \to 2458 \to 4318 \to 3269 \to 5210 \to 2521 \to 1051$	$-\ O\ -$
318	$\{0,3,240\}$	$649 \to 1325 \to 2203 \to 3783 \to 5543 \to 2504 \to 2500 \to 4324 \to 1721 \to 1052$	$-\ O\ -$
319	$\{0,3,242\}$	$651 \to 1209 \to 2060 \to 3705 \to 2024 \to 3486 \to 5336 \to 2017 \to 3395 \to 1053$	$-\ O\ -$
320	$\{0,3,246\}$	$652 \to 1397 \to 2198 \to 3685 \to 5517 \to 6075 \to 5821 \to 4789 \to 5044 \to 1055$	$-\ O\ -$
321	$\{0,3,247\}$	$653 \to 1219 \to 2079 \to 3725 \to 4419 \to 5920 \to 4948 \to 5742 \to 1718 \to 1127$	$-\ O\ -$
322	$\{0,3,249\}$	$654 \to 1221 \to 2081 \to 3728 \to 5541 \to 6100 \to 5479 \to 5556 \to 2808 \to 1162$	$-\ O\ -$
323	$\{0,3,250\}$	$655 \to 1223 \to 2041 \to 3678 \to 5515 \to 2457 \to 2407 \to 4255 \to 5869 \to 1057$	$P\ O\ -$
324	$\{0,3,252\}$	$656 \to 1388 \to 2125 \to 3748 \to 5522 \to 4219 \to 2323 \to 4000 \to 3589 \to 1058$	$-\ O\ -$
325	$\{0,3,253\}$	$657 \to 1398 \to 1830 \to 3382 \to 1747 \to 2980 \to 2562 \to 4356 \to 1663 \to 1156$	$-\ O\ -$
326	$\{0,3,262\}$	$662 \to 1296 \to 2031 \to 3661 \to 5498 \to 1883 \to 3413 \to 5277 \to 3615 \to 1062$	$-\ O\ -$
327	$\{0,3,263\}$	$663 \to 1349 \to 1981 \to 3385 \to 5301 \to 6149 \to 5390 \to 5897 \to 5958 \to 1168$	$-\ O\ -$
328	$\{0,3,269\}$	$666 \to 1301 \to 2033 \to 1783 \to 3078 \to 4879 \to 6057 \to 5489 \to 6099 \to 1135$	$-\ O\ -$
329	$\{0,3,271\}$	$667 \to 1289 \to 2039 \to 3675 \to 5054 \to 5993 \to 5484 \to 5042 \to 5986 \to 1081$	$-\ O\ -$
330	$\{0,3,272\}$	$668 \to 1405 \to 2043 \to 3682 \to 5516 \to 1989 \to 2846 \to 2233 \to 3939 \to 1066$	$-\ O\ -$
331	$\{0,3,279\}$	$669 \to 1281 \to 2062 \to 3708 \to 1687 \to 2928 \to 4823 \to 5459 \to 3809 \to 1103$	$-\ O\ -$
332	$\{0,3,281\}$	$670 \to 1394 \to 2068 \to 3716 \to 5534 \to 2838 \to 2370 \to 3965 \to 5705 \to 1153$	$-\ O\ -$
333	$\{0,3,282\}$	$671 \to 1406 \to 2071 \to 1632 \to 2941 \to 4841 \to 2897 \to 4684 \to 4598 \to 1071$	$-\ O\ -$
334	$\{0,3,286\}$	$672 \to 1200 \to 2047 \to 3688 \to 1693 \to 3021 \to 4883 \to 3570 \to 5418 \to 1073$	$-\ O\ -$
335	$\{0,3,289\}$	$674 \to 1264 \to 2091 \to 3739 \to 5540 \to 5119 \to 4786 \to 5827 \to 4801 \to 1083$	$-\ O\ -$
336	$\{0,3,292\}$	$675 \to 1270 \to 2045 \to 3684 \to 5039 \to 5148 \to 5570 \to 5848 \to 6082 \to 1074$	$-\ O\ -$
337	$\{0,3,295\}$	$676 \to 1338 \to 2053 \to 1865 \to 3435 \to 5317 \to 5169 \to 5372 \to 5866 \to 1139$	$-\ O\ -$
338	$\{0,3,316\}$	$677 \to 1408 \to 2146 \to 1659 \to 2981 \to 2404 \to 3964 \to 2782 \to 4689 \to 1077$	$-\ O\ -$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
339	$\{0,3,319\}$	$678 \to 1250 \to 2127 \to 3762 \to 1857 \to 3424 \to 5309 \to 5851 \to 4602 \to 1190$	$-\ O\ -$
340	$\{0,3,336\}$	$679 \to 1377 \to 2056 \to 3646 \to 3283 \to 5220 \to 3266 \to 2550 \to 4322 \to 1078$	$-\ O\ -$
341	$\{0,3,340\}$	$681 \to 1215 \to 2072 \to 3718 \to 1080$	$-\ O\ -$
342	$\{0,3,341\}$	$682 \to 1253 \to 2032 \to 3663 \to 5504 \to 3348 \to 4775 \to 5245 \to 3598 \to 1143$	$-\ E\ -$
343	$\{0,3,343\}$	$683 \to 1383 \to 2174 \to 3694 \to 5257 \to 3622 \to 5435 \to 4779 \to 4143 \to 1151$	$-\ O\ -$
344	$\{0,3,346\}$	$684 \to 1391 \to 2083 \to 2307 \to 3941 \to 5061 \to 3324 \to 5191 \to 5831 \to 1082$	$-\ O\ -$
345	$\{0,3,349\}$	$685 \to 1392 \to 2180 \to 2292 \to 3888 \to 4160 \to 5547 \to 1888 \to 3465 \to 1117$	$-\ O\ -$
346	$\{0,3,350\}$	$686 \to 1387 \to 1944 \to 3417 \to 1651 \to 2968 \to 4826 \to 6061 \to 6027 \to 1084$	$-\ O\ -$
347	$\{0,3,351\}$	$687 \to 1365 \to 2183 \to 1785 \to 3044 \to 3271 \to 5193 \to 6021 \to 5731 \to 1144$	$-\ E\ -$
348	$\{0,3,353\}$	$688 \to 1400 \to 2188 \to 3782 \to 5520 \to 3896 \to 3586 \to 5419 \to 1889 \to 1088$	$-\ O\ -$
349	$\{0,3,356\}$	$689 \to 1396 \to 2191 \to 2256 \to 3967 \to 1646 \to 2925 \to 4819 \to 6058 \to 1085$	$-\ O\ -$
350	$\{0,3,361\}$	$691 \to 1409 \to 2189 \to 3692 \to 5460 \to 1102 \to 709 \to 1344 \to 2171 \to 1172$	$-\ O\ -$
351	$\{0,3,365\}$	$693 \to 1399 \to 2059 \to 3701 \to 5526 \to 6186 \to 5826 \to 2372 \to 1664 \to 1176$	$-\ O\ -$
352	$\{0,3,366\}$	$694 \to 1411 \to 2199 \to 3676 \to 3657 \to 4629 \to 5088 \to 5837 \to 2485 \to 1087$	$-\ O\ -$
353	$\{0,3,369\}$	$695 \to 1370 \to 2201 \to 3775 \to 4757 \to 6038 \to 3286 \to 5114 \to 4639 \to 1111$	$-\ O\ -$
354	$\{0,3,370\}$	$696 \to 1330 \to 2202 \to 1867 \to 3438 \to 5239 \to 3576 \to 5365 \to 6164 \to 1089$	$-\ O\ -$
355	$\{0,3,372\}$	$697 \to 1287 \to 2165 \to 3741 \to 5502 \to 4782 \to 6032 \to 2296 \to 3970 \to 1090$	$-\ O\ -$
356	$\{0,3,373\}$	$698 \to 1333 \to 2204 \to 3704 \to 5528 \to 4623 \to 5908 \to 6137 \to 6140 \to 1100$	$-\ O\ -$
357	$\{0,3,375\}$	$699 \to 1291 \to 2170 \to 1193 \to 734 \to 1395 \to 2104 \to 3717 \to 5536 \to 1191$	$-\ O\ -$
358	$\{0,3,382\}$	$702 \to 1202 \to 2051 \to 2226 \to 3929 \to 5696 \to 4423 \to 5929 \to 4956 \to 1095$	$-\ O\ -$
359	$\{0,3,398\}$	$704 \to 1316 \to 2192 \to 3670 \to 4245 \to 5658 \to 6201 \to 4101 \to 5761 \to 1099$	$-\ O\ -$
360	$\{0,3,405\}$	$705 \to 1412 \to 2213 \to 3700 \to 2818 \to 4661 \to 4922 \to 1707 \to 3034 \to 1115$	$-\ O\ -$
361	$\{0,3,408\}$	$706 \to 1248 \to 2124 \to 3712 \to 2873 \to 4719 \to 4153 \to 1661 \to 2983 \to 1101$	$-\ O\ -$
362	$\{0,3,413\}$	$708 \to 1268 \to 2147 \to 3727 \to 5165 \to 4061 \to 3369 \to 5215 \to 6129 \to 1132$	$-\ O\ -$
363	$\{0,3,427\}$	$712 \to 1259 \to 2137 \to 3732 \to 5545 \to 1893 \to 3470 \to 2240 \to 3884 \to 1192$	$-\ O\ -$
364	$\{0,3,443\}$	$713 \to 1375 \to 2048 \to 3690 \to 3245 \to 5194 \to 6104 \to 4408 \to 5925 \to 1147$	$-\ O\ -$
365	$\{0,3,450\}$	$714 \to 1390 \to 2066 \to 3713 \to 1694 \to 3022 \to 4886 \to 5785 \to 4075 \to 1107$	$-\ O\ -$
366	$\{0,3,453\}$	$715 \to 1385 \to 2215 \to 3737 \to 5051 \to 4168 \to 5645 \to 5068 \to 5995 \to 1154$	$-\ O\ -$
367	$\{0,3,456\}$	$716 \to 1225 \to 2088 \to 3735 \to 3909 \to 1826 \to 3057 \to 1930 \to 3495 \to 1109$	$-\ O\ -$
368	$\{0,3,457\}$	$717 \to 1393 \to 2190 \to 3320 \to 1805 \to 3079 \to 4887 \to 6062 \to 5109 \to 1116$	$-\ O\ -$
369	$\{0,3,472\}$	$718 \to 1361 \to 2034 \to 3532 \to 5409 \to 6170 \to 6141 \to 2532 \to 3529 \to 1112$	$-\ O\ -$
370	$\{0,3,474\}$	$719 \to 1303 \to 2177 \to 1739 \to 3055 \to 4857 \to 1811 \to 1763 \to 3074 \to 1113$	$-\ O\ -$
371	$\{0,3,507\}$	$721 \to 1356 \to 2061 \to 3706 \to 2322 \to 4017 \to 5260 \to 3629 \to 2242 \to 1160$	$-\ O\ -$
372	$\{0,3,532\}$	$725 \to 1205 \to 2055 \to 3697 \to 5508 \to 1951 \to 3425 \to 5329 \to 6152 \to 1125$	$-\ O\ -$
373	$\{0,3,545\}$	$726 \to 1227 \to 1945 \to 3507 \to 3553 \to 5420 \to 5355 \to 2814 \to 2528 \to 1133$	$-\ O\ -$
374	$\{0,3,591\}$	$727 \to 1295 \to 2130 \to 3768 \to 5514 \to 4381 \to 2394 \to 2770 \to 4678 \to 1164$	$-\ O\ -$
375	$\{0,3,759\}$	$735 \to 1401 \to 2109 \to 3726 \to 5529 \to 3857 \to 5596 \to 4594 \to 1969 \to 1161$	$-\ O\ -$
376	$\{0,9,27\}$	$1628 \to 2934 \to 4833 \to 6029 \to 4654 \to 5966 \to 6050 \to 6111 \to 3297 \to 1638$	$-\ O\ -$
377	$\{0,9,31\}$	$1630 \to 2938 \to 4807 \to 5360 \to 6028 \to 4414 \to 3900 \to 4082 \to 5756 \to 2005$	$-\ O\ -$
378	$\{0,9,34\}$	$1633 \to 2943 \to 4843 \to 1961 \to 3515 \to 4044 \to 5757 \to 3280 \to 5085 \to 2789$	$-\ O\ -$
379	$\{0,9,36\}$	$1635 \to 2946 \to 4582 \to 5971 \to 6023 \to 1719 \to 3011 \to 4640 \to 1669 \to 2953$	$-\ O\ -$
380	$\{0,9,44\}$	$1640 \to 2954 \to 4840 \to 3268 \to 5209 \to 3836 \to 5625 \to 4246 \to 1874 \to 3403$	$-\ O\ -$
381	$\{0,9,45\}$	$1641 \to 2956 \to 4830 \to 3812 \to 5597 \to 6119 \to 1980 \to 3516 \to 1689 \to 3018$	$-\ O\ -$
382	$\{0,9,50\}$	$1644 \to 2960 \to 1839 \to 3399 \to 3814 \to 1849 \to 3412 \to 1845 \to 3407 \to 3845$	$-\ O\ -$
383	$\{0,9,51\}$	$1645 \to 2962 \to 4862 \to 2301 \to 3930 \to 5697 \to 6080 \to 6047 \to 1713 \to 3038$	$-\ O\ -$
384	$\{0,9,53\}$	$1647 \to 2933 \to 4831 \to 6065 \to 6025 \to 3889 \to 5443 \to 6173 \to 2002 \to 3493$	$P\ O\ -$
385	$\{0,9,54\}$	$1648 \to 2965 \to 4866 \to 3852 \to 3798 \to 5603 \to 2010 \to 1947 \to 3452 \to 4084$	$-\ O\ -$
386	$\{0,9,55\}$	$1649 \to 2966 \to 4867 \to 2466 \to 4306 \to 5844 \to 5793 \to 5464 \to 2264 \to 3642$	$-\ O\ -$
387	$\{0,9,58\}$	$1652 \to 1884 \to 3400 \to 5310 \to 6018 \to 5076 \to 5987 \to 6195 \to 3881 \to 4201$	$-\ O\ -$
388	$\{0,9,59\}$	$1653 \to 2971 \to 1953 \to 2337 \to 4016 \to 4418 \to 5393 \to 4902 \to 5895 \to 3289$	$-\ O\ -$
389	$\{0,9,60\}$	$1654 \to 2973 \to 4626 \to 5246 \to 3567 \to 5063 \to 5998 \to 4127 \to 2441 \to 4192$	$-\ O\ -$
390	$\{0,9,61\}$	$1655 \to 2975 \to 4237 \to 5674 \to 4146 \to 5776 \to 6196 \to 5858 \to 2332 \to 4025$	$-\ O\ -$
391	$\{0,9,62\}$	$1656 \to 2977 \to 3826 \to 5623 \to 4229 \to 1860 \to 3430 \to 4771 \to 6035 \to 4410$	$-\ O\ -$
			continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
392	$\{0,9,66\}$	$1660 \to 2755 \to 1827 \to 3060 \to 4564 \to 1814 \to 3066 \to 4842 \to 6069 \to 4605$	$-\ O\ -$
393	$\{0,9,75\}$	$1667 \to 2991 \to 4138 \to 5780 \to 4655 \to 5975 \to 1815 \to 2828 \to 4679 \to 1791$	$-\ O\ -$
394	$\{0,9,79\}$	$1668 \to 2996 \to 4863 \to 3620 \to 4186 \to 5660 \to 5859 \to 2464 \to 4107 \to 4754$	$-\ O\ -$
395	$\{0,9,82\}$	$1670 \to 2997 \to 4835 \to 5108 \to 5994 \to 3302 \to 4117 \to 5781 \to 5591 \to 5132$	$-\ O\ -$
396	$\{0,9,88\}$	$1672 \to 2982 \to 1879 \to 3455 \to 3796 \to 4567 \to 5392 \to 1908 \to 3404 \to 3339$	$-\ O\ -$
397	$\{0,9,90\}$	$1673 \to 3001 \to 1750 \to 3068 \to 4876 \to 1937 \to 3411 \to 5321 \to 1975 \to 3489$	$-\ O\ -$
398	$\{0,9,91\}$	$1674 \to 3003 \to 4855 \to 1999 \to 3496 \to 5305 \to 2269 \to 3966 \to 2236 \to 3945$	$-\ O\ -$
399	$\{0,9,94\}$	$1675 \to 3005 \to 4832 \to 4139 \to 3346 \to 3265 \to 5207 \to 5069 \to 5980 \to 5466$	$-\ O\ -$
400	$\{0,9,97\}$	$1676 \to 2819 \to 3822 \to 5618 \to 3835 \to 1924 \to 3494 \to 1863 \to 3433 \to 5335$	$-\ O\ -$
401	$\{0,9,101\}$	$1678 \to 3010 \to 2427 \to 4285 \to 5884 \to 3840 \to 3614 \to 5270 \to 1938 \to 3492$	$-\ O\ -$
402	$\{0,9,102\}$	$1679 \to 3012 \to 4818 \to 3561 \to 5426 \to 5815 \to 4792 \to 2435 \to 4176 \to 5651$	$-\ O\ -$
403	$\{0,9,103\}$	$1680 \to 1734 \to 2964 \to 4865 \to 5722 \to 2802 \to 4710 \to 6013 \to 2839 \to 4709$	$-\ O\ -$
404	$\{0,9,104\}$	$1681 \to 3014 \to 4870 \to 5852 \to 6024 \to 4222 \to 4611 \to 2288 \to 3932 \to 5700$	$-\ O\ -$
405	$\{0,9,106\}$	$1682 \to 2274 \to 3983 \to 5714 \to 5447 \to 4814 \to 4803 \to 6037 \to 4230 \to 5680$	$-\ O\ -$
406	$\{0,9,107\}$	$1683 \to 2957 \to 4858 \to 5892 \to 5083 \to 6001 \to 5136 \to 2368 \to 2312 \to 4007$	$-\ O\ -$
407	$\{0,9,108\}$	$1684 \to 3015 \to 4650 \to 5551 \to 6030 \to 2486 \to 2325 \to 4015 \to 4049 \to 5763$	$-\ O\ -$
408	$\{0,9,111\}$	$1686 \to 3017 \to 2860 \to 4668 \to 4454 \to 5855 \to 4940 \to 4785 \to 4166 \to 4377$	$-\ O\ -$
409	$\{0,9,113\}$	$1688 \to 2976 \to 4134 \to 5774 \to 5049 \to 5990 \to 4190 \to 2374 \to 3262 \to 5205$	$-\ O\ -$
410	$\{0,9,119\}$	$1692 \to 3020 \to 4892 \to 6002 \to 5171 \to 3364 \to 4086 \to 5581 \to 4060 \to 5773$	$-\ O\ -$
411	$\{0,9,122\}$	$1695 \to 3023 \to 4856 \to 5455 \to 5949 \to 6158 \to 1770 \to 2990 \to 2769 \to 4677$	$-\ O\ -$
412	$\{0,9,123\}$	$1696 \to 3002 \to 4877 \to 5050 \to 5977 \to 2837 \to 4724 \to 6014 \to 5580 \to 2311$	$-\ O\ -$
413	$\{0,9,124\}$	$1697 \to 2380 \to 3992 \to 2557 \to 4039 \to 4903 \to 6086 \to 3865 \to 4374 \to 3644$	$-\ O\ -$
414	$\{0,9,125\}$	$1698 \to 3025 \to 4894 \to 1817 \to 3063 \to 4761 \to 4105 \to 2434 \to 4092 \to 5678$	$-\ O\ -$
415	$\{0,9,126\}$	$1699 \to 2992 \to 4221 \to 2445 \to 4274 \to 5862 \to 4635 \to 4167 \to 5292 \to 3581$	$-\ O\ -$
416	$\{0,9,130\}$	$1703 \to 3030 \to 4889 \to 2784 \to 4657 \to 5984 \to 6202 \to 6053 \to 5853 \to 3345$	$-\ O\ -$
417	$\{0,9,134\}$	$1706 \to 3033 \to 4844 \to 3597 \to 4158 \to 5161 \to 5813 \to 2492 \to 4335 \to 2894$	$-\ O\ -$
418	$\{0,9,138\}$	$1709 \to 2959 \to 4839 \to 1732 \to 3048$	$-\ O\ -$
419	$\{0,9,140\}$	$1711 \to 2546 \to 4271 \to 3894 \to 5612 \to 6194 \to 1957 \to 3506 \to 4745 \to 6033$	$-\ O\ -$
420	$\{0,9,141\}$	$1712 \to 3004 \to 4878 \to 4649 \to 5976$	$P\ O\ -$
421	$\{0,9,150\}$	$1716 \to 2884 \to 4698 \to 4584 \to 5972 \to 1813 \to 3009 \to 4885 \to 4580 \to 5963$	$-\ O\ -$
422	$\{0,9,166\}$	$1722 \to 2338 \to 3988 \to 3247 \to 4059 \to 5752 \to 4422 \to 5922 \to 4926 \to 6091$	$-\ O\ -$
423	$\{0,9,175\}$	$1724 \to 3036 \to 4897 \to 3370 \to 5198 \to 2799 \to 4707 \to 5891 \to 5137 \to 5812$	$-\ O\ -$
424	$\{0,9,177\}$	$1725 \to 2908 \to 1789 \to 2999 \to 4874 \to 1973 \to 3513 \to 3360 \to 5237 \to 5367$	$-\ O\ -$
425	$\{0,9,178\}$	$1726 \to 2970 \to 2887 \to 4583 \to 5964 \to 5125 \to 5822 \to 4763 \to 4644 \to 5809$	$-\ O\ -$
426	$\{0,9,179\}$	$1727 \to 3043 \to 4888 \to 5978 \to 5573 \to 3293 \to 5189 \to 5583 \to 1745 \to 2963$	$-\ O\ -$
427	$\{0,9,180\}$	$1728 \to 3045 \to 3527 \to 5404 \to 1880 \to 3457 \to 1777 \to 2949 \to 4851 \to 6070$	$-\ O\ -$
428	$\{0,9,182\}$	$1729 \to 3000 \to 4875 \to 6071 \to 2309 \to 2390 \to 3972 \to 5706 \to 6107 \to 6052$	$-\ O\ -$
429	$\{0,9,184\}$	$1731 \to 2496 \to 2515 \to 4341 \to 2282 \to 3989 \to 5241 \to 3552 \to 3592 \to 5437$	$-\ O\ -$
430	$\{0,9,190\}$	$1735 \to 3007 \to 4884 \to 1756 \to 3069 \to 2421 \to 4276 \to 5871 \to 2305 \to 4003$	$-\ O\ -$
431	$\{0,9,191\}$	$1736 \to 3006 \to 4873 \to 5130 \to 2257 \to 2220 \to 3913 \to 5685 \to 6108 \to 6167$	$P\ O\ -$
432	$\{0,9,204\}$	$1740 \to 3058 \to 4825 \to 3653 \to 2785 \to 4692 \to 6006 \to 2483 \to 2573 \to 4313$	$-\ O\ -$
433	$\{0,9,207\}$	$1741 \to 3052 \to 4773 \to 5368 \to 3255 \to 4177 \to 3789 \to 5595 \to 6112 \to 1994$	$-\ O\ -$
434	$\{0,9,214\}$	$1742 \to 3061 \to 4848 \to 6064 \to 5857 \to 5462 \to 4102 \to 4805 \to 4175 \to 5649$	$-\ O\ -$
435	$\{0,9,217\}$	$1743 \to 2952 \to 4854 \to 4113 \to 5778 \to 5559 \to 2267 \to 3928 \to 5695 \to 5144$	$-\ O\ -$
436	$\{0,9,220\}$	$1744 \to 3041 \to 4089 \to 2398 \to 3984 \to 5715 \to 6076 \to 2304 \to 3979 \to 5104$	$-\ O\ -$
437	$\{0,9,231\}$	$1746 \to 3046 \to 4211 \to 5671 \to 4577 \to 5838 \to 1810 \to 3064 \to 4891 \to 4612$	$-\ O\ -$
438	$\{0,9,235\}$	$1748 \to 2972 \to 4813 \to 2858 \to 4660 \to 4076 \to 3347 \to 3343 \to 5233 \to 5960$	$-\ O\ -$
439	$\{0,9,236\}$	$1749 \to 3067 \to 4859 \to 2900 \to 3863 \to 5634 \to 4111 \to 1985 \to 3462 \to 5340$	$-\ O\ -$
440	$\{0,9,239\}$	$1751 \to 2924 \to 4817 \to 4074 \to 5775 \to 4248 \to 5557 \to 6122 \to 6072 \to 6056$	$-\ O\ -$
441	$\{0,9,240\}$	$1752 \to 3070 \to 3546 \to 3344 \to 4653 \to 5483 \to 2530 \to 4289 \to 3311 \to 4625$	$-\ O\ -$
442	$\{0,9,241\}$	$1753 \to 2961 \to 4861 \to 5806 \to 3310 \to 3331 \to 5225 \to 4163 \to 5638 \to 6200$	$-\ O\ -$
443	$\{0,9,250\}$	$1755 \to 2974 \to 3533 \to 5410 \to 4904 \to 6087 \to 2498 \to 4302 \to 5872 \to 4919$	$-\ O\ -$
444	$\{0,9,259\}$	$1760 \to 2995 \to 2225 \to 3927 \to 2794 \to 4705 \to 2542 \to 2842 \to 4702 \to 4603$	$-\ O\ -$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
445	$\{0,9,270\}$	$1764 \to 3024 \to 3323 \to 4759 \to 6017 \to 5729 \to 5904 \to 6155 \to 6106 \to 4124$	$-\ E\ -$
446	$\{0,9,271\}$	$1765 \to 2348 \to 3871 \to 3233 \to 5179 \to 2028 \to 3512 \to 5328 \to 4452 \to 5357$	$-\ O\ -$
447	$\{0,9,272\}$	$1766 \to 2222 \to 3920 \to 4901 \to 6020 \to 5814 \to 2876 \to 4685 \to 2302 \to 3976$	$-\ O\ -$
448	$\{0,9,277\}$	$1767 \to 2994 \to 4821 \to 6060 \to 6016 \to 4440 \to 5909 \to 4913 \to 6003 \to 4118$	$-\ O\ -$
449	$\{0,9,278\}$	$1768 \to 3076 \to 4822 \to 2566 \to 4279 \to 2866 \to 4703 \to 5452 \to 5253 \to 3613$	$-\ O\ -$
450	$\{0,9,281\}$	$1769 \to 3065 \to 4828 \to 2792 \to 4674 \to 2482 \to 2893 \to 4734 \to 5810 \to 4788$	$-\ O\ -$
451	$\{0,9,294\}$	$1774 \to 3008 \to 4849 \to 6063 \to 5261 \to 3575 \to 5168 \to 6116 \to 6110 \to 2359$	$-\ E\ -$
452	$\{0,9,295\}$	$1775 \to 1781 \to 2988 \to 2252 \to 3924 \to 3579 \to 5432 \to 6098 \to 5795 \to 2538$	$-\ O\ -$
453	$\{0,9,301\}$	$1776 \to 3077 \to 4829 \to 4045 \to 2448 \to 4309 \to 3803 \to 5610 \to 6084 \to 1926$	$-\ O\ -$
454	$\{0,9,337\}$	$1778 \to 3026 \to 4850 \to 1876 \to 3408 \to 5318 \to 5789 \to 3281 \to 5219 \to 6130$	$-\ O\ -$
455	$\{0,9,347\}$	$1782 \to 2969 \to 4869 \to 3611 \to 2567 \to 4034 \to 4751 \to 2564 \to 4307 \to 2911$	$-\ O\ -$
456	$\{0,9,349\}$	$1784 \to 3056 \to 4881 \to 1899 \to 3402 \to 5312 \to 6151 \to 4116 \to 5777 \to 5481$	$-\ O\ -$
457	$\{0,9,367\}$	$1792 \to 3037 \to 4872 \to 3877 \to 5636 \to 2461 \to 1977 \to 3443 \to 5306 \to 4135$	$-\ O\ -$
458	$\{0,9,370\}$	$1793 \to 2350 \to 3915 \to 2437 \to 4297 \to 5888 \to 4406 \to 5868 \to 4911 \to 3627$	$-\ O\ -$
459	$\{0,9,371\}$	$1794 \to 3059 \to 4890 \to 6068 \to 4234 \to 4164 \to 5121 \to 2270 \to 3980 \to 5711$	$-\ O\ -$
460	$\{0,9,378\}$	$1796 \to 3054 \to 4893 \to 2335 \to 3944 \to 3559 \to 3897 \to 4918 \to 6093 \to 1935$	$-\ O\ -$
461	$\{0,9,381\}$	$1797 \to 2945 \to 4846 \to 3257 \to 5184 \to 3850 \to 4098 \to 5766 \to 1903 \to 3478$	$-\ O\ -$
462	$\{0,9,382\}$	$1798 \to 3039 \to 2363 \to 2259 \to 3940 \to 5255 \to 3619 \to 5422 \to 5906 \to 4208$	$-\ O\ -$
463	$\{0,9,390\}$	$1800 \to 2955 \to 4151 \to 3372 \to 2848 \to 4730 \to 2865 \to 4202 \to 5642 \to 4585$	$-\ O\ -$
464	$\{0,9,413\}$	$1803 \to 2939 \to 4836 \to 2886 \to 3890 \to 2484 \to 1982 \to 1869 \to 3440 \to 3244$	$-\ O\ -$
465	$\{0,9,417\}$	$1804 \to 1900 \to 3476 \to 5325 \to 6026 \to 5370 \to 4216 \to 5675 \to 3817 \to 3306$	$-\ O\ -$
466	$\{0,9,428\}$	$1806 \to 2324 \to 4020 \to 5717 \to 4217 \to 5458 \to 6179 \to 2396 \to 2381 \to 3952$	$-\ O\ -$
467	$\{0,9,440\}$	$1808 \to 2937 \to 3600 \to 5434 \to 4379 \to 5474 \to 2449 \to 4312 \to 4206 \to 4463$	$-\ O\ -$
468	$\{0,9,461\}$	$1812 \to 3047 \to 4880 \to 2544 \to 4260 \to 5873 \to 3287 \to 5224 \to 5115 \to 3621$	$-\ O\ -$
469	$\{0,9,489\}$	$1818 \to 2993 \to 4642 \to 5969 \to 3904 \to 2460 \to 4320 \to 1917 \to 3414 \to 2840$	$-\ O\ -$
470	$\{0,9,498\}$	$1819 \to 2935 \to 4834 \to 6066 \to 3873 \to 5626 \to 4960 \to 1877 \to 3450 \to 4434$	$-\ O\ -$
471	$\{0,9,506\}$	$1820 \to 1834 \to 3391 \to 5166 \to 5867 \to 2290 \to 3997 \to 5712 \to 3816 \to 5616$	$-\ O\ -$
472	$\{0,9,553\}$	$1822 \to 2951 \to 4853 \to 1972 \to 3517 \to 2921 \to 4735 \to 5359 \to 6105 \to 5138$	$-\ O\ -$
473	$\{0,11,22\}$	$1829 \to 3380 \to 2761 \to 4664 \to 3554 \to 5421 \to 3861 \to 3784 \to 2553 \to 1886$	$P\ O\ -$
474	$\{0,11,26\}$	$1832 \to 3386 \to 5302 \to 4066 \to 5391 \to 5271 \to 3639 \to 3844 \to 5607 \to 2268$	$-\ O\ -$
475	$\{0,11,34\}$	$1837 \to 3396 \to 5307 \to 3374 \to 2425 \to 4282 \to 5883 \to 3837 \to 5609 \to 2798$	$-\ O\ -$
476	$\{0,11,45\}$	$1846 \to 3338 \to 2402 \to 3820 \to 5400 \to 5956 \to 1991 \to 3508 \to 5320 \to 2914$	$-\ O\ -$
477	$\{0,11,52\}$	$1850 \to 3415 \to 5323 \to 4943 \to 5394 \to 4571 \to 4366 \to 3804 \to 2234 \to 3943$	$-\ O\ -$
478	$\{0,11,53\}$	$1851 \to 2786 \to 4695 \to 6008 \to 2821 \to 4712 \to 6015 \to 3905 \to 5602 \to 2326$	$-\ O\ -$
479	$\{0,11,54\}$	$1852 \to 3381 \to 5096 \to 5485 \to 3843 \to 2507 \to 4294 \to 1949 \to 3441 \to 2776$	$-\ O\ -$
480	$\{0,11,55\}$	$1853 \to 3418 \to 5316 \to 5457 \to 5395 \to 3906 \to 5629 \to 3870 \to 1964 \to 3509$	$-\ O\ -$
481	$\{0,11,57\}$	$1855 \to 3421 \to 4758 \to 2473 \to 4295 \to 5887 \to 5794 \to 3834 \to 5272 \to 3631$	$-\ O\ -$
482	$\{0,11,58\}$	$1856 \to 3277 \to 5217 \to 6133 \to 5080 \to 5740 \to 2281 \to 3785 \to 5592 \to 4171$	$-\ O\ -$
483	$\{0,11,60\}$	$1858 \to 3426 \to 5304 \to 5249 \to 3594 \to 5055 \to 3807 \to 3801 \to 2420 \to 1984$	$-\ O\ -$
484	$\{0,11,61\}$	$1859 \to 3428 \to 2021 \to 3406 \to 5172 \to 6114 \to 2841 \to 2881 \to 4722 \to 3903$	$-\ O\ -$
485	$\{0,11,63\}$	$1861 \to 3431 \to 5333 \to 6079 \to 2479 \to 3806 \to 5041 \to 3829 \to 2027 \to 2760$	$-\ O\ -$
486	$\{0,11,66\}$	$1864 \to 2885 \to 4731 \to 5579 \to 4591 \to 4752 \to 6036 \to 3847 \to 5070 \to 4575$	$-\ O\ -$
487	$\{0,11,68\}$	$1866 \to 2224 \to 3925 \to 4613 \to 5386 \to 6156 \to 6118 \to 3858 \to 2766 \to 4672$	$-\ O\ -$
488	$\{0,11,78\}$	$1872 \to 3445 \to 5337 \to 5490 \to 5353 \to 3827 \to 5599 \to 3872 \to 2012 \to 3510$	$P\ O\ -$
489	$\{0,11,82\}$	$1875 \to 3288 \to 3242 \to 5190 \to 5038 \to 5982 \to 2489 \to 3880 \to 5632 \to 5120$	$-\ O\ -$
490	$\{0,11,93\}$	$1881 \to 3459 \to 5341 \to 5745 \to 5375 \to 6160 \to 6135 \to 3862 \to 5488 \to 5150$	$-\ O\ -$
491	$\{0,11,94\}$	$1882 \to 3461 \to 3227 \to 4609 \to 3327 \to 5238 \to 2451 \to 3891 \to 4628 \to 5446$	$-\ O\ -$
492	$\{0,11,99\}$	$1885 \to 3444 \to 4645 \to 3793 \to 3878 \to 5637 \to 1895 \to 1998 \to 3482 \to 2810$	$-\ O\ -$
493	$\{0,11,106\}$	$1892 \to 3469 \to 5330 \to 5040 \to 5397 \to 4254 \to 5670 \to 3882 \to 5079 \to 5492$	$-\ O\ -$
494	$\{0,11,108\}$	$1894 \to 3471 \to 2516 \to 4351 \to 5399 \to 4804 \to 3377 \to 3815 \to 3577 \to 5431$	$-\ O\ -$
495	$\{0,11,113\}$	$1897 \to 3474 \to 5346 \to 6147 \to 5387 \to 4212 \to 5664 \to 3838 \to 3246 \to 5196$	$-\ O\ -$
496	$\{0,11,114\}$	$1898 \to 3384 \to 5300 \to 2468 \to 2416 \to 4269 \to 3240 \to 3794 \to 5284 \to 3654$	$-\ O\ -$
497	$\{0,11,117\}$	$1901 \to 3434 \to 2791 \to 4687 \to 3303 \to 5231 \to 3856 \to 3883 \to 4800 \to 1909$	$-\ O\ -$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
498	$\{0, 11, 121\}$	$1904 \to 2238 \to 3947 \to 2310 \to 4006 \to 5694 \to 5850 \to 3839 \to 5627 \to 5792$	$-\ O\ -$
499	$\{0, 11, 132\}$	$1911 \to 3449 \to 5339 \to 4570 \to 5377 \to 5250 \to 3572 \to 3291 \to 2774 \to 4681$	$-\ O\ -$
500	$\{0, 11, 133\}$	$1912 \to 3487 \to 5298 \to 5117 \to 5384 \to 2910 \to 4682 \to 3885 \to 1922 \to 2757$	$-\ O\ -$
501	$\{0, 11, 134\}$	$1913 \to 3488 \to 3875 \to 5087 \to 4382$	$-\ O\ -$
502	$\{0, 11, 135\}$	$1914 \to 3456 \to 5332 \to 4456 \to 2777 \to 4683 \to 4119 \to 3301 \to 4436 \to 2276$	$-\ O\ -$
503	$\{0, 11, 141\}$	$1918 \to 3491 \to 5345 \to 2912 \to 4737 \to 2793 \to 4704 \to 3808 \to 5102 \to 5064$	$-\ O\ -$
504	$\{0, 11, 148\}$	$1923 \to 3398 \to 4165 \to 3238 \to 5188 \to 4774 \to 4437 \to 3902 \to 2284 \to 3991$	$-\ O\ -$
505	$\{0, 11, 159\}$	$1928 \to 3464 \to 5344 \to 4965 \to 5363 \to 4108 \to 3635 \to 3830 \to 4930 \to 2260$	$-\ O\ -$
506	$\{0, 11, 166\}$	$1931 \to 3484 \to 5099 \to 3253 \to 5192 \to 5950 \to 3300 \to 2891 \to 4691 \to 2790$	$-\ O\ -$
507	$\{0, 11, 170\}$	$1934 \to 3473 \to 5343 \to 3258 \to 5174 \to 3539 \to 5103 \to 3799 \to 5606 \to 2512$	$-\ O\ -$
508	$\{0, 11, 174\}$	$1936 \to 3499 \to 5308 \to 6150 \to 5388 \to 5251 \to 3610 \to 3892 \to 2773 \to 2361$	$-\ O\ -$
509	$\{0, 11, 185\}$	$1943 \to 3502 \to 5331 \to 4182 \to 5389 \to 5258 \to 3588 \to 3228 \to 5175 \to 2387$	$-\ O\ -$
510	$\{0, 11, 227\}$	$1950 \to 3480 \to 5348 \to 4064 \to 5385 \to 6165 \to 4131 \to 3786 \to 5594 \to 2277$	$-\ O\ -$
511	$\{0, 11, 239\}$	$1955 \to 2896 \to 2308 \to 4004 \to 5378 \to 5553 \to 5582 \to 3901 \to 5622 \to 4790$	$-\ O\ -$
512	$\{0, 11, 246\}$	$1958 \to 2358 \to 4008 \to 2371 \to 3926 \to 5693 \to 3278 \to 3910 \to 5294 \to 3585$	$-\ O\ -$
513	$\{0, 11, 247\}$	$1959 \to 3390 \to 4744 \to 5788 \to 5376 \to 5735 \to 5905 \to 3874 \to 5601 \to 5790$	$-\ O\ -$
514	$\{0, 11, 252\}$	$1963 \to 3500 \to 2262 \to 3973 \to 5396 \to 6166 \to 5588 \to 3853 \to 2283 \to 3990$	$-\ O\ -$
515	$\{0, 11, 259\}$	$1967 \to 3446 \to 2230 \to 3936 \to 2422 \to 4278 \to 5880 \to 3825 \to 5621 \to 4966$	$-\ O\ -$
516	$\{0, 11, 270\}$	$1971 \to 3454 \to 2389 \to 4029 \to 5354 \to 5954 \to 5081 \to 3860 \to 5633 \to 2854$	$-\ O\ -$
517	$\{0, 11, 279\}$	$1974 \to 3448 \to 5299 \to 5864 \to 5362 \to 6162 \to 4112 \to 3893 \to 5593 \to 6193$	$-\ O\ -$
518	$\{0, 11, 282\}$	$1976 \to 3520 \to 4920 \to 4929 \to 5374 \to 4091 \to 4380 \to 3791 \to 4900 \to 5129$	$-\ O\ -$
519	$\{0, 11, 289\}$	$1978 \to 3423 \to 4247 \to 2850 \to 4188 \to 2781 \to 4236 \to 3846 \to 5630 \to 5961$	$-\ O\ -$
520	$\{0, 11, 292\}$	$1979 \to 3394 \to 2579 \to 4358 \to 5369 \to 2822 \to 2517 \to 3795 \to 3563 \to 5427$	$-\ O\ -$
521	$\{0, 11, 306\}$	$1983 \to 2883 \to 4680 \to 2399 \to 4031 \to 5692 \to 3312 \to 2759 \to 4663 \to 5736$	$-\ O\ -$
522	$\{0, 11, 341\}$	$1986 \to 3388 \to 3823 \to 5620 \to 5382$	$-\ E\ -$
523	$\{0, 11, 346\}$	$1988 \to 2475 \to 4330 \to 2384 \to 4033 \to 5718 \to 4597 \to 2857 \to 4736 \to 4383$	$-\ O\ -$
524	$\{0, 11, 348\}$	$1990 \to 3521 \to 5322 \to 4097 \to 4231 \to 5650 \to 4398 \to 3869 \to 4954 \to 5156$	$-\ O\ -$
525	$\{0, 11, 359\}$	$1993 \to 3299 \to 5230 \to 6125 \to 5398 \to 4065 \to 5755 \to 3854 \to 2899 \to 4676$	$-\ O\ -$
526	$\{0, 11, 369\}$	$1996 \to 3503 \to 5347 \to 6153 \to 5380 \to 2526 \to 4267 \to 3790 \to 5598 \to 4122$	$-\ O\ -$
527	$\{0, 11, 373\}$	$1997 \to 3416 \to 4797 \to 6031 \to 2315 \to 3340 \to 5229 \to 2266 \to 3975 \to 5709$	$-\ O\ -$
528	$\{0, 11, 390\}$	$2003 \to 3387 \to 4156 \to 4938 \to 4157 \to 5112 \to 4445 \to 3810 \to 4955 \to 6088$	$-\ O\ -$
529	$\{0, 11, 398\}$	$2004 \to 3466 \to 5311 \to 2801 \to 4244 \to 5646 \to 4596 \to 3912 \to 5615 \to 5951$	$-\ O\ -$
530	$\{0, 11, 401\}$	$2006 \to 3497 \to 2415 \to 4268 \to 5373 \to 2803 \to 3334 \to 3851 \to 3558 \to 2824$	$-\ O\ -$
531	$\{0, 11, 410\}$	$2007 \to 3422 \to 5326 \to 2446 \to 4291 \to 4103 \to 5105 \to 3859 \to 5240 \to 3582$	$-\ O\ -$
532	$\{0, 11, 414\}$	$2008 \to 3458 \to 3251 \to 5200 \to 4238 \to 5669 \to 5470 \to 3824 \to 5604 \to 5167$	$-\ O\ -$
533	$\{0, 11, 427\}$	$2011 \to 3419 \to 5324 \to 5845 \to 2820 \to 2383 \to 4002 \to 3800 \to 4764 \to 6042$	$-\ O\ -$
534	$\{0, 11, 440\}$	$2013 \to 3427 \to 2503 \to 4336 \to 5356 \to 6161 \to 2494 \to 3787 \to 3625 \to 5442$	$-\ O\ -$
535	$\{0, 11, 463\}$	$2019 \to 3504 \to 4218 \to 5677 \to 5361 \to 5830 \to 3342 \to 3868 \to 2333 \to 3948$	$-\ O\ -$
536	$\{0, 11, 553\}$	$2020 \to 3405 \to 5315 \to 6051 \to 5383 \to 3330 \to 3578 \to 2285 \to 3993 \to 3275$	$-\ O\ -$
537	$\{0, 11, 579\}$	$2023 \to 3436 \to 4916 \to 4924 \to 4652 \to 4389 \to 4426 \to 3828 \to 4088 \to 3353$	$-\ O\ -$
538	$\{0, 11, 700\}$	$2025 \to 3505 \to 5350 \to 5472 \to 5371 \to 2454 \to 4315 \to 3821 \to 5611 \to 5461$	$-\ O\ -$
539	$\{0, 13, 42\}$	$2229 \to 3934 \to 4950 \to 6097 \to 5825 \to 4432 \to 2844 \to 4658 \to 6005 \to 3295$	$-\ O\ -$
540	$\{0, 13, 46\}$	$2232 \to 3379 \to 5232 \to 2459 \to 4277 \to 4037 \to 5753 \to 5089 \to 5275 \to 3569$	$-\ O\ -$
541	$\{0, 13, 54\}$	$2237 \to 3946 \to 2833 \to 4386 \to 5110 \to 4962 \to 5067 \to 5988 \to 4399 \to 4083$	$-\ O\ -$
542	$\{0, 13, 62\}$	$2245 \to 3534 \to 2577 \to 4349 \to 4433 \to 2556 \to 4258 \to 5291 \to 3624 \to 2417$	$-\ O\ -$
543	$\{0, 13, 65\}$	$2247 \to 3957 \to 4145 \to 5770 \to 2853 \to 4110 \to 5768 \to 5584 \to 2327 \to 3985$	$-\ O\ -$
544	$\{0, 13, 67\}$	$2248 \to 3960 \to 4794 \to 4620 \to 5574 \to 2275 \to 3942 \to 4777 \to 4578 \to 4041$	$-\ O\ -$
545	$\{0, 13, 68\}$	$2249 \to 3961 \to 5082 \to 5999 \to 5566 \to 5847 \to 2280 \to 3987 \to 2872 \to 4696$	$-\ O\ -$
546	$\{0, 13, 73\}$	$2253 \to 3963 \to 5703 \to 5107 \to 3658 \to 5430 \to 6102 \to 5473 \to 2536 \to 4355$	$-\ O\ -$
547	$\{0, 13, 84\}$	$2258 \to 2481 \to 3313 \to 4050 \to 4912 \to 6090 \to 5263 \to 3626 \to 3329 \to 4915$	$-\ O\ -$
548	$\{0, 13, 92\}$	$2263 \to 3974 \to 2319 \to 4014 \to 5252 \to 3562 \to 4767 \to 5267 \to 3608 \to 2539$	$-\ O\ -$
549	$\{0, 13, 107\}$	$2273 \to 3981 \to 5699 \to 5899 \to 4394 \to 4215 \to 4909 \to 4046 \to 5758 \to 4446$	$-\ O\ -$
550	$\{0, 13, 117\}$	$2279 \to 3959 \to 4624 \to 5738 \to 5128 \to 2797 \to 4706 \to 2377 \to 3351 \to 5202$	$-\ O\ -$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
551	$\{0, 13, 130\}$	$2289 \to 2513 \to 4283 \to 2800 \to 4708 \to 6012 \to 4085 \to 3632 \to 4213 \to 5672$	$- O -$
552	$\{0, 13, 132\}$	$2291 \to 3969 \to 4765 \to 4579 \to 5970 \to 2314 \to 3971 \to 2807 \to 4627 \to 5965$	$- O -$
553	$\{0, 13, 139\}$	$2295 \to 3986 \to 5716 \to 2470 \to 4325 \to 4641 \to 2812 \to 4136 \to 5243 \to 3595$	$- O -$
554	$\{0, 13, 146\}$	$2299 \to 3916 \to 4750 \to 4899 \to 5554 \to 6049 \to 4427 \to 3349 \to 4961 \to 5052$	$- O -$
555	$\{0, 13, 148\}$	$2300 \to 3998 \to 5072 \to 3363 \to 4762 \to 6040 \to 4413 \to 5587 \to 2364 \to 3954$	$- O -$
556	$\{0, 13, 166\}$	$2306 \to 3996 \to 5701 \to 3264 \to 5197 \to 5842 \to 4416 \to 3367 \to 2888 \to 4739$	$- O -$
557	$\{0, 13, 178\}$	$2313 \to 3982 \to 2892 \to 4455 \to 5916$	$- E -$
558	$\{0, 13, 195\}$	$2320 \to 3977 \to 5710 \to 4189 \to 4572 \to 2406 \to 4019 \to 5698 \to 6181 \to 4120$	$- O -$
559	$\{0, 13, 198\}$	$2321 \to 4009 \to 5704 \to 4251 \to 5673$	$- E -$
560	$\{0, 13, 217\}$	$2328 \to 3935 \to 3628 \to 2813 \to 4715 \to 4768 \to 2490 \to 4193 \to 5662 \to 5955$	$- O -$
561	$\{0, 13, 225\}$	$2331 \to 4023 \to 5707 \to 2834 \to 4429 \to 4563 \to 4921 \to 6095 \to 5747 \to 4401$	$- O -$
562	$\{0, 13, 241\}$	$2336 \to 4005 \to 5453 \to 5065 \to 5983 \to 6143 \to 5146 \to 5741 \to 5549 \to 4778$	$- O -$
563	$\{0, 13, 244\}$	$2339 \to 3919 \to 5445 \to 6174 \to 4614 \to 5491 \to 5135 \to 5748 \to 5819 \to 4634$	$- O -$
564	$\{0, 13, 248\}$	$2340 \to 3923 \to 4375 \to 4811 \to 4588 \to 5586 \to 3282 \to 4369 \to 5914 \to 4606$	$- O -$
565	$\{0, 13, 252\}$	$2342 \to 3922 \to 2433 \to 4144 \to 4378 \to 2816 \to 4717 \to 5254 \to 3571 \to 4403$	$- O -$
566	$\{0, 13, 260\}$	$2347 \to 3933 \to 2768 \to 4675 \to 2393 \to 3284 \to 5222 \to 6126 \to 5952 \to 4126$	$- O -$
567	$\{0, 13, 281\}$	$2353 \to 3968 \to 5565 \to 6191 \to 6073 \to 4196 \to 5644 \to 5058 \to 5981 \to 5142$	$- O -$
568	$\{0, 13, 284\}$	$2355 \to 2414 \to 4265 \to 5875 \to 5280 \to 3590 \to 5248 \to 3605 \to 5438 \to 2455$	$- O -$
569	$\{0, 13, 285\}$	$2356 \to 4001 \to 5689 \to 2453 \to 4314 \to 5890 \to 2845 \to 4727 \to 5266 \to 3601$	$- O -$
570	$\{0, 13, 343\}$	$2360 \to 3918 \to 5690 \to 5561 \to 6169 \to 6083 \to 4090 \to 5779 \to 5071 \to 5992$	$- O -$
571	$\{0, 13, 349\}$	$2362 \to 4030 \to 5691 \to 6081 \to 5095 \to 5834 \to 3294 \to 5227 \to 6128 \to 5576$	$- O -$
572	$\{0, 13, 353\}$	$2365 \to 4022 \to 5471 \to 6136 \to 4608 \to 5293 \to 3643 \to 5403 \to 5896 \to 4095$	$- O -$
573	$\{0, 13, 371\}$	$2373 \to 4024 \to 5467 \to 6176 \to 6168 \to 6145 \to 5159 \to 5723 \to 5835 \to 4142$	$- O -$
574	$\{0, 13, 403\}$	$2385 \to 2913 \to 3528 \to 2836 \to 4723 \to 6011 \to 2505 \to 4347 \to 5877 \to 5953$	$- O -$
575	$\{0, 13, 453\}$	$2391 \to 4021 \to 5688 \to 6157 \to 6144 \to 5155 \to 2788 \to 4699 \to 5832 \to 4791$	$- O -$
576	$\{0, 13, 496\}$	$2400 \to 4026 \to 4756 \to 4447 \to 5930$	$- O -$
577	$\{0, 13, 558\}$	$2403 \to 3938 \to 5448 \to 5098 \to 5865 \to 5558 \to 6172 \to 5750 \to 5571 \to 5797$	$- O -$
578	$\{0, 15, 58\}$	$2426 \to 3584 \to 5406 \to 4587 \to 5743 \to 2480 \to 2763 \to 4667 \to 4589 \to 4228$	$- O -$
579	$\{0, 15, 66\}$	$2432 \to 3541 \to 5416 \to 6142 \to 4205$	$- O -$
580	$\{0, 15, 74\}$	$2438 \to 4298 \to 4450 \to 5917 \to 4925 \to 5247 \to 3555 \to 4461 \to 4063 \to 4910$	$- O -$
581	$\{0, 15, 83\}$	$2442 \to 4303 \to 5886 \to 5783 \to 3267 \to 5208 \to 3573 \to 2827 \to 2869 \to 4693$	$- O -$
582	$\{0, 15, 85\}$	$2444 \to 4305 \to 2898 \to 4726 \to 4169 \to 5297 \to 3560 \to 5425 \to 5833 \to 4810$	$- O -$
583	$\{0, 15, 89\}$	$2447 \to 4308 \to 4443 \to 2902 \to 4665 \to 5276 \to 3574 \to 2762 \to 4666 \to 4908$	$- O -$
584	$\{0, 15, 98\}$	$2450 \to 4262 \to 3609 \to 5412 \to 3256 \to 5203 \to 2574 \to 4329 \to 5721 \to 5560$	$- O -$
585	$\{0, 15, 116\}$	$2462 \to 4321 \to 5889 \to 5133 \to 4106 \to 5289 \to 3316 \to 5226 \to 4235 \to 5665$	$- O -$
586	$\{0, 15, 117\}$	$2463 \to 4292 \to 2548 \to 4362 \to 5154 \to 3308 \to 3604 \to 5287 \to 3540 \to 5415$	$- O -$
587	$\{0, 15, 122\}$	$2467 \to 4323 \to 5727 \to 5449 \to 5092 \to 5281 \to 3656 \to 5401 \to 5720 \to 5589$	$- O -$
588	$\{0, 15, 140\}$	$2476 \to 4304 \to 4441 \to 3564 \to 4465 \to 5295 \to 3634 \to 2477 \to 4332 \to 4395$	$- O -$
589	$\{0, 15, 170\}$	$2488 \to 3630 \to 5436 \to 6138 \to 6134$	$P\, O -$
590	$\{0, 15, 179\}$	$2493 \to 4296 \to 5861 \to 6203 \to 6198 \to 5265 \to 3617 \to 5116 \to 5127 \to 3263$	$- O -$
591	$\{0, 15, 183\}$	$2495 \to 4338 \to 3273 \to 5187 \to 4631 \to 5268 \to 3648 \to 3260 \to 5204 \to 4600$	$- O -$
592	$\{0, 15, 185\}$	$2497 \to 4340 \to 5885 \to 4183 \to 5656 \to 5286 \to 3623 \to 5414 \to 4776 \to 6043$	$- O -$
593	$\{0, 15, 205\}$	$2508 \to 4319 \to 5803 \to 2545 \to 4226 \to 5282 \to 3549 \to 5405 \to 5256 \to 3591$	$- O -$
594	$\{0, 15, 226\}$	$2511 \to 4287 \to 4079 \to 4162 \to 5100 \to 4743 \to 3599 \to 3368 \to 5235 \to 5569$	$- O -$
595	$\{0, 15, 235\}$	$2514 \to 4284 \to 4636 \to 4080 \to 2783 \to 4671 \to 3254 \to 4566 \to 5787 \to 2849$	$- O -$
596	$\{0, 15, 243\}$	$2518 \to 4194 \to 5639 \to 6188 \to 6187 \to 5264 \to 3618 \to 5428 \to 4753 \to 4742$	$P\, O -$
597	$\{0, 15, 244\}$	$2519 \to 4272 \to 3378 \to 5221 \to 5725 \to 5296 \to 3545 \to 5411 \to 5894 \to 5465$	$- O -$
598	$\{0, 15, 246\}$	$2520 \to 4353 \to 5045 \to 4396 \to 4573 \to 4152 \to 3612 \to 5440 \to 4442 \to 4149$	$- O -$
599	$\{0, 15, 363\}$	$2540 \to 4275 \to 5878 \to 3290 \to 5153 \to 4586 \to 3603 \to 5439 \to 4067 \to 5162$	$- O -$
600	$\{0, 15, 405\}$	$2549 \to 4342 \to 4253 \to 5643 \to 4935 \to 4370 \to 3633 \to 4467 \to 5921 \to 4951$	$- O -$
601	$\{0, 15, 443\}$	$2558 \to 4345 \to 5575 \to 4937 \to 6078 \to 5283 \to 3542 \to 5046 \to 4967 \to 6092$	$- O -$
602	$\{0, 15, 452\}$	$2559 \to 4281 \to 5882 \to 6048 \to 6055 \to 3317 \to 3357 \to 5186 \to 4240 \to 3325$	$- O -$
603	$\{0, 15, 587\}$	$2571 \to 4299 \to 5879 \to 2826 \to 3236 \to 5183 \to 3587 \to 4203 \to 5666 \to 5817$	$- O -$

continued

$m = 10, \nu = 3$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
604	$\{0,17,110\}$	$2804 \to 4694 \to 6007 \to 6103 \to 5802$	$-O-$
605	$\{0,17,116\}$	$2809 \to 4365 \to 4646 \to 4184 \to 5657$	$-O-$
606	$\{0,17,153\}$	$2831 \to 4400 \to 5927 \to 4958 \to 5957 \to 5846 \to 4420 \to 2895 \to 2877 \to 4711$	$-O-$
607	$\{0,17,156\}$	$2832 \to 4721 \to 5962 \to 5568 \to 5126 \to 5495 \to 2867 \to 4732 \to 5048 \to 5989$	$-O-$
608	$\{0,17,168\}$	$2835 \to 4714 \to 6010 \to 5739 \to 3285 \to 5223 \to 4195 \to 3250 \to 5199 \to 6127$	$-O-$
609	$\{0,17,205\}$	$2852 \to 4690 \to 5463 \to 5749 \to 5475 \to 6178 \to 4104 \to 5719 \to 5496 \to 5751$	$-O-$
610	$\{0,17,249\}$	$2868 \to 3359 \to 4053 \to 5767 \to 4402 \to 5152 \to 4949 \to 4252 \to 5676 \to 4385$	$-O-$
611	$\{0,17,462\}$	$2907 \to 4688 \to 5585 \to 4607 \to 5158 \to 4809 \to 4170 \to 5106 \to 4633 \to 5824$	$-O-$
612	$\{0,17,572\}$	$2920 \to 4453 \to 3241 \to 4191 \to 5661 \to 5732 \to 4449 \to 5915 \to 4927 \to 5843$	$-O-$
613	$\{0,21,42\}$	$3225 \to 5173 \to 4178 \to 5652 \to 6199 \to 6121 \to 6117 \to 5145 \to 6045 \to 3298$	$PO-$
614	$\{0,21,231\}$	$3321 \to 5160 \to 4457 \to 5918 \to 4637$	$-E-$
615	$\{0,21,248\}$	$3326 \to 4405 \to 4390 \to 4957 \to 4928 \to 4173 \to 4035 \to 4412 \to 4946 \to 4953$	$-O-$
616	$\{0,21,270\}$	$3333 \to 4621 \to 4077 \to 4766 \to 4220 \to 5679 \to 4595 \to 4121 \to 5759 \to 5820$	$-O-$
617	$\{0,21,372\}$	$3352 \to 5195 \to 6124 \to 4643 \to 5047$	$-O-$
618	$\{0,21,398\}$	$3356 \to 5206 \to 5798 \to 5744 \to 5482 \to 6171 \to 6120 \to 4114 \to 5454 \to 5140$	$-O-$
619	$\{0,21,424\}$	$3361 \to 5228 \to 4376 \to 5898 \to 4947$	$-O-$
620	$\{0,27,121\}$	$4068 \to 4610 \to 5151 \to 5801 \to 5728 \to 5902 \to 4224 \to 5667 \to 5849 \to 5468$	$-O-$
621	$\{0,27,132\}$	$4073 \to 5764 \to 4430 \to 4617 \to 4923$	$-E-$
622	$\{0,27,241\}$	$4096 \to 5737 \to 5450 \to 6175 \to 5090 \to 5985 \to 5478 \to 5118 \to 5911 \to 5562$	$-O-$
623	$\{0,27,293\}$	$4109 \to 4569 \to 4760 \to 6039 \to 6146 \to 5078 \to 4638 \to 5967 \to 6197 \to 6192$	$-O-$
624	$\{0,27,316\}$	$4115 \to 5577 \to 6190 \to 5863 \to 5840 \to 5131 \to 5053 \to 5991 \to 5796 \to 5782$	$PO-$
625	$\{0,27,404\}$	$4130 \to 4615 \to 5973 \to 4411 \to 5907 \to 4952 \to 4214 \to 5641 \to 4397 \to 5919$	$-O-$
626	$\{0,29,70\}$	$4154 \to 4458 \to 5550 \to 4964 \to 5552 \to 6182 \to 4438 \to 5073 \to 4905 \to 4787$	$-O-$
627	$\{0,29,82\}$	$4161 \to 5548 \to 6189 \to 5733 \to 5901 \to 5477 \to 5059 \to 5996 \to 5456 \to 4225$	$-O-$
628	$\{0,29,102\}$	$4172 \to 5647 \to 6077 \to 5091 \to 5578 \to 5077 \to 4239 \to 5655 \to 4233 \to 5062$	$-E-$
629	$\{0,31,62\}$	$4363 \to 4907 \to 4898 \to 4632 \to 4451$	$PO-$
630	$\{0,31,78\}$	$4372 \to 4581 \to 4945 \to 6094 \to 5084$	$-O-$
631	$\{0,31,101\}$	$4384 \to 5923 \to 4944 \to 4565 \to 4808$	$-O-$
632	$\{0,33,66\}$	$4562 \to 4622 \to 4592 \to 4651 \to 4574$	$-E-$

A.8 $m = 11, p(x) = x^{11} + x^9 + 1$

A.8.1 $m = 11, \nu = 2$

$m = 11, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	$\{0,1\}$	$0 \to 1 \to 3 \to 7 \to 13 \to 27 \to 56 \to 113 \to 201 \to 202 \to 315$	$PO-$
1	$\{0,3\}$	$2 \to 5 \to 9 \to 19 \to 41 \to 83 \to 100 \to 182 \to 295 \to 272 \to 192$	$PO-$
2	$\{0,5\}$	$4 \to 8 \to 16 \to 34 \to 70 \to 138 \to 241 \to 320 \to 222 \to 61 \to 122$	$PO-$
3	$\{0,7\}$	$6 \to 11 \to 23 \to 49 \to 99 \to 180 \to 283 \to 243 \to 200 \to 316 \to 304$	$PO-$
4	$\{0,13\}$	$10 \to 21 \to 45 \to 91 \to 168 \to 285 \to 217 \to 153 \to 266 \to 188 \to 303$	$PO-$
5	$\{0,15\}$	$12 \to 25 \to 53 \to 107 \to 193 \to 308 \to 111 \to 109 \to 196 \to 312 \to 40$	$PO-$
6	$\{0,17\}$	$14 \to 29 \to 60 \to 120 \to 212 \to 123 \to 214 \to 114 \to 203 \to 147 \to 257$	$PO-$
7	$\{0,19\}$	$15 \to 32 \to 67 \to 134 \to 206 \to 318 \to 172 \to 35 \to 72 \to 140 \to 245$	$PO-$
8	$\{0,21\}$	$17 \to 36 \to 74 \to 98 \to 179 \to 292 \to 151 \to 211 \to 325 \to 317 \to 108$	$PO-$
9	$\{0,23\}$	$18 \to 39 \to 26 \to 54 \to 110 \to 198 \to 314 \to 82 \to 55 \to 112 \to 199$	$PO-$
10	$\{0,25\}$	$20 \to 43 \to 87 \to 162 \to 275 \to 133 \to 231 \to 328 \to 204 \to 131 \to 227$	$PO-$
11	$\{0,27\}$	$22 \to 47 \to 95 \to 175 \to 207 \to 319 \to 240 \to 50 \to 101 \to 184 \to 297$	$PO-$
12	$\{0,29\}$	$24 \to 51 \to 103 \to 128 \to 221 \to 323 \to 155 \to 96 \to 177 \to 290 \to 121$	$PO-$
13	$\{0,33\}$	$28 \to 58 \to 117 \to 208 \to 225 \to 276 \to 57 \to 115 \to 205 \to 213 \to 298$	$PO-$
14	$\{0,35\}$	$30 \to 62 \to 124 \to 215 \to 329 \to 278 \to 156 \to 269 \to 291 \to 264 \to 228$	$PO-$
			continued

$m = 11, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
15	{0, 37}	31 → 65 → 130 → 224 → 333 → 234 → 226 → 334 → 288 → 246 → 254	$P\ O\ -$
16	{0, 39}	33 → 69 → 137 → 237 → 195 → 311 → 294 → 77 → 68 → 135 → 233	$P\ O\ -$
17	{0, 43}	37 → 76 → 145 → 252 → 78 → 148 → 259 → 66 → 132 → 229 → 293	$P\ O\ -$
18	{0, 45}	38 → 79 → 127 → 218 → 331 → 322 → 194 → 88 → 163 → 106 → 191	$P\ O\ -$
19	{0, 49}	42 → 85 → 158 → 52 → 105 → 190 → 307 → 116 → 90 → 166 → 282	$P\ O\ -$
20	{0, 51}	44 → 89 → 165 → 279 → 64 → 129 → 223 → 159 → 273 → 220 → 306	$P\ O\ -$
21	{0, 53}	46 → 93 → 171 → 287 → 238 → 256 → 75 → 143 → 251 → 136 → 235	$P\ O\ -$
22	{0, 55}	48 → 97 → 178 → 154 → 268 → 219 → 321 → 144 → 81 → 152 → 265	$P\ O\ -$
23	{0, 67}	59 → 119 → 92 → 170 → 286 → 84 → 146 → 253 → 332 → 313 → 210	$P\ O\ -$
24	{0, 71}	63 → 126 → 216 → 330 → 289 → 181 → 247 → 310 → 197 → 94 → 173	$P\ O\ -$
25	{0, 81}	71 → 139 → 242 → 176 → 239 → 326 → 236 → 118 → 209 → 80 → 150	$P\ O\ -$
26	{0, 83}	73 → 141 → 248 → 340 → 339 → 337 → 324 → 270 → 104 → 189 → 305	$P\ O\ -$
27	{0, 99}	86 → 160 → 185 → 299 → 296 → 174 → 157 → 271 → 244 → 142 → 250	$P\ O\ -$
28	{0, 115}	102 → 186 → 300 → 169 → 167 → 284 → 267 → 260 → 327 → 309 → 125	$P\ O\ -$
29	{0, 181}	149 → 261 → 230 → 335 → 258 → 255 → 338 → 336 → 301 → 263 → 164	$P\ O\ -$
30	{0, 199}	161 → 274 → 280 → 262 → 281 → 183 → 277 → 249 → 187 → 302 → 232	$P\ O\ -$

A.9 $m = 12, p(x) = x^{12} + x^6 + x^4 + x + 1$

A.9.1 $m = 12, \nu = 2$

$m = 12, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
0	{0, 1}	0 → 1 → 3 → 7 → 15 → 31 → 63 → 120 → 115 → 211 → 387 → 624	$P\ O\ -$
1	{0, 3}	2 → 5 → 11 → 23 → 47 → 93 → 174 → 315 → 548 → 60 → 116 → 213	$P\ O\ -$
2	{0, 5}	4 → 9 → 19 → 39 → 78 → 149 → 271 → 480 → 123 → 227 → 410 → 631	$P\ O\ -$
3	{0, 7}	6 → 13 → 27 → 55 → 106 → 195 → 358 → 600 → 92 → 173 → 314 → 546	$P\ O\ -$
4	{0, 9}	8 → 17 → 35 → 70 → 135 → 248 → 443 → 428 → 657 → 402 → 275 → 489	$P\ O\ -$
5	{0, 11}	10 → 21 → 43 → 86 → 163 → 293 → 514 → 666 → 641 → 414 → 44 → 88	$P\ O\ -$
6	{0, 13}	12 → 25 → 51 → 100 → 184 → 336 → 580 → 217 → 229 → 412 → 639 → 77	$P\ O\ -$
7	{0, 15}	14 → 29 → 59 → 114 → 209 → 384 → 148 → 269 → 221 → 401 → 638 → 630	$P\ O\ -$
8	{0, 17}	16 → 33 → 67 → 128 → 182 → 332 → 573 → 240 → 222 → 403 → 581 → 307	$P\ O\ -$
9	{0, 19}	18 → 37 → 74 → 142 → 261 → 462 → 662 → 463 → 362 → 604 → 560 → 378	$P\ O\ -$
10	{0, 21}	20 → 41 → 82 → 156 → 281 → 495 → 615 → 370 → 296 → 518 → 318 → 553	$P\ O\ -$
11	{0, 23}	22 → 45 → 90 → 168 → 306 → 199 → 366 → 204 → 377 → 348 → 590 → 280	$P\ O\ -$
12	{0, 25}	24 → 49 → 96 → 111 → 203 → 375 → 616 → 599 → 292 → 170 → 310 → 541	$P\ O\ -$
13	{0, 27}	26 → 53 → 102 → 190 → 129 → 236 → 424 → 365 → 608 → 249 → 353 → 594	$P\ O\ -$
14	{0, 29}	28 → 57 → 110 → 201 → 371 → 611 → 143 → 75 → 144 → 263 → 466 → 565	$P\ O\ -$
15	{0, 31}	30 → 61 → 117 → 215 → 394 → 547 → 450 → 119 → 220 → 103 → 192 → 351	$P\ O\ -$
16	{0, 33}	32 → 65 → 124 → 228 → 411 → 647 → 313 → 121 → 223 → 404 → 617 → 147	$P\ O\ -$
17	{0, 35}	34 → 68 → 131 → 241 → 433 → 154 → 276 → 237 → 426 → 656 → 637 → 262	$P\ O\ -$
18	{0, 37}	36 → 72 → 138 → 254 → 452 → 668 → 500 → 481 → 678 → 672 → 640 → 542	$P\ O\ -$
19	{0, 39}	38 → 76 → 146 → 266 → 470 → 675 → 634 → 601 → 66 → 126 → 232 → 415	$P\ O\ -$
20	{0, 41}	40 → 80 → 153 → 274 → 487 → 130 → 239 → 431 → 497 → 405 → 294 → 515	$P\ O\ -$
21	{0, 43}	42 → 84 → 159 → 287 → 162 → 291 → 482 → 679 → 677 → 646 → 636 → 97	$P\ O\ -$
22	{0, 47}	46 → 91 → 171 → 311 → 333 → 575 → 432 → 568 → 219 → 301 → 526 → 473	$P\ O\ -$
23	{0, 49}	48 → 94 → 176 → 319 → 555 → 246 → 317 → 552 → 224 → 372 → 612 → 152	$P\ O\ -$
24	{0, 51}	50 → 98 → 181 → 330 → 572 → 554 → 533 → 622 → 549 → 212 → 389 → 625	$P\ O\ -$
25	{0, 53}	52 → 101 → 187 → 343 → 587 → 507 → 513 → 73 → 140 → 258 → 457 → 574	$P\ O\ -$
26	{0, 55}	54 → 104 → 85 → 161 → 290 → 510 → 442 → 665 → 578 → 400 → 557 → 397	$P\ O\ -$
27	{0, 57}	56 → 108 → 198 → 364 → 284 → 501 → 357 → 598 → 346 → 406 → 642 → 498	$P\ O\ -$
			continued

$m = 12, \nu = 2$			
$\mathbb{G}_i$	$\mathfrak{B}_i$	$\mathbb{T}_i$	marks
28	$\{0,59\}$	$58 \to 112 \to 205 \to 125 \to 230 \to 413 \to 270 \to 479 \to 150 \to 272 \to 483 \to 558$	$P\,O\,-$
29	$\{0,63\}$	$62 \to 118 \to 218 \to 399 \to 635 \to 619$	$P\,O\,-$
30	$\{0,65\}$	$64 \to 122 \to 225 \to 407 \to 643 \to 175$	$-\,E\,-$
31	$\{0,71\}$	$69 \to 133 \to 245 \to 438 \to 661 \to 485 \to 359 \to 602 \to 511 \to 398 \to 251 \to 448$	$P\,O\,-$
32	$\{0,73\}$	$71 \to 136 \to 250 \to 446 \to 320 \to 556 \to 444 \to 621 \to 109 \to 200 \to 368 \to 609$	$P\,O\,-$
33	$\{0,81\}$	$79 \to 151 \to 273 \to 484 \to 648 \to 475 \to 160 \to 289 \to 226 \to 408 \to 244 \to 437$	$P\,O\,-$
34	$\{0,83\}$	$81 \to 155 \to 278 \to 493 \to 458 \to 206 \to 380 \to 521 \to 550 \to 260 \to 461 \to 593$	$P\,O\,-$
35	$\{0,85\}$	$83 \to 157 \to 283 \to 499 \to 674 \to 658 \to 591 \to 279 \to 467 \to 673 \to 644 \to 589$	$P\,O\,-$
36	$\{0,89\}$	$87 \to 165 \to 297 \to 520 \to 196 \to 360 \to 512 \to 597 \to 393 \to 409 \to 645 \to 127$	$P\,O\,-$
37	$\{0,91\}$	$89 \to 167 \to 303 \to 529 \to 592 \to 435 \to 459 \to 478 \to 331 \to 530 \to 633 \to 576$	$P\,O\,-$
38	$\{0,99\}$	$95 \to 177 \to 321 \to 559 \to 145 \to 264 \to 468 \to 316 \to 551 \to 502 \to 632 \to 477$	$P\,O\,-$
39	$\{0,103\}$	$99 \to 183 \to 334 \to 577 \to 385 \to 564 \to 440 \to 214 \to 392 \to 390 \to 627 \to 134$	$P\,O\,-$
40	$\{0,111\}$	$105 \to 194 \to 355 \to 567 \to 517 \to 421 \to 653 \to 454 \to 216 \to 396 \to 277 \to 491$	$P\,O\,-$
41	$\{0,113\}$	$107 \to 197 \to 172 \to 312 \to 544 \to 383$	$P\,O\,-$
42	$\{0,119\}$	$113 \to 207 \to 137 \to 252 \to 449 \to 247 \to 441 \to 418 \to 651 \to 395 \to 191 \to 349$	$P\,O\,-$
43	$\{0,141\}$	$132 \to 243 \to 436 \to 340 \to 583 \to 337 \to 528 \to 626 \to 545 \to 180 \to 328 \to 570$	$P\,O\,-$
44	$\{0,149\}$	$139 \to 256 \to 455 \to 663 \to 439 \to 376 \to 618 \to 379 \to 286 \to 505 \to 265 \to 469$	$P\,O\,-$
45	$\{0,151\}$	$141 \to 259 \to 460 \to 344 \to 579 \to 534 \to 509 \to 664 \to 628 \to 391 \to 166 \to 299$	$P\,O\,-$
46	$\{0,171\}$	$158 \to 285 \to 503 \to 650 \to 561 \to 188 \to 345 \to 588 \to 350 \to 506 \to 629 \to 465$	$P\,O\,-$
47	$\{0,177\}$	$164 \to 295 \to 516 \to 356 \to 596 \to 186 \to 341 \to 584 \to 231 \to 169 \to 308 \to 536$	$P\,O\,-$
48	$\{0,199\}$	$178 \to 323 \to 562 \to 486 \to 324 \to 563 \to 361 \to 603 \to 388 \to 386 \to 623 \to 189$	$P\,O\,-$
49	$\{0,201\}$	$179 \to 326 \to 298 \to 522 \to 425 \to 655 \to 445 \to 255 \to 453 \to 416 \to 649 \to 488$	$P\,O\,-$
50	$\{0,209\}$	$185 \to 338 \to 233 \to 417 \to 543 \to 354$	$P\,O\,-$
51	$\{0,219\}$	$193 \to 352 \to 524 \to 606 \to 451 \to 367 \to 571 \to 476 \to 342 \to 586 \to 527 \to 519$	$P\,O\,-$
52	$\{0,233\}$	$202 \to 373 \to 539 \to 540 \to 305 \to 532 \to 322 \to 304 \to 531 \to 419 \to 652 \to 339$	$P\,O\,-$
53	$\{0,239\}$	$208 \to 382 \to 242 \to 434 \to 234 \to 420 \to 325 \to 566 \to 210 \to 327 \to 569 \to 423$	$P\,O\,-$
54	$\{0,273\}$	$235 \to 422$	$-\,E\,-$
55	$\{0,277\}$	$238 \to 429 \to 257 \to 456 \to 282 \to 496 \to 490 \to 681 \to 680 \to 667 \to 654 \to 464$	$P\,O\,-$
56	$\{0,295\}$	$253 \to 268 \to 474 \to 381 \to 471 \to 620$	$P\,O\,-$
57	$\{0,313\}$	$267 \to 472 \to 369 \to 610 \to 607 \to 329 \to 309 \to 538 \to 582 \to 427 \to 535 \to 335$	$P\,O\,-$
58	$\{0,345\}$	$288 \to 430 \to 659 \to 595$	$P\,O\,-$
59	$\{0,359\}$	$300 \to 525 \to 671 \to 670 \to 537 \to 504 \to 660 \to 605 \to 347 \to 374 \to 614 \to 492$	$P\,O\,-$
60	$\{0,363\}$	$302 \to 508 \to 676 \to 669 \to 613 \to 494$	$P\,O\,-$
61	$\{0,455\}$	$363 \to 523 \to 585$	$-\,E\,-$
62	$\{0,585\}$	447	$-\,E\,-$
63	$\{0,1365\}$	682	$-\,E\,S$

Appendix B Super-Categories

In this appendix, we give tables for the super-categories defined in Section 5.4. Thus, any two subspaces from the same super-category produce SSRS codes with the same dimension.

B.1 $m = 6, p(x) = x^6 + x + 1$

B.1.1 $m = 6, \nu = 3$

No.	categories
0	all ordinary categories
1	$\mathbb{G}_2, \mathbb{G}_5$
2	$\mathbb{G}_6$

B.2 $m = 8, p(x) = x^8 + x^4 + x^3 + x^2 + 1$

B.2.1 $m = 8, \nu = 3$

No.	categories
0	all ordinary categories
1	$\mathbb{G}_{20}, \mathbb{G}_{31}, \mathbb{G}_{50}$
2	$\mathbb{G}_{45}$
3	$\mathbb{G}_{51}$
4	$\mathbb{G}_{52}$

B.2.2 $m = 8, \nu = 4$

No.	categories
0	all ordinary categories
1	$\mathbb{G}_3, \mathbb{G}_7, \mathbb{G}_{12}, \mathbb{G}_{14}, \mathbb{G}_{18}, \mathbb{G}_{22}, \mathbb{G}_{25}, \mathbb{G}_{40}, \mathbb{G}_{42}, \mathbb{G}_{46}, \mathbb{G}_{53}, \mathbb{G}_{55}, \mathbb{G}_{58}, \mathbb{G}_{60}, \mathbb{G}_{68}, \mathbb{G}_{70}, \mathbb{G}_{75}, \mathbb{G}_{76}, \mathbb{G}_{81}, \mathbb{G}_{90}, \mathbb{G}_{92}, \mathbb{G}_{100}, \mathbb{G}_{103}$

No.	categories
2	$\mathbb{G}_{23}, \mathbb{G}_{45}$
3	$\mathbb{G}_{32}, \mathbb{G}_{33}, \mathbb{G}_{38}, \mathbb{G}_{80}, \mathbb{G}_{96}, \mathbb{G}_{105}$
4	$\mathbb{G}_{47}$
5	$\mathbb{G}_{49}$
6	$\mathbb{G}_{73}$
7	$\mathbb{G}_{77}$
8	$\mathbb{G}_{104}$
9	$\mathbb{G}_{106}$
10	$\mathbb{G}_{107}$
11	$\mathbb{G}_{108}$

B.3 $m = 9, p(x) = x^9 + x^5 + 1$

B.3.1 $m = 9, \nu = 3$

No.	categories
0	all ordinary categories
1	$\mathbb{G}_{9}$
2	$\mathbb{G}_{11}, \mathbb{G}_{27}, \mathbb{G}_{29}, \mathbb{G}_{31}, \mathbb{G}_{35}, \mathbb{G}_{39}, \mathbb{G}_{67}, \mathbb{G}_{70}, \mathbb{G}_{72}, \mathbb{G}_{83}, \mathbb{G}_{93}, \mathbb{G}_{94}, \mathbb{G}_{105}, \mathbb{G}_{112}, \mathbb{G}_{117}, \mathbb{G}_{118}, \mathbb{G}_{121}, \mathbb{G}_{126}, \mathbb{G}_{132}, \mathbb{G}_{142}, \mathbb{G}_{146}, \mathbb{G}_{153}$
3	$\mathbb{G}_{115}$
4	$\mathbb{G}_{141}$
5	$\mathbb{G}_{148}$
6	$\mathbb{G}_{172}$
7	$\mathbb{G}_{175}$
8	$\mathbb{G}_{176}$

B.4 $m = 10, p(x) = x^{10} + x^3 + 1$

B.4.1 $m = 10, \nu = 3$

No.	categories
0	all ordinary categories
1	$\mathbb{G}_{23}, \mathbb{G}_{146}, \mathbb{G}_{174}, \mathbb{G}_{255}, \mathbb{G}_{342}, \mathbb{G}_{347}, \mathbb{G}_{445}, \mathbb{G}_{451}, \mathbb{G}_{522}, \mathbb{G}_{628}$
2	$\mathbb{G}_{557}$
3	$\mathbb{G}_{559}$

No.	categories
4	$\mathbb{G}_{614}$
5	$\mathbb{G}_{621}$
6	$\mathbb{G}_{632}$

Appendix C Dimension of SSRS Codes (1)

This appendix consists of tables of the best binary dimensions $K(\mathbb{C}(J), \mathcal{S})$ of SSRS codes. Given the dimension of the primal RS code k_0, the dimension of SSRS codes with respect to every distinct exceptional subspace, is investigated. The set J is chosen as $J = \{1, 2, \ldots, k_0\}$. Notations used in these tables are briefly explained in the following table.

m	alphabet size of primal field
n	code length ($n = 2^m - 1$)
J	consecutive integer set defining primal RS code ($J = \{1, 2, \ldots, k_0\}$)
k_0	dimension of primal RS code $k_0 = \|J\|$
d_0	designed minimum distance of SSRS code ($d_0 = n - k_0 + 1$)
ν	alphabet size of subspace $\mathcal{S}$
μ	dimension of $\mathcal{S}^{\perp}$ ($\mu = m - \nu$)
K	binary dimension $K(\mathbb{C}, \mathcal{S})$ of SSRS code

I. Mark † means that there is a dimension increase as compared to the lower bound.

II. Mark $\star$ means that there is a dimension increase and this dimension is the maximum dimension among all subspaces.

III. Every column consists of the binary dimension $K(\mathbb{C}(J), \mathcal{S})$.

IV. All dimensions are computed with respect to representative subspaces from every category.

V. For $m = 8, 9$ equivalent categories are classified into unknown super-categories and the corresponding dimension is computed for every super-category.

VI. Note that category $\mathbb{G}_0$ is ordinary, which gives the lower bound on the dimension.

C.1 $m = 4, n = 15$

$m = 4$				
ν	3	2		1
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_0$
k_0	K	K	K	K
14	42	28	28	14
13	38	24	24	10
12	34	20	20	10
11	30	16	16	6
10	26	16	16	6
9	22	12	14$\star$	4
8	18	8	10$\star$	4
7	14	4	6$\star$	0
6	14	4	6$\star$	0
5	10	4	6$\star$	0
4	8	4	4	0
3	4	0	0	0
2	4	0	0	0
1	0	0	0	0

C.2 $m = 5, n = 31$

$m = 5$				
ν	4	3	2	1
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K	K	K
30	120	90	60	30
29	115	85	55	25
28	110	80	50	25
27	105	75	45	20
26	100	70	45	20
25	95	65	40	15
				continued

$m=5$				
ν	4	3	2	1
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K	K	K
24	90	60	35	15
23	85	55	30	10
22	80	55	30	10
21	75	50	25	10
20	70	45	25	10
19	65	40	20	5
18	60	35	20	5
17	55	30	15	5
16	50	25	10	5
15	45	20	5	0
14	45	20	5	0
13	40	20	5	0
12	35	20	5	0
11	30	15	5	0
10	30	15	5	0
9	25	10	5	0
8	20	10	5	0
7	15	5	0	0
6	15	5	0	0
5	10	5	0	0
4	10	5	0	0
3	5	0	0	0
2	5	0	0	0
1	0	0	0	0

C.3 $m=6, n=63$

$m=6$												
ν	5	4			3				2			1
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_3$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_5$	$\mathbb{G}_6$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_3$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
62	310	248	248	248	186	186	186	186	124	124	124	62
61	304	242	242	242	180	180	180	180	118	118	118	56
continued												

$m=6$												
ν	5	4			3				2			1
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_3$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_5$	$\mathbb{G}_6$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_3$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
60	298	236	236	236	174	174	174	174	112	112	112	56
59	292	230	230	230	168	168	168	168	106	106	106	50
58	286	224	224	224	162	162	162	162	106	106	106	50
57	280	218	218	218	156	156	156	156	100	100	100	44
56	274	212	212	212	150	150	150	150	94	94	94	44
55	268	206	206	206	144	144	144	144	88	88	88	38
54	262	200	200	200	144	144	144	144	88	88	88	38
53	256	194	194	194	138	138	138	141⋆	82	85⋆	82	35
52	250	188	188	188	132	132	132	135⋆	76	79⋆	76	35
51	244	182	182	182	126	126	126	129⋆	70	73⋆	70	29
50	238	176	176	176	120	120	120	123⋆	70	73⋆	70	29
49	232	170	170	170	114	114	114	117⋆	64	67⋆	64	23
48	226	164	164	164	108	108	108	111⋆	58	61⋆	58	23
47	220	158	158	158	102	102	102	105⋆	52	55⋆	52	17
46	214	158	158	158	102	102	102	105⋆	52	55⋆	52	17
45	208	152	152	152	96	96	96	105⋆	52	55⋆	52	17
44	202	146	149⋆	146	93	93	93	102⋆	52	52	52	17
43	196	140	143⋆	140	87	87	87	96⋆	46	46	52⋆	17
42	190	134	137†	140⋆	87	87	87	90⋆	46	46	52⋆	17
41	184	128	131†	136⋆	81	83†	83†	84⋆	42	42	50⋆	15
40	178	122	125†	130⋆	75	77†	77†	78⋆	36	36	44⋆	15
39	172	116	119†	124⋆	69	71†	71†	72⋆	30	30	38⋆	9
38	166	110	113†	118⋆	69	71†	71†	72⋆	30	30	38⋆	9
37	160	104	107†	112⋆	63	65†	65†	72⋆	30	30	38⋆	9
36	154	98	101†	106⋆	57	59†	59†	72⋆	30	30	32⋆	9
35	148	92	95†	100⋆	51	53†	53†	69⋆	24	27⋆	26†	6
34	142	86	89†	94⋆	45	47†	47†	63⋆	24	27⋆	26†	6
33	136	80	83†	88⋆	39	41†	41†	57⋆	18	21†	26⋆	6
32	130	74	77†	82⋆	33	35†	35†	51⋆	12	15†	20⋆	6
31	124	68	71†	76⋆	27	29†	29†	45⋆	6	9†	14⋆	0
30	124	68	71†	76⋆	27	29†	29†	45⋆	6	9†	14⋆	0
29	118	68	71†	76⋆	27	29†	29†	45⋆	6	9†	14⋆	0
28	112	68	71⋆	70†	27	29†	29†	45⋆	6	9†	14⋆	0
27	106	62	65⋆	64†	27	29†	29†	45⋆	6	9†	14⋆	0

continued

$m=6$													
ν	5	4			3				2			1
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_3$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_5$	$\mathbb{G}_6$	$\mathbb{G}_0$	$\mathbb{G}_2$	$\mathbb{G}_3$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
26	103	62	62	64⋆	27	29†	29†	42⋆	6	9†	14⋆	0
25	97	56	56	64⋆	27	29†	29†	36⋆	6	9†	14⋆	0
24	91	50	50	58⋆	27	29†	29†	30⋆	6	9†	14⋆	0
23	85	44	44	52⋆	21	23†	23†	24⋆	6	9†	14⋆	0
22	85	44	44	52⋆	21	23†	23†	24⋆	6	9†	14⋆	0
21	79	44	44	52⋆	21	23†	23†	24⋆	6	9†	14⋆	0
20	75	42	42	48⋆	21	21	21	24⋆	6	9†	12⋆	0
19	69	36	36	42⋆	15	15	15	24⋆	6	9⋆	6	0
18	63	36	36	36	15	15	15	24⋆	6	9⋆	6	0
17	57	30	33⋆	30	12	12	12	21⋆	6	6	6	0
16	51	24	27⋆	24	12	12	12	15⋆	6	6	6	0
15	45	18	21⋆	18	6	6	6	9⋆	0	0	0	0
14	45	18	21⋆	18	6	6	6	9⋆	0	0	0	0
13	39	18	21⋆	18	6	6	6	9⋆	0	0	0	0
12	39	18	21⋆	18	6	6	6	9⋆	0	0	0	0
11	33	12	15⋆	12	6	6	6	9⋆	0	0	0	0
10	33	12	15⋆	12	6	6	6	9⋆	0	0	0	0
9	27	12	15⋆	12	6	6	6	9⋆	0	0	0	0
8	24	12	12	12	6	6	6	6	0	0	0	0
7	18	6	6	6	0	0	0	0	0	0	0	0
6	18	6	6	6	0	0	0	0	0	0	0	0
5	12	6	6	6	0	0	0	0	0	0	0	0
4	12	6	6	6	0	0	0	0	0	0	0	0
3	6	0	0	0	0	0	0	0	0	0	0	0
2	6	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0

C.4 $m = 7, n = 127$

$m=7$										
ν	6	5	4			3			2	1
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K
126	756	630	504	504	504	378	378	378	252	126
125	749	623	497	497	497	371	371	371	245	119
124	742	616	490	490	490	364	364	364	238	119
123	735	609	483	483	483	357	357	357	231	112
122	728	602	476	476	476	350	350	350	231	112
121	721	595	469	469	469	343	343	343	224	105
120	714	588	462	462	462	336	336	336	217	105
119	707	581	455	455	455	329	329	329	210	98
118	700	574	448	448	448	329	329	329	210	98
117	693	567	441	441	441	322	322	322	203	91
116	686	560	434	434	434	315	315	315	196	91
115	679	553	427	427	427	308	308	308	189	84
114	672	546	420	420	420	301	301	301	189	84
113	665	539	413	413	413	294	294	294	182	77
112	658	532	406	406	406	287	287	287	175	77
111	651	525	399	399	399	280	280	280	168	70
110	644	518	399	399	399	280	280	280	168	70
109	637	511	392	392	392	273	273	273	161	70
108	630	504	385	385	385	266	266	266	161	70
107	623	497	378	378	378	259	259	259	154	63
106	616	490	371	371	371	252	252	252	154	63
105	609	483	364	364	364	245	245	245	147	56
104	602	476	357	357	357	238	238	238	140	56
103	595	469	350	350	350	231	231	231	133	49
102	588	462	343	343	343	231	231	231	133	49
101	581	455	336	336	336	224	224	224	126	49
100	574	448	329	329	329	217	217	217	119	49
99	567	441	322	322	322	210	210	210	112	42
98	560	434	315	315	315	203	203	203	112	42
97	553	427	308	308	308	196	196	196	105	35
96	546	420	301	301	301	189	189	189	98	35
95	539	413	294	294	294	182	182	182	91	28
94	532	413	294	294	294	182	182	182	91	28

continued

$m=7$										
ν	6	5	4			3			2	1
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K
93	525	406	287	294⋆	287	182	182	182	91	28
92	518	399	280	287⋆	280	182	182	182	91	28
91	511	392	273	280⋆	273	175	175	182⋆	91	28
90	504	385	273	280⋆	273	175	175	182⋆	91	28
89	497	378	266	273⋆	266	168	168	175⋆	84	28
88	490	371	259	266⋆	259	161	168⋆	168⋆	84	28
87	483	364	252	259⋆	252	154	161⋆	161⋆	77	28
86	476	357	252	252	252	154	161⋆	161⋆	77	28
85	469	350	245	245	245	147	154⋆	154⋆	77	28
84	462	343	238	238	238	147	154⋆	154⋆	77	28
83	455	336	231	231	231	140	147⋆	147⋆	70	21
82	448	329	224	224	224	133	140⋆	140⋆	70	21
81	441	322	217	217	217	126	133⋆	133⋆	63	21
80	434	315	210	210	210	119	126⋆	126⋆	56	21
79	427	308	203	203	203	112	119⋆	119⋆	49	14
78	420	301	203	203	203	112	119⋆	119⋆	49	14
77	413	294	196	196	203⋆	112	119⋆	119⋆	49	14
76	406	287	189	189	196⋆	112	112	119⋆	49	14
75	399	280	182	182	189⋆	105	105	112⋆	42	14
74	392	273	175	182⋆	182⋆	105	105	105	42	14
73	385	266	168	175⋆	175⋆	98	98	98	42	14
72	378	259	161	168⋆	168⋆	91	91	91	42	14
71	371	252	154	161⋆	161⋆	84	84	84	35	7
70	364	245	147	154⋆	154⋆	84	84	84	35	7
69	357	238	140	147⋆	147⋆	77	84⋆	77	35	7
68	350	231	133	140⋆	140⋆	70	77⋆	77⋆	35	7
67	343	224	126	133⋆	133⋆	63	70⋆	70⋆	28	7
66	336	217	119	126⋆	126⋆	56	63⋆	63⋆	28	7
65	329	210	112	119⋆	119⋆	49	56⋆	56⋆	21	7
64	322	203	105	112⋆	112⋆	42	49⋆	49⋆	14	7
63	315	196	98	105⋆	105⋆	35	42⋆	42⋆	7	0
62	315	196	98	105⋆	105⋆	35	42⋆	42⋆	7	0
61	308	196	98	105⋆	105⋆	35	42⋆	42⋆	7	0
60	301	196	98	105⋆	105⋆	35	42⋆	42⋆	7	0

continued

$m = 7$										
ν	6	5	4			3			2	1
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K
59	294	189	98	105⋆	105⋆	35	42⋆	42⋆	7	0
58	287	189	98	105⋆	105⋆	35	42⋆	42⋆	7	0
57	280	182	98	105⋆	98	35	42⋆	42⋆	7	0
56	273	175	98	98	98	35	42⋆	42⋆	7	0
55	266	168	91	91	91	35	42⋆	42⋆	7	0
54	266	168	91	91	91	35	42⋆	42⋆	7	0
53	259	161	91	91	91	35	42⋆	42⋆	7	0
52	252	154	91	91	91	35	42⋆	42⋆	7	0
51	245	147	84	84	91⋆	35	35	42⋆	7	0
50	238	147	84	84	91⋆	35	35	42⋆	7	0
49	231	140	77	84⋆	84⋆	35	35	42⋆	7	0
48	224	133	70	77⋆	77⋆	35	35	35	7	0
47	217	126	63	70⋆	70⋆	28	28	28	7	0
46	217	126	63	70⋆	70⋆	28	28	28	7	0
45	210	126	63	70⋆	70⋆	28	28	28	7	0
44	203	126	63	70⋆	70⋆	28	28	28	7	0
43	196	119	63	70⋆	70⋆	28	28	28	7	0
42	196	119	63	70⋆	70⋆	28	28	28	7	0
41	189	112	56	63⋆	63⋆	28	28	28	7	0
40	182	105	56	63⋆	63⋆	28	28	28	7	0
39	175	98	49	56⋆	56⋆	21	28⋆	21	7	0
38	168	98	49	56⋆	56⋆	21	28⋆	21	7	0
37	161	91	49	49	56⋆	21	28⋆	21	7	0
36	154	91	49	49	56⋆	21	28⋆	21	7	0
35	147	84	42	42	49⋆	14	21⋆	14	7	0
34	140	77	42	42	42	14	21⋆	14	7	0
33	133	70	35	35	35	14	21⋆	14	7	0
32	126	63	28	28	28	14	14	14	7	0
31	119	56	21	21	21	7	7	7	0	0
30	119	56	21	21	21	7	7	7	0	0
29	112	56	21	21	21	7	7	7	0	0
28	112	56	21	21	21	7	7	7	0	0
27	105	49	21	21	21	7	7	7	0	0
26	105	49	21	21	21	7	7	7	0	0

continued

$m = 7$										
ν	6	5	4			3			2	1
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_1$	$\mathbb{G}_{14}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K	K	K	K	K	K	K	K	K
25	98	49	21	21	21	7	7	7	0	0
24	91	49	21	21	21	7	7	7	0	0
23	84	42	14	14	14	7	7	7	0	0
22	84	42	14	14	14	7	7	7	0	0
21	77	42	14	14	14	7	7	7	0	0
20	77	42	14	14	14	7	7	7	0	0
19	70	35	14	14	14	7	7	7	0	0
18	70	35	14	14	14	7	7	7	0	0
17	63	28	14	14	14	7	7	7	0	0
16	56	28	14	14	14	7	7	7	0	0
15	49	21	7	7	7	0	0	0	0	0
14	49	21	7	7	7	0	0	0	0	0
13	42	21	7	7	7	0	0	0	0	0
12	42	21	7	7	7	0	0	0	0	0
11	35	14	7	7	7	0	0	0	0	0
10	35	14	7	7	7	0	0	0	0	0
9	28	14	7	7	7	0	0	0	0	0
8	28	14	7	7	7	0	0	0	0	0
7	21	7	0	0	0	0	0	0	0	0
6	21	7	0	0	0	0	0	0	0	0
5	14	7	0	0	0	0	0	0	0	0
4	14	7	0	0	0	0	0	0	0	0
3	7	0	0	0	0	0	0	0	0	0
2	7	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0

C.5 $m = 8, n = 255$

$m = 8$																					
ν	7	6			5					4											
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_5$	$\mathbb{G}_7$	$\mathbb{G}_0$	$\mathbb{G}_{20}$	$\mathbb{G}_{45}$	$\mathbb{G}_{51}$	$\mathbb{G}_{52}$	$\mathbb{G}_0$	$\mathbb{G}_3$	$\mathbb{G}_{23}$	$\mathbb{G}_{32}$	$\mathbb{G}_{47}$	$\mathbb{G}_{49}$	$\mathbb{G}_{73}$	$\mathbb{G}_{77}$	$\mathbb{G}_{104}$	$\mathbb{G}_{106}$	$\mathbb{G}_{107}$	$\mathbb{G}_{108}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
254	1778	1524	1524	1524	1270	1270	1270	1270	1270	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016
253	1770	1516	1516	1516	1262	1262	1262	1262	1262	1008	1008	1008	1008	1008	1008	1008	1008	1008	1008	1008	1008
252	1762	1508	1508	1508	1254	1254	1254	1254	1254	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
251	1754	1500	1500	1500	1246	1246	1246	1246	1246	992	992	992	992	992	992	992	992	992	992	992	992

continued

$m=8$																					
ν	7	6			5					4											
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_5$	$\mathbb{G}_7$	$\mathbb{G}_0$	$\mathbb{G}_{20}$	$\mathbb{G}_{45}$	$\mathbb{G}_{51}$	$\mathbb{G}_{52}$	$\mathbb{G}_0$	$\mathbb{G}_3$	$\mathbb{G}_{23}$	$\mathbb{G}_{32}$	$\mathbb{G}_{47}$	$\mathbb{G}_{49}$	$\mathbb{G}_{73}$	$\mathbb{G}_{77}$	$\mathbb{G}_{104}$	$\mathbb{G}_{106}$	$\mathbb{G}_{107}$	$\mathbb{G}_{108}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
250	1746	1492	1492	1492	1238	1238	1238	1238	1238	984	984	984	984	984	984	984	984	984	984	984	984
249	1738	1484	1484	1484	1230	1230	1230	1230	1230	976	976	976	976	976	976	976	976	976	976	976	976
248	1730	1476	1476	1476	1222	1222	1222	1222	1222	968	968	968	968	968	968	968	968	968	968	968	968
247	1722	1468	1468	1468	1214	1214	1214	1214	1214	960	960	960	960	960	960	960	960	960	960	960	960
246	1714	1460	1460	1460	1206	1206	1206	1206	1206	952	952	952	952	952	952	952	952	952	952	952	952
245	1706	1452	1452	1452	1198	1198	1198	1198	1198	944	944	944	944	944	944	944	944	944	944	944	944
244	1698	1444	1444	1444	1190	1190	1190	1190	1190	936	936	936	936	936	936	936	936	936	936	936	936
243	1690	1436	1436	1436	1182	1182	1182	1182	1182	928	928	928	928	928	928	928	928	928	928	928	928
242	1682	1428	1428	1428	1174	1174	1174	1174	1174	920	920	920	920	920	920	920	920	920	920	920	920
241	1674	1420	1420	1420	1166	1166	1166	1166	1166	912	912	912	912	912	912	912	912	912	912	912	912
240	1666	1412	1412	1412	1158	1158	1158	1158	1158	904	904	904	904	904	904	904	904	904	904	904	904
239	1658	1404	1404	1404	1150	1150	1150	1150	1150	896	896	896	896	896	896	896	896	896	896	896	896
238	1650	1396	1396	1396	1142	1142	1142	1142	1142	896	896	896	896	896	896	896	896	896	896	896	896
237	1642	1388	1388	1388	1134	1134	1134	1134	1134	888	888	888	888	888	888	888	888	888	888	888	892 ⋆
236	1634	1380	1380	1380	1126	1126	1126	1126	1126	880	880	880	880	880	880	880	880	880	880	880	884 ⋆
235	1626	1372	1372	1372	1118	1118	1118	1118	1118	872	872	872	872	872	872	872	872	872	872	872	876 ⋆
234	1618	1364	1364	1364	1110	1110	1110	1110	1110	864	864	864	864	864	864	864	864	864	864	864	868 ⋆
233	1610	1356	1356	1356	1102	1102	1102	1102	1102	856	856	856	856	856	856	856	856	856	856	856	860 ⋆
232	1602	1348	1348	1348	1094	1094	1094	1094	1094	848	848	848	848	848	848	848	848	848	848	848	852 ⋆
231	1594	1340	1340	1340	1086	1086	1086	1086	1086	840	840	840	840	840	840	840	840	840	840	840	844 ⋆
230	1586	1332	1332	1332	1078	1078	1078	1078	1078	832	832	832	832	832	832	832	832	832	832	832	836 ⋆
229	1578	1324	1324	1324	1070	1070	1070	1070	1070	824	824	824	824	824	824	824	824	824	824	824	828 ⋆
228	1570	1316	1316	1316	1062	1062	1062	1062	1062	816	816	816	816	816	816	816	816	816	816	816	820 ⋆
227	1562	1308	1308	1308	1054	1054	1054	1054	1054	808	808	808	808	808	808	808	808	808	808	808	812 ⋆
226	1554	1300	1300	1300	1046	1046	1046	1046	1046	800	800	800	800	800	800	800	800	800	800	800	804 ⋆
225	1546	1292	1292	1292	1038	1038	1038	1038	1038	792	792	792	792	792	792	792	792	792	792	792	796 ⋆
224	1538	1284	1284	1284	1030	1030	1030	1030	1030	784	784	784	784	784	784	784	784	784	784	784	788 ⋆
223	1530	1276	1276	1276	1022	1022	1022	1022	1022	776	776	776	776	776	776	776	776	776	776	776	780 ⋆
222	1522	1268	1268	1268	1022	1022	1022	1022	1022	776	776	776	776	776	776	776	776	776	776	776	780 ⋆
221	1514	1260	1260	1260	1014	1014	1014	1014	1014	768	768	768	768	768	768	768	768	768	768	768	780 ⋆
220	1506	1252	1252	1252	1006	1006	1006	1006	1010⋆	760	760	764†	764†	760	760	760	760	760	760	760	776 ⋆
219	1498	1244	1244	1244	998	998	998	998	1002⋆	752	752	756†	756†	752	752	752	752	752	752	752	768 ⋆
218	1490	1236	1236	1236	990	990	990	990	994⋆	744	744	748†	748†	744	744	744	752†	744	744	744	760 ⋆
217	1482	1228	1228	1228	982	982	982	982	986⋆	736	736	740†	740†	736	736	736	744†	736	736	736	752 ⋆
216	1474	1220	1220	1220	974	974	974	974	978⋆	728	728	732†	732†	728	728	728	736†	728	728	728	744 ⋆
215	1466	1212	1212	1212	966	966	966	966	970⋆	720	720	724†	724†	720	720	720	728†	720	720	720	736 ⋆
214	1458	1204	1204	1204	958	958	958	958	962⋆	712	712	716†	716†	712	712	712	720†	712	712	712	728 ⋆
213	1450	1196	1196	1196	950	950	950	950	954⋆	704	704	708†	708†	704	704	704	712†	704	704	704	720 ⋆
212	1442	1188	1188	1188	942	942	942	942	946⋆	696	696	700†	700†	696	696	696	704†	696	696	696	712 ⋆
211	1434	1180	1180	1180	934	934	934	934	938⋆	688	688	692†	692†	688	688	688	696†	688	688	688	704 ⋆
210	1426	1172	1172	1172	926	926	926	926	930⋆	680	680	684†	684†	680	680	680	688†	680	680	680	696 ⋆
209	1418	1164	1164	1164	918	918	918	918	922⋆	672	672	676†	676†	672	672	672	680†	672	672	672	688 ⋆
208	1410	1156	1156	1156	910	910	910	910	914⋆	664	664	668†	668†	664	664	664	672†	664	664	664	680 ⋆
207	1402	1148	1148	1148	902	902	902	902	906⋆	656	656	660†	660†	656	656	656	664†	656	656	656	672 ⋆
206	1394	1140	1140	1140	894	894	894	894	898⋆	656	656	660†	660†	656	656	656	664†	656	656	656	672 ⋆
205	1386	1132	1132	1132	886	886	886	886	890⋆	648	648	652†	652†	648	648	648	656†	648	648	648	672 ⋆
204	1378	1124	1124	1124	878	878	878	878	882⋆	640	640	644†	644†	640	640	640	648†	640	640	640	672 ⋆
203	1370	1116	1116	1116	870	870	870	870	874⋆	632	632	636†	636†	632	632	632	640†	632	632	632	668 ⋆
202	1362	1108	1108	1108	862	862	862	862	866⋆	624	624	628†	628†	624	624	624	632†	624	624	624	660 ⋆
201	1354	1100	1100	1100	854	854	854	854	858⋆	616	616	620†	620†	616	616	616	624†	616	616	616	652 ⋆
200	1346	1092	1092	1092	846	846	846	846	850⋆	608	608	612†	612†	608	608	608	616†	608	608	608	644 ⋆

continued

$m=8$																					
ν	7	6			5					4											
$S^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_5$	$\mathbb{G}_7$	$\mathbb{G}_0$	$\mathbb{G}_{20}$	$\mathbb{G}_{45}$	$\mathbb{G}_{51}$	$\mathbb{G}_{52}$	$\mathbb{G}_0$	$\mathbb{G}_3$	$\mathbb{G}_{23}$	$\mathbb{G}_{32}$	$\mathbb{G}_{47}$	$\mathbb{G}_{49}$	$\mathbb{G}_{73}$	$\mathbb{G}_{77}$	$\mathbb{G}_{104}$	$\mathbb{G}_{106}$	$\mathbb{G}_{107}$	$\mathbb{G}_{108}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
199	1338	1084	1084	1084	838	838	838	838	842⋆	600	600	604†	604†	600	600	600	608†	600	600	600	636⋆
198	1330	1076	1076	1076	830	830	830	830	834⋆	592	592	596†	596†	592	592	592	600†	592	592	592	628⋆
197	1322	1068	1068	1068	822	822	822	822	826⋆	584	584	588†	588†	584	584	584	592†	584	584	584	620⋆
196	1314	1060	1060	1060	814	814	814	814	818⋆	576	576	580†	580†	576	576	576	584†	576	576	576	612⋆
195	1306	1052	1052	1052	806	806	806	806	810⋆	568	568	572†	572†	568	568	568	576†	568	568	568	604⋆
194	1298	1044	1044	1044	798	798	798	798	802⋆	560	560	564†	564†	560	560	560	568†	560	560	560	596⋆
193	1290	1036	1036	1036	790	790	790	790	794⋆	552	552	556†	556†	552	552	552	560†	552	552	552	588⋆
192	1282	1028	1028	1028	782	782	782	782	786⋆	544	544	548†	548†	544	544	544	552†	544	544	544	580⋆
191	1274	1020	1020	1020	774	774	774	774	778⋆	536	536	540†	540†	536	536	536	544†	536	536	536	572⋆
190	1266	1020	1020	1020	774	774	774	774	778⋆	536	536	540†	540†	536	536	536	544†	536	536	536	572⋆
189	1258	1012	1012	1012	766	766	766	774⋆	770†	536	536	540†	540†	536	536	536	544†	536	536	536	572⋆
188	1250	1004	1004	1004	758	758	758	766†	770⋆	536	536	540†	540†	536	536	536	536	536	536	536	572⋆
187	1242	996	996	996	750	750	750	758†	762⋆	528	528	532†	532†	528	528	528	528	536†	528	536†	572⋆
186	1234	988	992⋆	992⋆	746	746	746	754†	758⋆	528	528	528	528	528	528	528	528	536†	528	536†	568⋆
185	1226	980	984⋆	984⋆	738	738	738	746†	750⋆	520	520	520	520	520	520	520	520	528†	520	528†	560⋆
184	1218	972	976⋆	976⋆	730	730	730	738†	742⋆	512	512	512	512	512	520†	512	512	520†	512	520†	552⋆
183	1210	964	968⋆	968⋆	722	722	722	730†	734⋆	504	504	504	504	504	512†	504	504	512†	504	512†	544⋆
182	1202	956	960⋆	960⋆	722	722	722	730⋆	726†	504	504	504	504	504	512†	504	504	512†	504	512†	536⋆
181	1194	948	952⋆	952⋆	714	714	714	722⋆	718†	496	496	496	496	496	504†	496	496	504†	496	504†	528⋆
180	1186	940	944⋆	944⋆	706	706	706	714⋆	710†	488	488	488	488	488	496†	488	488	496†	488	496†	520⋆
179	1178	932	936⋆	936⋆	698	698	698	706⋆	702†	480	480	480	480	480	488†	480	480	488†	480	488†	512⋆
178	1170	924	928⋆	928⋆	690	690	690	698⋆	694†	472	472	472	472	472	480†	472	472	488†	480†	480†	504⋆
177	1162	916	920⋆	920⋆	682	682	682	690⋆	686†	464	464	464	464	464	472†	464	464	480†	472†	472†	496⋆
176	1154	908	912⋆	912⋆	674	674	674	682⋆	678†	456	456	456	456	456	464†	456	456	472†	464†	464†	488⋆
175	1146	900	904⋆	904⋆	666	666	666	674⋆	670†	448	448	448	448	448	456†	448	448	464†	456†	456†	480⋆
174	1138	892	896†	904⋆	666	666	666	666	670⋆	448	448	448	448	448	456†	448	448	464†	456†	456†	480⋆
173	1130	884	888†	896⋆	658	658	658	658	662⋆	440	440	440	440	448†	448†	440	440	464†	448†	448†	480⋆
172	1122	876	880†	888⋆	650	650	650	650	654⋆	440	440	440	440	448†	448†	440	440	464†	448†	448†	480⋆
171	1114	868	872†	880⋆	642	642	642	642	646⋆	432	432	432	432	440†	440†	432	432	464†	440†	440†	480⋆
170	1106	860	864†	880⋆	634	642†	634	634	646⋆	432	432	432	432	432	440†	432	432	464†	440†	440†	480⋆
169	1098	852	856†	874⋆	626	636†	626	626	640⋆	424	426†	424	426†	424	432†	424	424	460†	432†	432†	476⋆
168	1090	844	848†	866⋆	618	628†	618	618	632⋆	416	418†	416	418†	416	424†	416	416	452†	424†	424†	468⋆
167	1082	836	840†	858⋆	610	620†	610	610	624⋆	408	410†	408	410†	408	416†	408	408	444†	416†	416†	460⋆
166	1074	828	832†	850⋆	602	612†	602	602	616⋆	400	402†	400	402†	400	408†	400	400	436†	408†	408†	452⋆
165	1066	820	824†	842⋆	594	604†	594	594	608⋆	392	394†	392	394†	392	400†	392	392	428†	400†	400†	444⋆
164	1058	812	816†	834⋆	586	596†	586	586	600⋆	384	386†	384	386†	384	392†	384	384	420†	392†	392†	436⋆
163	1050	804	808†	826⋆	578	588†	578	578	592⋆	376	378†	376	378†	376	384†	376	376	412†	384†	384†	428⋆
162	1042	796	800†	818⋆	570	580†	570	570	584⋆	368	370†	368	370†	368	376†	368	368	404†	376†	376†	420⋆
161	1034	788	792†	810⋆	562	572†	562	562	576⋆	360	362†	360	362†	360	368†	360	360	396†	368†	368†	412⋆
160	1026	780	784†	802⋆	554	564†	554	554	568⋆	352	354†	352	354†	352	360†	352	352	388†	360†	360†	404⋆
159	1018	772	776†	794⋆	546	556†	546	546	560⋆	344	346†	344	346†	344	352†	344	344	380†	352†	352†	396⋆
158	1010	764	768†	786⋆	546	556†	546	546	560⋆	344	346†	344	346†	344	352†	344	344	380†	352†	352†	396⋆
157	1002	756	760†	778⋆	538	548†	546†	538	552⋆	344	346†	344	346†	344	352†	344	344	380†	352†	352†	396⋆
156	994	748	752†	770⋆	530	540†	538†	530	552⋆	344	346†	344	346†	344	352†	344	344	372†	344	352†	396⋆
155	986	740	744†	762⋆	522	532†	530†	522	544⋆	336	338†	336	338†	336	344†	336	336	364†	336	344†	396⋆
154	978	732	736†	754⋆	514	524†	522†	514	544⋆	336	338†	336	338†	336	336	336	336	364†	336	344†	396⋆
153	970	724	728†	746⋆	506	516†	514†	506	536⋆	328	330†	328	330†	328	328	336†	328	364†	328	336†	396⋆
152	962	716	720†	738⋆	498	508†	506†	498	532⋆	320	322†	324†	326†	320	320	328†	320	356†	320	328†	392⋆
151	954	708	712†	730⋆	490	500†	498†	490	524⋆	312	314†	316†	318†	312	312	320†	312	348†	312	320†	384⋆
150	946	700	704†	722⋆	482	492†	490†	490†	516⋆	312	314†	316†	318†	312	312	320†	312	340†	312	312	376⋆
149	938	692	696†	714⋆	474	484†	482†	482†	508⋆	304	306†	308†	310†	304	304	312†	304	332†	304	304	368⋆

continued

$m = 8$																					
ν	7	6			5					4											
$S^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_5$	$\mathbb{G}_7$	$\mathbb{G}_0$	$\mathbb{G}_{20}$	$\mathbb{G}_{45}$	$\mathbb{G}_{51}$	$\mathbb{G}_{52}$	$\mathbb{G}_0$	$\mathbb{G}_3$	$\mathbb{G}_{23}$	$\mathbb{G}_{32}$	$\mathbb{G}_{47}$	$\mathbb{G}_{49}$	$\mathbb{G}_{73}$	$\mathbb{G}_{77}$	$\mathbb{G}_{104}$	$\mathbb{G}_{106}$	$\mathbb{G}_{107}$	$\mathbb{G}_{108}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
148	930	684	688†	706⋆	466	476†	474†	474†	500⋆	296	298†	300†	302†	304†	296	304†	296	324†	296	296	360⋆
147	922	676	680†	698⋆	458	468†	466†	466†	492⋆	288	290†	292†	294†	296†	288	296†	288	316†	288	288	352⋆
146	914	668	672†	690⋆	450	460†	458†	458†	484⋆	280	282†	284†	286†	288†	280	288†	288†	308†	280	280	344⋆
145	906	660	664†	682⋆	442	452†	450†	450†	476⋆	272	274†	276†	278†	280†	272	280†	280†	300†	272	272	336⋆
144	898	652	656†	674⋆	434	444†	442†	442†	468⋆	264	266†	268†	270†	272†	264	272†	272†	292†	264	264	328⋆
143	890	644	648†	666⋆	426	436†	434†	434†	460⋆	256	258†	260†	262†	264†	256	264†	264†	284†	256	256	320⋆
142	882	636	640†	658⋆	418	428†	426†	426†	452⋆	256	258†	260†	262†	264†	256	264†	264†	284†	256	256	320⋆
141	874	628	632†	650⋆	410	420†	418†	418†	444⋆	248	250†	252†	254†	256†	248	256†	256†	284†	256†	248	320⋆
140	866	620	624†	642⋆	402	412†	410†	410†	436⋆	240	242†	244†	246†	248†	248†	248†	248†	276†	248†	240	320⋆
139	858	612	616†	634⋆	394	404†	402†	402†	428⋆	232	234†	236†	238†	240†	240†	240†	240†	268†	240†	232	320⋆
138	850	604	608†	626⋆	386	396†	394†	394†	420⋆	224	226†	228†	230†	232†	232†	232†	232†	268†	232†	232†	320⋆
137	842	596	600†	618⋆	378	388†	386†	386†	412⋆	216	218†	220†	222†	224†	224†	224†	224†	268†	224†	224†	320⋆
136	834	588	592†	610⋆	370	380†	378†	378†	404⋆	208	210†	212†	214†	216†	216†	216†	216†	260†	216†	216†	320⋆
135	826	580	584†	602⋆	362	372†	370†	370†	396⋆	200	202†	204†	206†	208†	208†	208†	208†	252†	208†	208†	316⋆
134	818	572	576†	594⋆	354	364†	362†	362†	388⋆	192	194†	196†	198†	200†	200†	200†	200†	244†	200†	200†	308⋆
133	810	564	568†	586⋆	346	356†	354†	354†	380⋆	184	186†	188†	190†	192†	192†	192†	192†	236†	192†	192†	300⋆
132	802	556	560†	578⋆	338	348†	346†	346†	372⋆	176	178†	180†	182†	184†	184†	184†	184†	228†	184†	184†	292⋆
131	794	548	552†	570⋆	330	340†	338†	338†	364⋆	168	170†	172†	174†	176†	176†	176†	176†	220†	176†	176†	284⋆
130	786	540	544†	562⋆	322	332†	330†	330†	356⋆	160	162†	164†	166†	168†	168†	168†	168†	212†	168†	168†	276⋆
129	778	532	536†	554⋆	314	324†	322†	322†	348⋆	152	154†	156†	158†	160†	160†	160†	160†	204†	160†	160†	268⋆
128	770	524	528†	546⋆	306	316†	314†	314†	340⋆	144	146†	148†	150†	152†	152†	152†	152†	196†	152†	152†	260⋆
127	762	516	520†	538⋆	298	308†	306†	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
126	762	516	520†	538⋆	298	308†	306†	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
125	754	516	520†	538⋆	298	308†	306†	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
124	746	516	520†	530⋆	298	308†	306†	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
123	738	508	512†	522⋆	298	308†	306†	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
122	730	508	512†	522⋆	298	308†	306†	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
121	722	500	504†	522⋆	298	308†	298	306†	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
120	714	492	496†	514⋆	298	308†	298	298	332⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
119	706	484	488†	506⋆	290	300†	290	290	324⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	252⋆
118	702	484	484	502⋆	290	300†	290	290	320⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	248⋆
117	694	476	476	494⋆	290	300†	290	290	312⋆	136	138†	140†	142†	144†	144†	144†	144†	188†	144†	144†	240⋆
116	686	468	468	486⋆	290	292†	290	290	304⋆	136	138†	140†	142†	144†	144†	144†	144†	180†	144†	144†	232⋆
115	678	460	460	478⋆	282	284†	290†	282	296⋆	136	138†	140†	142†	144†	144†	144†	144†	172†	136	144†	224⋆
114	670	452	452	470⋆	282	284†	290⋆	282	288†	136	138†	140†	142†	144†	144†	144†	144†	172†	136	144†	216⋆
113	662	444	444	462⋆	274	276†	282⋆	282⋆	280†	136	138†	140†	142†	144†	144†	144†	136	172†	136	144†	208⋆
112	654	436	436	454⋆	266	268†	274⋆	274⋆	272†	136	138†	140†	142†	144†	144†	144†	136	164†	136	136	200⋆
111	646	428	428	446⋆	258	260†	266⋆	266⋆	264†	128	130†	132†	134†	136†	136†	136†	128	156†	128	128	192⋆
110	646	428	428	446⋆	258	260†	266⋆	266⋆	264†	128	130†	132†	134†	136†	136†	136†	128	156†	128	128	192⋆
109	638	428	428	446⋆	258	260†	266⋆	266⋆	264†	128	130†	132†	134†	136†	136†	136†	128	156†	128	128	192⋆
108	630	420	420	438⋆	258	260†	266⋆	266⋆	264†	128	130†	132†	134†	136†	136†	136†	128	156†	128	128	192⋆
107	622	412	412	430⋆	250	252†	258†	258†	264⋆	128	130†	132†	134†	136†	128	136†	128	156†	128	128	192⋆
106	614	412	412	430⋆	250	252†	258†	258†	264⋆	128	130†	132†	134†	136†	128	136†	128	156†	128	128	192⋆
105	606	404	404	430⋆	242	252†	250†	250†	264⋆	128	130†	132†	134†	136†	128	128	128	156†	128	128	192⋆
104	598	396	396	422⋆	234	244†	250†	242†	256⋆	128	130†	132†	134†	136†	128	128	128	156†	128	128	192⋆
103	590	388	388	414⋆	226	236†	242†	234†	248⋆	120	122†	124†	126†	128†	120	120	120	156†	128†	120	192⋆
102	582	388	388	414⋆	226	236†	242†	234†	248⋆	120	122†	124†	126†	128†	120	120	120	156†	128†	120	192⋆
101	574	380	384†	410⋆	222	232†	238†	230†	244⋆	120	122†	120	122†	128†	120	120	120	156†	128†	120	188⋆
100	566	372	376†	402⋆	214	224†	230†	230†	236⋆	120	122†	120	122†	120	120	120	120	148†	128†	120	180⋆
99	558	364	368†	394⋆	206	216†	222†	222†	228⋆	112	114†	112	114†	112	112	112	120†	140†	120†	112	172⋆
98	550	356	360†	386⋆	206	216†	222⋆	222⋆	220†	112	114†	112	114†	112	112	112	120†	140†	120†	112	164⋆

continued

$m=8$																					
ν	7	6			5					4											
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_5$	$\mathbb{G}_7$	$\mathbb{G}_0$	$\mathbb{G}_{20}$	$\mathbb{G}_{45}$	$\mathbb{G}_{51}$	$\mathbb{G}_{52}$	$\mathbb{G}_0$	$\mathbb{G}_3$	$\mathbb{G}_{23}$	$\mathbb{G}_{32}$	$\mathbb{G}_{47}$	$\mathbb{G}_{49}$	$\mathbb{G}_{73}$	$\mathbb{G}_{77}$	$\mathbb{G}_{104}$	$\mathbb{G}_{106}$	$\mathbb{G}_{107}$	$\mathbb{G}_{108}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
97	542	348	352†	378⋆	198	208†	214⋆	214⋆	212†	104	106†	104	106†	104	104	104	112†	140†	112†	112†	156⋆
96	534	340	344†	370⋆	190	200†	206⋆	206⋆	204†	96	98†	96	98†	96	96	96	104†	132†	104†	104†	148⋆
95	526	332	336†	362⋆	182	192†	198⋆	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
94	526	332	336†	362⋆	182	192†	198⋆	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
93	518	332	336†	362⋆	182	192†	198⋆	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
92	510	332	336†	354⋆	182	192†	198⋆	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
91	502	324	328†	346⋆	182	192†	198⋆	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
90	502	324	328†	346⋆	182	192†	198⋆	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
89	494	316	320†	346⋆	182	192†	190†	198⋆	196†	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
88	486	308	312†	338⋆	182	192†	190†	190†	196⋆	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
87	478	300	304†	330⋆	174	184†	182†	182†	188⋆	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
86	478	300	304†	330⋆	174	184†	182†	182†	188⋆	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
85	470	300	304†	330⋆	174	184†	182†	182†	188⋆	88	90†	88	90†	88	88	88	96†	124†	96†	96†	140⋆
84	464	296	300†	324⋆	172	180†	180†	180†	184⋆	88	88	88	88	88	88	88	96†	120†	96†	96†	136⋆
83	456	288	292†	316⋆	164	172†	172†	172†	176⋆	80	80	80	80	80	80	88†	88†	112†	88†	88†	128⋆
82	448	280	284†	308⋆	164	164	172⋆	172⋆	168†	80	80	80	80	80	80	88†	88†	104†	88†	88†	120⋆
81	440	272	276†	300⋆	156	156	164⋆	164⋆	160†	72	72	72	72	72	72	80†	80†	96†	80†	80†	112⋆
80	432	264	268†	292⋆	148	148	164⋆	156†	152†	72	72	72	72	72	72	72	80†	88†	80†	80†	104⋆
79	424	256	260†	284⋆	140	140	156⋆	148†	144†	64	64	64	64	64	64	64	72†	80†	72†	72†	96⋆
78	416	256	260†	276⋆	140	140	156⋆	148†	144†	64	64	64	64	64	64	64	72†	80†	72†	72†	96⋆
77	408	248	252†	268⋆	140	140	156⋆	140	144†	64	64	64	64	64	64	64	72†	80†	72†	72†	96⋆
76	400	248	252†	260⋆	140	140	156⋆	140	144†	64	64	64	64	64	64	64	72†	80†	72†	72†	96⋆
75	392	240	244†	252⋆	132	132	148⋆	132	144†	64	64	64	64	64	64	64	72†	72†	72†	64	96⋆
74	384	240	244⋆	244⋆	132	132	148⋆	132	144†	64	64	64	64	64	64	64	72†	72†	72†	64	96⋆
73	376	232	236⋆	236⋆	124	124	140⋆	124	136†	64	64	64	64	64	64	64	72†	72†	72†	64	96⋆
72	368	224	228⋆	228⋆	124	124	140⋆	124	136†	64	64	64	64	64	64	64	72†	72†	72†	64	96⋆
71	360	216	220⋆	220⋆	116	116	132⋆	116	128†	56	56	56	56	56	56	56	64†	64†	64†	56	96⋆
70	352	208	212⋆	212⋆	116	116	124†	116	128⋆	56	56	56	56	56	56	56	64†	64†	64†	56	96⋆
69	344	200	204⋆	204⋆	108	108	116†	108	128⋆	56	56	56	56	56	56	56	56	64†	64†	56	96⋆
68	336	192	196⋆	196⋆	108	108	108	108	128⋆	56	56	56	56	56	56	56	56	64†	64†	56	96⋆
67	328	184	188⋆	188⋆	100	100	100	100	124⋆	48	48	52†	52†	48	48	48	48	56†	56†	48	92⋆
66	320	176	180⋆	180⋆	92	92	92	92	116⋆	48	48	52†	52†	48	48	48	48	48	48	48	84⋆
65	312	168	172⋆	172⋆	84	84	84	84	108⋆	40	40	44†	44†	40	48†	40	40	40	40	40	76⋆
64	304	160	164⋆	164⋆	76	76	76	76	100⋆	32	32	36†	36†	32	40†	32	32	32	32	32	68⋆
63	296	152	156⋆	156⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
62	296	152	156⋆	156⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
61	288	152	156⋆	156⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
60	288	152	156⋆	156⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
59	280	144	148⋆	148⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
58	280	144	148⋆	148⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
57	272	144	148⋆	148⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
56	264	144	148⋆	148⋆	68	68	68	68	92⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
55	256	136	140⋆	140⋆	60	60	60	60	84⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
54	256	136	140⋆	140⋆	60	60	60	60	84⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
53	248	136	140⋆	140⋆	60	60	60	60	84⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
52	248	136	140⋆	140⋆	60	60	60	60	84⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
51	240	128	132⋆	132⋆	60	60	60	60	84⋆	24	24	28†	28†	24	32†	24	24	24	24	24	60⋆
50	236	128	128	128	60	60	60	60	80⋆	24	24	28†	28†	24	32†	24	24	24	24	24	56⋆
49	228	120	120	120	60	60	60	60	72⋆	24	24	28†	28†	24	32†	24	24	24	24	24	48⋆
48	220	112	112	112	60	60	60	60	64⋆	24	24	28†	28†	24	32†	24	24	24	24	24	40⋆
47	212	104	104	104	52	52	52	52	56⋆	16	16	20†	20†	16	24†	16	16	16	16	16	32⋆

continued

$m=8$																					
ν	7	6			5					4											
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_5$	$\mathbb{G}_7$	$\mathbb{G}_0$	$\mathbb{G}_{20}$	$\mathbb{G}_{45}$	$\mathbb{G}_{51}$	$\mathbb{G}_{52}$	$\mathbb{G}_0$	$\mathbb{G}_3$	$\mathbb{G}_{23}$	$\mathbb{G}_{32}$	$\mathbb{G}_{47}$	$\mathbb{G}_{49}$	$\mathbb{G}_{73}$	$\mathbb{G}_{77}$	$\mathbb{G}_{104}$	$\mathbb{G}_{106}$	$\mathbb{G}_{107}$	$\mathbb{G}_{108}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
46	212	104	104	104	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
45	204	104	104	104	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
44	204	104	104	104	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
43	196	96	96	96	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
42	196	96	96	96	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
41	188	96	96	96	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
40	180	96	96	96	52	52	52	52	56$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
39	172	88	88	88	44	44	44	44	48$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
38	172	88	88	88	44	44	44	44	48$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
37	164	88	88	88	44	44	44	44	48$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
36	164	88	88	88	44	44	44	44	48$\star$	16	16	20$\dagger$	20$\dagger$	16	24$\dagger$	16	16	16	16	16	32$\star$
35	156	80	80	80	36	36	36	36	48$\star$	16	16	20$\dagger$	20$\dagger$	16	16	16	16	16	16	16	32$\star$
34	148	80	80	80	36	36	36	36	48$\star$	16	16	20$\dagger$	20$\dagger$	16	16	16	16	16	16	16	32$\star$
33	140	72	76$\star$	76$\star$	32	32	32	32	44$\star$	16	16	16	16	16	16	16	16	16	16	16	28$\star$
32	132	64	68$\star$	68$\star$	32	32	32	32	36$\star$	16	16	16	16	16	16	16	16	16	16	16	20$\star$
31	124	56	60$\star$	60$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
30	124	56	60$\star$	60$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
29	116	56	60$\star$	60$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
28	116	56	60$\star$	60$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
27	108	48	52$\star$	52$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
26	108	48	52$\star$	52$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
25	100	48	52$\star$	52$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
24	100	48	52$\star$	52$\star$	24	24	24	24	28$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
23	92	40	44$\star$	44$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
22	92	40	44$\star$	44$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
21	84	40	44$\star$	44$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
20	84	40	44$\star$	44$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
19	76	32	36$\star$	36$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
18	76	32	36$\star$	36$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
17	68	32	36$\star$	36$\star$	16	16	16	16	20$\star$	8	8	8	8	8	8	8	8	8	8	8	12$\star$
16	64	32	32	32	16	16	16	16	16	8	8	8	8	8	8	8	8	8	8	8	8
15	56	24	24	24	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
14	56	24	24	24	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
13	48	24	24	24	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
12	48	24	24	24	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
11	40	16	16	16	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
10	40	16	16	16	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
9	32	16	16	16	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
8	32	16	16	16	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
7	24	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	24	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	16	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	16	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C.6 $m = 9, n = 511$

$m=9$												
ν	8	7		6								
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
510	4080	3570	3570	3060	3060	3060	3060	3060	3060	3060	3060	3060
509	4071	3561	3561	3051	3051	3051	3051	3051	3051	3051	3051	3051
508	4062	3552	3552	3042	3042	3042	3042	3042	3042	3042	3042	3042
507	4053	3543	3543	3033	3033	3033	3033	3033	3033	3033	3033	3033
506	4044	3534	3534	3024	3024	3024	3024	3024	3024	3024	3024	3024
505	4035	3525	3525	3015	3015	3015	3015	3015	3015	3015	3015	3015
504	4026	3516	3516	3006	3006	3006	3006	3006	3006	3006	3006	3006
503	4017	3507	3507	2997	2997	2997	2997	2997	2997	2997	2997	2997
502	4008	3498	3498	2988	2988	2988	2988	2988	2988	2988	2988	2988
501	3999	3489	3489	2979	2979	2979	2979	2979	2979	2979	2979	2979
500	3990	3480	3480	2970	2970	2970	2970	2970	2970	2970	2970	2970
499	3981	3471	3471	2961	2961	2961	2961	2961	2961	2961	2961	2961
498	3972	3462	3462	2952	2952	2952	2952	2952	2952	2952	2952	2952
497	3963	3453	3453	2943	2943	2943	2943	2943	2943	2943	2943	2943
496	3954	3444	3444	2934	2934	2934	2934	2934	2934	2934	2934	2934
495	3945	3435	3435	2925	2925	2925	2925	2925	2925	2925	2925	2925
494	3936	3426	3426	2916	2916	2916	2916	2916	2916	2916	2916	2916
493	3927	3417	3417	2907	2907	2907	2907	2907	2907	2907	2907	2907
492	3918	3408	3408	2898	2898	2898	2898	2898	2898	2898	2898	2898
491	3909	3399	3399	2889	2889	2889	2889	2889	2889	2889	2889	2889
490	3900	3390	3390	2880	2880	2880	2880	2880	2880	2880	2880	2880
489	3891	3381	3381	2871	2871	2871	2871	2871	2871	2871	2871	2871
488	3882	3372	3372	2862	2862	2862	2862	2862	2862	2862	2862	2862
487	3873	3363	3363	2853	2853	2853	2853	2853	2853	2853	2853	2853
486	3864	3354	3354	2844	2844	2844	2844	2844	2844	2844	2844	2844
485	3855	3345	3345	2835	2835	2835	2835	2835	2835	2835	2835	2835
484	3846	3336	3336	2826	2826	2826	2826	2826	2826	2826	2826	2826
483	3837	3327	3327	2817	2817	2817	2817	2817	2817	2817	2817	2817
482	3828	3318	3318	2808	2808	2808	2808	2808	2808	2808	2808	2808
481	3819	3309	3309	2799	2799	2799	2799	2799	2799	2799	2799	2799
480	3810	3300	3300	2790	2790	2790	2790	2790	2790	2790	2790	2790
479	3801	3291	3291	2781	2781	2781	2781	2781	2781	2781	2781	2781
478	3792	3282	3282	2772	2772	2772	2772	2772	2772	2772	2772	2772
477	3783	3273	3273	2763	2763	2763	2763	2763	2763	2763	2763	2763
476	3774	3264	3264	2754	2754	2754	2754	2754	2754	2754	2754	2754
475	3765	3255	3255	2745	2745	2745	2745	2745	2745	2745	2745	2745
474	3756	3246	3246	2736	2736	2736	2736	2736	2736	2736	2736	2736
473	3747	3237	3237	2727	2727	2727	2727	2727	2727	2727	2727	2727
472	3738	3228	3228	2718	2718	2718	2718	2718	2718	2718	2718	2718
471	3729	3219	3219	2709	2709	2709	2709	2709	2709	2709	2709	2709
470	3720	3210	3210	2700	2700	2700	2700	2700	2700	2700	2700	2700
469	3711	3201	3201	2691	2691	2691	2691	2691	2691	2691	2691	2691
468	3702	3192	3192	2682	2682	2682	2682	2682	2682	2682	2682	2682
467	3693	3183	3183	2673	2673	2673	2673	2673	2673	2673	2673	2673
466	3684	3174	3174	2664	2664	2664	2664	2664	2664	2664	2664	2664
465	3675	3165	3165	2655	2655	2655	2655	2655	2655	2655	2655	2655
464	3666	3156	3156	2646	2646	2646	2646	2646	2646	2646	2646	2646
463	3657	3147	3147	2637	2637	2637	2637	2637	2637	2637	2637	2637
462	3648	3138	3138	2628	2628	2628	2628	2628	2628	2628	2628	2628
461	3639	3129	3129	2619	2619	2619	2619	2619	2619	2619	2619	2619

continued

$m = 9$												
ν	8	7		6								
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
460	3630	3120	3120	2610	2610	2610	2610	2610	2610	2610	2610	2610
459	3621	3111	3111	2601	2601	2601	2601	2601	2601	2601	2601	2601
458	3612	3102	3102	2592	2592	2592	2592	2592	2592	2592	2592	2592
457	3603	3093	3093	2583	2583	2583	2583	2583	2583	2583	2583	2583
456	3594	3084	3084	2574	2574	2574	2574	2574	2574	2574	2574	2574
455	3585	3075	3075	2565	2565	2565	2565	2565	2565	2565	2565	2565
454	3576	3066	3066	2556	2556	2556	2556	2556	2556	2556	2556	2556
453	3567	3057	3057	2547	2547	2547	2547	2547	2547	2547	2547	2547
452	3558	3048	3048	2538	2538	2538	2538	2538	2538	2538	2538	2538
451	3549	3039	3039	2529	2529	2529	2529	2529	2529	2529	2529	2529
450	3540	3030	3030	2520	2520	2520	2520	2520	2520	2520	2520	2520
449	3531	3021	3021	2511	2511	2511	2511	2511	2511	2511	2511	2511
448	3522	3012	3012	2502	2502	2502	2502	2502	2502	2502	2502	2502
447	3513	3003	3003	2493	2493	2493	2493	2493	2493	2493	2493	2493
446	3504	2994	2994	2493	2493	2493	2493	2493	2493	2493	2493	2493
445	3495	2985	2985	2484	2484	2484	2484	2484	2484	2484	2484	2484
444	3486	2976	2976	2475	2475	2475	2475	2475	2475	2475	2475	2475
443	3477	2967	2967	2466	2466	2466	2466	2466	2466	2466	2466	2466
442	3468	2958	2958	2457	2457	2457	2457	2457	2457	2457	2457	2457
441	3459	2949	2949	2448	2448	2448	2448	2448	2448	2448	2448	2448
440	3450	2940	2940	2439	2439	2439	2439	2439	2439	2439	2439	2439
439	3441	2931	2931	2430	2430	2430	2430	2430	2430	2430	2430	2430
438	3432	2922	2922	2421	2421	2421	2421	2421	2421	2421	2421	2430 $\star$
437	3423	2913	2913	2412	2412	2412	2412	2412	2412	2412	2412	2424 $\star$
436	3414	2904	2904	2403	2403	2403	2403	2403	2403	2403	2403	2415 $\star$
435	3405	2895	2895	2394	2394	2394	2394	2394	2394	2394	2394	2406 $\star$
434	3396	2886	2886	2385	2385	2385	2385	2385	2385	2385	2385	2397 $\star$
433	3387	2877	2877	2376	2376	2376	2376	2376	2376	2376	2376	2388 $\star$
432	3378	2868	2868	2367	2367	2367	2367	2367	2367	2367	2367	2379 $\star$
431	3369	2859	2859	2358	2358	2358	2358	2358	2358	2358	2358	2370 $\star$
430	3360	2850	2850	2349	2349	2349	2349	2349	2349	2349	2349	2361 $\star$
429	3351	2841	2841	2340	2340	2340	2340	2340	2340	2340	2340	2352 $\star$
428	3342	2832	2832	2331	2331	2331	2331	2331	2331	2331	2331	2343 $\star$
427	3333	2823	2823	2322	2322	2322	2322	2322	2322	2322	2322	2334 $\star$
426	3324	2814	2814	2313	2313	2313	2313	2313	2313	2313	2313	2325 $\star$
425	3315	2805	2805	2304	2304	2304	2304	2304	2304	2304	2304	2316 $\star$
424	3306	2796	2796	2295	2295	2295	2295	2295	2295	2295	2295	2307 $\star$
423	3297	2787	2787	2286	2286	2286	2286	2286	2286	2286	2286	2298 $\star$
422	3288	2778	2778	2277	2277	2277	2277	2277	2277	2277	2277	2289 $\star$
421	3279	2769	2769	2268	2268	2268	2268	2268	2268	2268	2268	2280 $\star$
420	3270	2760	2760	2259	2259	2259	2259	2259	2259	2259	2259	2271 $\star$
419	3261	2751	2751	2250	2250	2250	2250	2250	2250	2250	2250	2262 $\star$
418	3252	2742	2742	2241	2241	2241	2241	2241	2241	2241	2241	2253 $\star$
417	3243	2733	2733	2232	2232	2232	2232	2232	2232	2232	2232	2244 $\star$
416	3234	2724	2724	2223	2223	2223	2223	2223	2223	2223	2223	2235 $\star$
415	3225	2715	2715	2214	2214	2214	2214	2214	2214	2214	2214	2226 $\star$
414	3216	2706	2706	2205	2205	2205	2205	2205	2205	2205	2205	2217 $\star$
413	3207	2697	2697	2196	2196	2196	2196	2196	2196	2196	2196	2208 $\star$
412	3198	2688	2688	2187	2187	2187	2187	2187	2187	2187	2187	2199 $\star$
411	3189	2679	2679	2178	2178	2178	2178	2178	2178	2178	2178	2190 $\star$
410	3180	2670	2670	2169	2169	2169	2169	2169	2169	2169	2169	2181 $\star$

continued

$m=9$												
ν	8	7		6								
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
409	3171	2661	2661	2160	2160	2160	2160	2160	2160	2160	2160	2172 $\star$
408	3162	2652	2652	2151	2151	2151	2151	2151	2151	2151	2151	2163 $\star$
407	3153	2643	2643	2142	2142	2142	2142	2142	2142	2142	2142	2154 $\star$
406	3144	2634	2634	2133	2133	2133	2133	2133	2133	2133	2133	2145 $\star$
405	3135	2625	2625	2124	2124	2124	2124	2124	2124	2124	2124	2136 $\star$
404	3126	2616	2616	2115	2115	2115	2115	2115	2115	2115	2115	2127 $\star$
403	3117	2607	2607	2106	2106	2106	2106	2106	2106	2106	2106	2118 $\star$
402	3108	2598	2598	2097	2097	2097	2097	2097	2097	2097	2097	2109 $\star$
401	3099	2589	2589	2088	2088	2088	2088	2088	2088	2088	2088	2100 $\star$
400	3090	2580	2580	2079	2079	2079	2079	2079	2079	2079	2079	2091 $\star$
399	3081	2571	2571	2070	2070	2070	2070	2070	2070	2070	2070	2082 $\star$
398	3072	2562	2562	2061	2061	2061	2061	2061	2061	2061	2061	2073 $\star$
397	3063	2553	2553	2052	2052	2052	2052	2052	2052	2052	2052	2064 $\star$
396	3054	2544	2544	2043	2043	2043	2043	2043	2043	2043	2043	2055 $\star$
395	3045	2535	2535	2034	2034	2034	2034	2034	2034	2034	2034	2046 $\star$
394	3036	2526	2526	2025	2025	2025	2025	2025	2025	2025	2025	2037 $\star$
393	3027	2517	2517	2016	2016	2016	2016	2016	2016	2016	2016	2028 $\star$
392	3018	2508	2508	2007	2007	2007	2007	2007	2007	2007	2007	2019 $\star$
391	3009	2499	2499	1998	1998	1998	1998	1998	1998	1998	1998	2010 $\star$
390	3000	2490	2490	1989	1989	1989	1989	1989	1989	1989	1989	2001 $\star$
389	2991	2481	2481	1980	1980	1980	1980	1980	1980	1980	1980	1992 $\star$
388	2982	2472	2472	1971	1971	1971	1971	1971	1971	1971	1971	1983 $\star$
387	2973	2463	2463	1962	1962	1962	1962	1962	1962	1962	1962	1974 $\star$
386	2964	2454	2454	1953	1953	1953	1953	1953	1953	1953	1953	1965 $\star$
385	2955	2445	2445	1944	1944	1944	1944	1944	1944	1944	1944	1956 $\star$
384	2946	2436	2436	1935	1935	1935	1935	1935	1935	1935	1935	1947 $\star$
383	2937	2427	2427	1926	1926	1926	1926	1926	1926	1926	1926	1938 $\star$
382	2928	2427	2427	1926	1926	1926	1926	1926	1926	1926	1926	1938 $\star$
381	2919	2418	2418	1917	1917	1917	1917	1917	1926$\dagger$	1917	1917	1938 $\star$
380	2910	2409	2409	1908	1908	1908	1908	1908	1917$\dagger$	1908	1917$\dagger$	1929 $\star$
379	2901	2400	2400	1899	1899	1899	1899	1899	1908$\dagger$	1899	1908$\dagger$	1920 $\star$
378	2892	2391	2391	1890	1890	1890	1890	1890	1899$\dagger$	1890	1899$\dagger$	1911 $\star$
377	2883	2382	2382	1881	1881	1881	1881	1881	1890$\dagger$	1881	1890$\dagger$	1902 $\star$
376	2874	2373	2373	1872	1872	1872	1872	1872	1881$\dagger$	1872	1881$\dagger$	1893 $\star$
375	2865	2364	2364	1863	1863	1863	1863	1863	1872$\dagger$	1863	1872$\dagger$	1884 $\star$
374	2856	2355	2355	1863	1863	1863	1863	1863	1872$\dagger$	1863	1872$\dagger$	1884 $\star$
373	2847	2346	2346	1854	1854	1854	1854	1854	1863$\dagger$	1854	1863$\dagger$	1884 $\star$
372	2838	2337	2337	1845	1845	1845	1845	1845	1854$\dagger$	1845	1854$\dagger$	1875 $\star$
371	2829	2328	2328	1836	1836	1836	1836	1836	1845$\dagger$	1836	1845$\dagger$	1866 $\star$
370	2820	2319	2319	1827	1827	1827	1827	1827	1836$\dagger$	1827	1836$\dagger$	1857 $\star$
369	2811	2310	2310	1818	1818	1818	1818	1818	1827$\dagger$	1818	1827$\dagger$	1848 $\star$
368	2802	2301	2301	1809	1809	1809	1809	1809	1818$\dagger$	1809	1818$\dagger$	1839 $\star$
367	2793	2292	2292	1800	1800	1800	1800	1800	1809$\dagger$	1800	1809$\dagger$	1830 $\star$
366	2784	2283	2292$\star$	1800	1800	1800	1800	1800	1809$\dagger$	1800	1800	1830 $\star$
365	2775	2274	2283$\star$	1791	1791	1791	1791	1791	1800$\dagger$	1791	1791	1830 $\star$
364	2766	2265	2277$\star$	1782	1782	1785$\dagger$	1782	1782	1791$\dagger$	1782	1782	1824 $\star$
363	2757	2256	2268$\star$	1773	1773	1776$\dagger$	1773	1773	1782$\dagger$	1773	1773	1815 $\star$
362	2748	2247	2259$\star$	1764	1764	1767$\dagger$	1764	1764	1773$\dagger$	1764	1764	1806 $\star$
361	2739	2238	2250$\star$	1755	1755	1758$\dagger$	1755	1755	1764$\dagger$	1755	1755	1797 $\star$
360	2730	2229	2241$\star$	1746	1746	1749$\dagger$	1746	1746	1755$\dagger$	1746	1746	1788 $\star$
359	2721	2220	2232$\star$	1737	1737	1740$\dagger$	1737	1737	1746$\dagger$	1737	1737	1779 $\star$

continued

$m = 9$												
ν	8	7		6								
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
358	2712	2211	2223⋆	1728	1728	1731†	1728	1728	1737†	1728	1728	1770⋆
357	2703	2202	2214⋆	1719	1719	1722†	1719	1719	1728†	1719	1719	1761⋆
356	2694	2193	2205⋆	1710	1710	1713†	1710	1710	1719†	1710	1710	1752⋆
355	2685	2184	2196⋆	1701	1701	1704†	1701	1701	1710†	1701	1701	1743⋆
354	2676	2175	2187⋆	1692	1692	1695†	1692	1692	1701†	1692	1692	1734⋆
353	2667	2166	2178⋆	1683	1683	1686†	1683	1683	1692†	1683	1683	1725⋆
352	2658	2157	2169⋆	1674	1674	1677†	1674	1674	1683†	1674	1674	1716⋆
351	2649	2148	2160⋆	1665	1665	1668†	1665	1665	1674†	1665	1665	1707⋆
350	2640	2139	2151⋆	1665	1665	1668†	1665	1665	1665	1665	1665	1698⋆
349	2631	2130	2142⋆	1656	1656	1659†	1656	1656	1656	1656	1656	1689⋆
348	2622	2121	2133⋆	1647	1647	1650†	1647	1656†	1647	1647	1647	1680⋆
347	2613	2112	2124⋆	1638	1638	1641†	1638	1647†	1638	1638	1638	1671⋆
346	2604	2103	2115⋆	1629	1638†	1632†	1629	1638†	1629	1629	1629	1662⋆
345	2595	2094	2106⋆	1620	1629†	1623†	1620	1629†	1620	1620	1620	1653⋆
344	2586	2085	2097⋆	1611	1620†	1614†	1611	1620†	1611	1611	1611	1644⋆
343	2577	2076	2088⋆	1602	1611†	1605†	1602	1611†	1602	1602	1602	1635⋆
342	2568	2067	2079⋆	1593	1602†	1596†	1593	1602†	1593	1593	1593	1626⋆
341	2559	2058	2070⋆	1584	1593†	1587†	1584	1593†	1584	1584	1584	1617⋆
340	2550	2049	2061⋆	1575	1584†	1578†	1575	1584†	1575	1575	1575	1608⋆
339	2541	2040	2052⋆	1566	1575†	1569†	1566	1575†	1566	1566	1566	1599⋆
338	2532	2031	2043⋆	1557	1566†	1560†	1557	1566†	1557	1557	1557	1590⋆
337	2523	2022	2034⋆	1548	1557†	1551†	1548	1557†	1548	1548	1548	1581⋆
336	2514	2013	2025⋆	1539	1548†	1542†	1539	1548†	1539	1539	1539	1572⋆
335	2505	2004	2016⋆	1530	1539†	1533†	1530	1539†	1530	1530	1530	1563⋆
334	2496	1995	2007⋆	1521	1530†	1524†	1521	1530†	1521	1521	1521	1554⋆
333	2487	1986	1998⋆	1512	1521†	1515†	1512	1521†	1512	1512	1512	1545⋆
332	2478	1977	1989⋆	1503	1512†	1506†	1503	1512†	1503	1503	1503	1536⋆
331	2469	1968	1980⋆	1494	1503†	1497†	1494	1503†	1494	1494	1494	1527⋆
330	2460	1959	1971⋆	1485	1494†	1488†	1485	1494†	1485	1485	1485	1518⋆
329	2451	1950	1962⋆	1476	1485†	1479†	1476	1485†	1476	1476	1476	1509⋆
328	2442	1941	1953⋆	1467	1476†	1470†	1467	1476†	1467	1467	1467	1500⋆
327	2433	1932	1944⋆	1458	1467†	1461†	1458	1467†	1458	1458	1458	1491⋆
326	2424	1923	1935⋆	1449	1458†	1452†	1449	1458†	1449	1449	1449	1482⋆
325	2415	1914	1926⋆	1440	1449†	1443†	1440	1449†	1440	1440	1440	1473⋆
324	2406	1905	1917⋆	1431	1440†	1434†	1431	1440†	1431	1431	1431	1464⋆
323	2397	1896	1908⋆	1422	1431†	1425†	1422	1431†	1422	1422	1422	1455⋆
322	2388	1887	1899⋆	1413	1422†	1416†	1413	1422†	1413	1413	1413	1446⋆
321	2379	1878	1890⋆	1404	1413†	1407†	1404	1413†	1404	1404	1404	1437⋆
320	2370	1869	1881⋆	1395	1404†	1398†	1395	1404†	1395	1395	1395	1428⋆
319	2361	1860	1872⋆	1386	1395†	1389†	1386	1395†	1386	1386	1386	1419⋆
318	2352	1851	1863⋆	1386	1395†	1389†	1386	1395†	1386	1386	1386	1419⋆
317	2343	1842	1854⋆	1377	1386†	1380†	1377	1386†	1377	1386†	1377	1419⋆
316	2334	1833	1845⋆	1368	1377†	1371†	1377†	1377†	1368	1377†	1368	1419⋆
315	2325	1824	1836⋆	1359	1368†	1362†	1368†	1368†	1359	1368†	1359	1410⋆
314	2316	1815	1827⋆	1350	1359†	1353†	1359†	1359†	1350	1359†	1350	1401⋆
313	2307	1806	1818⋆	1341	1350†	1344†	1350†	1350†	1341	1350†	1341	1392⋆
312	2298	1797	1809⋆	1332	1341†	1335†	1341†	1341†	1332	1341†	1332	1383⋆
311	2289	1788	1800⋆	1323	1332†	1326†	1332†	1332†	1323	1332†	1323	1374⋆
310	2280	1779	1791⋆	1314	1323†	1317†	1323†	1323†	1314	1323†	1323†	1374⋆
309	2271	1770	1782⋆	1305	1314†	1308†	1314†	1314†	1305	1314†	1314†	1374⋆
308	2262	1761	1773⋆	1296	1305†	1299†	1305†	1305†	1296	1305†	1305†	1374⋆

continued

$m = 9$												
ν	8	7		6								
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
307	2253	1752	1764⋆	1287	1296†	1290†	1296†	1296†	1287	1296†	1296†	1365 ⋆
306	2244	1743	1755⋆	1278	1287†	1281†	1287†	1287†	1278	1287†	1287†	1356 ⋆
305	2235	1734	1746⋆	1269	1278†	1272†	1278†	1278†	1269	1278†	1278†	1347 ⋆
304	2226	1725	1737⋆	1260	1269†	1263†	1269†	1269†	1260	1269†	1269†	1338 ⋆
303	2217	1716	1728⋆	1251	1260†	1254†	1260†	1260†	1251	1260†	1260†	1329 ⋆
302	2208	1707	1719⋆	1242	1251†	1245†	1251†	1251†	1251†	1251†	1251†	1329 ⋆
301	2199	1698	1710⋆	1233	1242†	1236†	1242†	1242†	1242†	1242†	1242†	1329 ⋆
300	2190	1689	1701⋆	1224	1233†	1227†	1233†	1233†	1233†	1233†	1233†	1329 ⋆
299	2181	1680	1692⋆	1215	1224†	1218†	1224†	1224†	1224†	1224†	1224†	1320 ⋆
298	2172	1671	1683⋆	1206	1215†	1209†	1215†	1215†	1215†	1215†	1215†	1311 ⋆
297	2163	1662	1674⋆	1197	1206†	1200†	1206†	1206†	1206†	1206†	1206†	1302 ⋆
296	2154	1653	1665⋆	1188	1197†	1191†	1197†	1197†	1197†	1197†	1197†	1293 ⋆
295	2145	1644	1656⋆	1179	1188†	1182†	1188†	1188†	1188†	1188†	1188†	1284 ⋆
294	2136	1635	1647⋆	1170	1179†	1173†	1179†	1179†	1179†	1179†	1179†	1284 ⋆
293	2127	1626	1638⋆	1161	1170†	1164†	1170†	1170†	1170†	1170†	1170†	1284 ⋆
292	2118	1617	1629⋆	1152	1161†	1155†	1161†	1161†	1161†	1161†	1161†	1284 ⋆
291	2109	1608	1620⋆	1143	1152†	1146†	1152†	1152†	1152†	1152†	1152†	1278 ⋆
290	2100	1599	1611⋆	1134	1143†	1137†	1143†	1143†	1143†	1143†	1143†	1269 ⋆
289	2091	1590	1602⋆	1125	1134†	1128†	1134†	1134†	1134†	1134†	1134†	1260 ⋆
288	2082	1581	1593⋆	1116	1125†	1119†	1125†	1125†	1125†	1125†	1125†	1251 ⋆
287	2073	1572	1584⋆	1107	1116†	1110†	1116†	1116†	1116†	1116†	1116†	1242 ⋆
286	2064	1563	1575⋆	1098	1107†	1101†	1107†	1107†	1107†	1107†	1107†	1233 ⋆
285	2055	1554	1566⋆	1089	1098†	1092†	1098†	1098†	1098†	1098†	1098†	1224 ⋆
284	2046	1545	1557⋆	1080	1089†	1083†	1089†	1089†	1089†	1089†	1089†	1215 ⋆
283	2037	1536	1548⋆	1071	1080†	1074†	1080†	1080†	1080†	1080†	1080†	1206 ⋆
282	2028	1527	1539⋆	1062	1071†	1065†	1071†	1071†	1071†	1071†	1071†	1197 ⋆
281	2019	1518	1530⋆	1053	1062†	1056†	1062†	1062†	1062†	1062†	1062†	1188 ⋆
280	2010	1509	1521⋆	1044	1053†	1047†	1053†	1053†	1053†	1053†	1053†	1179 ⋆
279	2001	1500	1512⋆	1035	1044†	1038†	1044†	1044†	1044†	1044†	1044†	1170 ⋆
278	1992	1491	1503⋆	1026	1035†	1029†	1035†	1035†	1035†	1035†	1035†	1161 ⋆
277	1983	1482	1494⋆	1017	1026†	1020†	1026†	1026†	1026†	1026†	1026†	1152 ⋆
276	1974	1473	1485⋆	1008	1017†	1011†	1017†	1017†	1017†	1017†	1017†	1143 ⋆
275	1965	1464	1476⋆	999	1008†	1002†	1008†	1008†	1008†	1008†	1008†	1134 ⋆
274	1956	1455	1467⋆	990	999†	993†	999†	999†	999†	999†	999†	1125 ⋆
273	1947	1446	1458⋆	981	990†	984†	990†	990†	990†	990†	990†	1116 ⋆
272	1938	1437	1449⋆	972	981†	975†	981†	981†	981†	981†	981†	1107 ⋆
271	1929	1428	1440⋆	963	972†	966†	972†	972†	972†	972†	972†	1098 ⋆
270	1920	1419	1431⋆	954	963†	957†	963†	963†	963†	963†	963†	1089 ⋆
269	1911	1410	1422⋆	945	954†	948†	954†	954†	954†	954†	954†	1080 ⋆
268	1902	1401	1413⋆	936	945†	939†	945†	945†	945†	945†	945†	1071 ⋆
267	1893	1392	1404⋆	927	936†	930†	936†	936†	936†	936†	936†	1062 ⋆
266	1884	1383	1395⋆	918	927†	921†	927†	927†	927†	927†	927†	1053 ⋆
265	1875	1374	1386⋆	909	918†	912†	918†	918†	918†	918†	918†	1044 ⋆
264	1866	1365	1377⋆	900	909†	903†	909†	909†	909†	909†	909†	1035 ⋆
263	1857	1356	1368⋆	891	900†	894†	900†	900†	900†	900†	900†	1026 ⋆
262	1848	1347	1359⋆	882	891†	885†	891†	891†	891†	891†	891†	1017 ⋆
261	1839	1338	1350⋆	873	882†	876†	882†	882†	882†	882†	882†	1008 ⋆
260	1830	1329	1341⋆	864	873†	867†	873†	873†	873†	873†	873†	999 ⋆
259	1821	1320	1332⋆	855	864†	858†	864†	864†	864†	864†	864†	990 ⋆
258	1812	1311	1323⋆	846	855†	849†	855†	855†	855†	855†	855†	981 ⋆
257	1803	1302	1314⋆	837	846†	840†	846†	846†	846†	846†	846†	972 ⋆

continued

$m=9$												
ν	8	7		6								
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
256	1794	1293	1305⋆	828	837†	831†	837†	837†	837†	837†	837†	963 ⋆
255	1785	1284	1296⋆	819	828†	822†	828†	828†	828†	828†	828†	954 ⋆
254	1785	1284	1296⋆	819	828†	822†	828†	828†	828†	828†	828†	954 ⋆
253	1776	1284	1296⋆	819	828†	822†	828†	828†	828†	828†	828†	954 ⋆
252	1767	1284	1296⋆	819	828†	822†	828†	828†	828†	828†	828†	954 ⋆
251	1758	1275	1287⋆	819	828†	822†	828†	828†	828†	828†	828†	954 ⋆
250	1749	1275	1278⋆	819	828†	822†	828†	828†	828†	828†	828†	945 ⋆
249	1740	1266	1269⋆	819	828†	822†	828†	828†	828†	819	828†	936 ⋆
248	1731	1257	1260⋆	819	828†	822†	828†	828†	819	819	828†	927 ⋆
247	1722	1248	1251⋆	810	819†	813†	819†	819†	810	810	819†	918 ⋆
246	1713	1248	1251⋆	810	819†	813†	819†	819†	810	810	819†	918 ⋆
245	1704	1239	1251⋆	810	819†	813†	810	819†	810	810	819†	918 ⋆
244	1695	1230	1242⋆	810	819†	813†	810	819†	810	810	819†	918 ⋆
243	1686	1221	1233⋆	801	810†	804†	801	810†	801	810†	810†	918 ⋆
242	1677	1212	1224⋆	801	810†	804†	801	810†	801	810†	801	909 ⋆
241	1668	1203	1215⋆	792	801†	795†	792	801†	801†	801†	792	900 ⋆
240	1659	1194	1206⋆	783	792†	786†	783	792†	792†	792†	783	891 ⋆
239	1650	1185	1197⋆	774	783†	777†	774	783†	783†	783†	774	882 ⋆
238	1650	1185	1197⋆	774	783†	777†	774	783†	783†	783†	774	882 ⋆
237	1641	1176	1188⋆	774	783†	777†	774	783†	783†	783†	774	882 ⋆
236	1632	1167	1188⋆	774	783†	777†	774	774	783†	783†	774	882 ⋆
235	1623	1158	1179⋆	765	774†	768†	774†	765	774†	774†	765	882 ⋆
234	1614	1149	1170⋆	765	765	768†	774†	765	774†	774†	765	873 ⋆
233	1605	1140	1161⋆	756	756	759†	765†	756	765†	765†	756	864 ⋆
232	1596	1131	1152⋆	747	747	750†	756†	747	756†	765†	747	855 ⋆
231	1587	1122	1143⋆	738	738	741†	747†	738	747†	756†	738	846 ⋆
230	1578	1122	1143⋆	738	738	741†	747†	738	747†	756†	738	846 ⋆
229	1569	1113	1134⋆	729	729	732†	738†	729	738†	747†	738†	846 ⋆
228	1560	1104	1125⋆	720	720	723†	729†	720	738†	738†	729†	846 ⋆
227	1551	1095	1116⋆	711	711	714†	720†	711	729†	729†	720†	846 ⋆
226	1542	1086	1107⋆	702	702	705†	711†	702	720†	720†	711†	837 ⋆
225	1533	1077	1098⋆	693	693	696†	702†	693	711†	711†	702†	828 ⋆
224	1524	1068	1089⋆	684	684	687†	693†	684	702†	702†	693†	819 ⋆
223	1515	1059	1080⋆	675	675	678†	684†	675	693†	693†	684†	810 ⋆
222	1515	1059	1080⋆	675	675	678†	684†	675	693†	693†	684†	810 ⋆
221	1506	1059	1080⋆	675	675	678†	684†	675	693†	693†	684†	810 ⋆
220	1497	1059	1080⋆	675	675	678†	684†	675	693†	693†	684†	810 ⋆
219	1488	1050	1071⋆	675	675	678†	684†	675	693†	693†	684†	810 ⋆
218	1482	1047	1065⋆	675	675	675	684†	675	693†	693†	684†	804 ⋆
217	1473	1038	1056⋆	666	666	666	675†	675†	684†	684†	675†	795 ⋆
216	1464	1029	1047⋆	657	657	657	675†	666†	675†	675†	666†	786 ⋆
215	1455	1020	1038⋆	648	648	648	666†	657†	666†	666†	657†	777 ⋆
214	1446	1020	1029⋆	648	648	648	666†	657†	666†	666†	657†	768 ⋆
213	1437	1011	1020⋆	639	648†	639	657†	648†	657†	657†	648†	759 ⋆
212	1428	1002	1011⋆	630	639†	630	648†	639†	648†	648†	639†	750 ⋆
211	1419	993	1002⋆	621	630†	621	639†	630†	639†	639†	630†	741 ⋆
210	1410	984	993⋆	621	630†	621	639†	621	639†	639†	630†	732 ⋆
209	1401	975	984⋆	612	621†	612	630†	612	630†	630†	621†	723 ⋆
208	1392	966	975⋆	603	612†	603	621†	603	621†	621†	612†	714 ⋆
207	1383	957	966⋆	594	603†	594	612†	594	612†	612†	603†	705 ⋆
206	1374	957	957	594	603†	594	612†	594	612†	612†	603†	696 ⋆

continued

$m = 9$												
ν	8	7		6								
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
205	1365	948	948	594	603†	594	612†	594	612†	612†	594	687 ⋆
204	1356	939	939	594	594	594	612†	594	612†	612†	594	678 ⋆
203	1347	930	930	585	585	585	603†	585	603†	603†	585	669 ⋆
202	1338	921	921	585	585	585	594†	585	603†	603†	585	660 ⋆
201	1329	912	912	576	576	576	585†	576	594†	594†	576	651 ⋆
200	1320	903	903	567	567	567	576†	567	585†	585†	567	642 ⋆
199	1311	894	894	558	558	558	567†	558	576†	576†	558	633 ⋆
198	1302	885	885	558	558	558	558	558	576†	576†	558	624 ⋆
197	1293	876	876	549	549	549	549	549	567†	567†	549	615 ⋆
196	1284	867	867	540	540	540	540	540	558†	558†	540	606 ⋆
195	1275	858	858	531	531	531	531	531	549†	549†	531	597 ⋆
194	1266	849	849	522	522	522	522	522	540†	540†	522	588 ⋆
193	1257	840	840	513	513	513	513	513	531†	531†	513	579 ⋆
192	1248	831	831	504	504	504	504	504	522†	522†	504	570 ⋆
191	1239	822	822	495	495	495	495	495	513†	513†	495	561 ⋆
190	1239	822	822	495	495	495	495	495	513†	513†	495	561 ⋆
189	1230	822	822	495	495	495	495	495	513†	513†	495	561 ⋆
188	1221	822	822	495	495	495	495	495	513†	513†	495	561 ⋆
187	1212	813	813	495	495	495	495	495	513†	513†	495	561 ⋆
186	1212	813	813	495	495	495	495	495	513†	513†	495	561 ⋆
185	1203	804	804	495	495	495	495	495	513†	504†	495	552 ⋆
184	1194	795	795	495	495	495	495	495	504†	504†	495	543 ⋆
183	1185	786	786	486	486	486	486	486	495†	495†	486	534 ⋆
182	1185	786	786	486	486	486	486	486	495†	495†	486	534 ⋆
181	1176	786	786	486	486	486	486	486	495†	495†	486	534 ⋆
180	1167	777	777	486	486	486	486	486	495†	495†	486	534 ⋆
179	1158	768	768	477	477	477	477	477	486†	495†	477	534 ⋆
178	1149	768	768	477	477	477	477	477	486†	495†	477	534 ⋆
177	1140	759	759	468	468	468	468	468	486†	486†	468	525 ⋆
176	1131	750	750	459	459	459	459	459	477†	477†	459	516 ⋆
175	1122	741	741	450	450	450	450	450	468†	468†	450	507 ⋆
174	1122	741	741	450	450	450	450	450	468†	468†	450	507 ⋆
173	1113	741	741	450	450	450	450	450	468†	468†	450	507 ⋆
172	1104	741	741	450	450	450	450	450	468†	468†	450	507 ⋆
171	1095	732	732	450	450	450	450	450	468†	468†	450	507 ⋆
170	1095	732	732	450	450	450	450	450	468†	468†	450	507 ⋆
169	1086	723	723	441	441	441	441	441	459†	459†	441	498 ⋆
168	1077	714	714	432	432	432	432	432	450†	450†	432	489 ⋆
167	1068	705	705	423	423	423	423	423	441†	441†	423	480 ⋆
166	1059	696	696	423	423	423	423	423	441†	441†	423	480 ⋆
165	1050	687	687	414	414	414	414	423†	432†	432†	414	480 ⋆
164	1041	678	678	414	414	414	414	423†	432†	432†	414	480 ⋆
163	1032	669	669	405	405	405	405	414†	423†	423†	405	480 ⋆
162	1023	660	660	396	396	396	396	405†	414†	423†	396	480 ⋆
161	1014	651	651	387	387	387	387	396†	405†	414†	387	471 ⋆
160	1005	642	642	378	378	378	378	387†	396†	405†	378	462 ⋆
159	996	633	633	369	369	369	369	378†	387†	396†	369	453 ⋆
158	987	633	633	369	369	369	369	378†	387†	396†	369	453 ⋆
157	978	624	633⋆	369	369	369	369	378†	378†	396†	369	453 ⋆
156	969	624	633⋆	369	369	369	369	378†	378†	396†	369	453 ⋆
155	960	615	624⋆	360	360	360	360	369†	369†	387†	369†	453 ⋆
continued												

$m = 9$												
ν	8	7		6								
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
154	951	615	624⋆	360	360	360	360	369†	369†	387†	369†	453 ⋆
153	942	606	615⋆	351	360†	351	351	360†	360†	378†	360†	444 ⋆
152	933	597	606⋆	351	360†	351	351	351	360†	378†	360†	435 ⋆
151	924	588	597⋆	342	351†	342	342	342	351†	369†	351†	426 ⋆
150	915	588	597⋆	342	351†	342	342	342	351†	369†	351†	426 ⋆
149	906	579	597⋆	342	351†	342	342	342	342	369†	351†	426 ⋆
148	897	579	597⋆	342	351†	342	342	342	342	369†	351†	426 ⋆
147	888	570	588⋆	333	342†	333	333	333	333	360†	342†	426 ⋆
146	879	561	588⋆	333	333	333	333	333	333	360†	342†	426 ⋆
145	870	552	582⋆	324	324	327†	324	324	324	351†	333†	420 ⋆
144	861	543	573⋆	315	315	318†	315	315	315	342†	324†	411 ⋆
143	852	534	564⋆	306	306	309†	306	306	306	333†	315†	402 ⋆
142	843	525	555⋆	306	306	309†	306	306	306	324†	315†	393 ⋆
141	834	516	546⋆	297	297	300†	306†	297	297	315†	306†	384 ⋆
140	825	507	537⋆	297	297	300†	306†	297	297	306†	306†	375 ⋆
139	816	498	528⋆	288	288	291†	297†	288	288	297†	297†	366 ⋆
138	807	489	519⋆	288	288	291†	297†	288	288	288	297†	357 ⋆
137	798	480	510⋆	279	279	282†	297†	279	279	279	288†	348 ⋆
136	789	471	501⋆	270	270	273†	288†	270	270	270	288†	339 ⋆
135	780	462	492⋆	261	261	264†	279†	261	261	261	279†	330 ⋆
134	771	453	483⋆	252	252	255†	270†	252	252	252	270†	321 ⋆
133	762	444	474⋆	243	243	246†	261†	243	243	243	261†	312 ⋆
132	753	435	465⋆	234	234	237†	252†	234	234	234	252†	303 ⋆
131	744	426	456⋆	225	225	228†	243†	225	225	225	243†	294 ⋆
130	735	417	447⋆	216	216	219†	234†	216	216	216	234†	285 ⋆
129	726	408	438⋆	207	207	210†	225†	207	207	207	225†	276 ⋆
128	717	399	429⋆	198	198	201†	216†	198	198	198	216†	267 ⋆
127	708	390	420⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
126	708	390	420⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
125	699	390	420⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
124	699	390	420⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
123	690	381	411⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
122	690	381	411⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
121	681	381	411⋆	189	189	192†	207†	189	189	189	207†	258 ⋆
120	672	381	402⋆	189	189	192†	207†	189	189	189	207†	249 ⋆
119	663	372	393⋆	180	180	183†	198†	180	180	180	198†	240 ⋆
118	663	372	393⋆	180	180	183†	198†	180	180	180	198†	240 ⋆
117	654	372	393⋆	180	180	183†	198†	180	180	180	198†	240 ⋆
116	654	372	393⋆	180	180	183†	198†	180	180	180	198†	240 ⋆
115	645	363	384⋆	180	180	183†	198†	180	180	180	198†	240 ⋆
114	636	363	384⋆	180	180	183†	198†	180	180	180	198†	240 ⋆
113	627	354	384⋆	180	180	183†	189†	180	180	180	198†	240 ⋆
112	618	345	375⋆	180	180	183†	189†	180	180	180	189†	231 ⋆
111	609	336	366⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
110	609	336	366⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
109	600	336	366⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
108	600	336	366⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
107	591	327	357⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
106	591	327	357⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
105	582	327	357⋆	171	171	174†	180†	171	171	171	180†	222 ⋆
104	573	327	348⋆	171	171	174†	180†	171	171	171	180†	213 ⋆

continued

$m=9$												
ν	8	7		6								
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
103	564	318	339⋆	162	162	165†	171†	162	162	162	171†	204⋆
102	564	318	339⋆	162	162	165†	171†	162	162	162	171†	204⋆
101	555	309	330⋆	162	162	165†	171†	162	162	162	171†	204⋆
100	546	309	330⋆	162	162	165†	171†	162	162	162	171†	204⋆
99	537	300	321⋆	153	153	156†	171†	153	153	153	162†	204⋆
98	528	300	321⋆	153	153	156†	171†	153	153	153	162†	204⋆
97	519	291	312⋆	144	144	147†	162†	144	144	144	162†	204⋆
96	510	282	303⋆	135	135	138†	153†	135	135	135	153†	195⋆
95	501	273	294⋆	126	126	129†	144†	126	126	126	144†	186⋆
94	501	273	294⋆	126	126	129†	144†	126	126	126	144†	186⋆
93	492	273	294⋆	126	126	129†	144†	126	126	126	144†	186⋆
92	492	273	294⋆	126	126	129†	144†	126	126	126	144†	186⋆
91	483	264	285⋆	126	126	129†	144†	126	126	126	144†	186⋆
90	483	264	285⋆	126	126	129†	144†	126	126	126	144†	186⋆
89	474	264	285⋆	126	126	129†	144†	126	126	126	144†	186⋆
88	465	264	276⋆	126	126	129†	144†	126	126	126	144†	177⋆
87	456	255	267⋆	117	117	120†	135†	117	117	117	135†	168⋆
86	456	255	267⋆	117	117	120†	135†	117	117	117	135†	168⋆
85	447	255	267⋆	117	117	120†	135†	117	117	117	135†	168⋆
84	447	255	267⋆	117	117	120†	135†	117	117	117	135†	168⋆
83	438	246	258⋆	117	117	120†	135†	117	117	117	135†	168⋆
82	438	246	258⋆	117	117	120†	135†	117	117	117	135†	168⋆
81	429	237	258⋆	117	117	120†	126†	117	117	117	135†	168⋆
80	420	228	249⋆	117	117	120†	126†	117	117	117	126†	159⋆
79	411	219	240⋆	108	108	111†	117†	108	108	108	117†	150⋆
78	411	219	240⋆	108	108	111†	117†	108	108	108	117†	150⋆
77	402	219	240⋆	108	108	111†	117†	108	108	108	117†	150⋆
76	402	219	240⋆	108	108	111†	117†	108	108	108	117†	150⋆
75	393	210	231⋆	108	108	111†	117†	108	108	108	117†	150⋆
74	393	210	231⋆	108	108	111†	117†	108	108	108	117†	150⋆
73	384	210	231⋆	108	108	111†	117†	108	108	108	117†	150⋆
72	378	207	225⋆	108	108	108	117†	108	108	108	117†	144⋆
71	369	198	216⋆	99	99	99	108†	99	99	99	108†	135⋆
70	360	198	207⋆	99	99	99	108†	99	99	99	108†	126⋆
69	351	189	198⋆	99	99	99	108†	99	99	99	99	117⋆
68	342	189	189	99	99	99	108⋆	99	99	99	99	108⋆
67	333	180	180	90	90	90	99⋆	90	90	90	90	99⋆
66	324	171	171	90	90	90	90	90	90	90	90	90
65	315	162	162	81	81	81	81	81	81	81	81	81
64	306	153	153	72	72	72	72	72	72	72	72	72
63	297	144	144	63	63	63	63	63	63	63	63	63
62	297	144	144	63	63	63	63	63	63	63	63	63
61	288	144	144	63	63	63	63	63	63	63	63	63
60	288	144	144	63	63	63	63	63	63	63	63	63
59	279	135	135	63	63	63	63	63	63	63	63	63
58	279	135	135	63	63	63	63	63	63	63	63	63
57	270	135	135	63	63	63	63	63	63	63	63	63
56	270	135	135	63	63	63	63	63	63	63	63	63
55	261	126	126	54	54	54	54	54	54	54	54	54
54	261	126	126	54	54	54	54	54	54	54	54	54
53	252	126	126	54	54	54	54	54	54	54	54	54

continued

$m=9$												
ν	8	7		6								
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
52	252	126	126	54	54	54	54	54	54	54	54	54
51	243	117	117	54	54	54	54	54	54	54	54	54
50	243	117	117	54	54	54	54	54	54	54	54	54
49	234	117	117	54	54	54	54	54	54	54	54	54
48	225	117	117	54	54	54	54	54	54	54	54	54
47	216	108	108	45	45	45	45	45	45	45	45	45
46	216	108	108	45	45	45	45	45	45	45	45	45
45	207	108	108	45	45	45	45	45	45	45	45	45
44	207	108	108	45	45	45	45	45	45	45	45	45
43	198	99	99	45	45	45	45	45	45	45	45	45
42	198	99	99	45	45	45	45	45	45	45	45	45
41	189	99	99	45	45	45	45	45	45	45	45	45
40	189	99	99	45	45	45	45	45	45	45	45	45
39	180	90	90	36	36	36	36	36	36	36	36	36
38	180	90	90	36	36	36	36	36	36	36	36	36
37	171	90	90	36	36	36	36	36	36	36	36	36
36	171	90	90	36	36	36	36	36	36	36	36	36
35	162	81	81	36	36	36	36	36	36	36	36	36
34	162	81	81	36	36	36	36	36	36	36	36	36
33	153	72	72	36	36	36	36	36	36	36	36	36
32	144	72	72	36	36	36	36	36	36	36	36	36
31	135	63	63	27	27	27	27	27	27	27	27	27
30	135	63	63	27	27	27	27	27	27	27	27	27
29	126	63	63	27	27	27	27	27	27	27	27	27
28	126	63	63	27	27	27	27	27	27	27	27	27
27	117	54	54	27	27	27	27	27	27	27	27	27
26	117	54	54	27	27	27	27	27	27	27	27	27
25	108	54	54	27	27	27	27	27	27	27	27	27
24	108	54	54	27	27	27	27	27	27	27	27	27
23	99	45	45	18	18	18	18	18	18	18	18	18
22	99	45	45	18	18	18	18	18	18	18	18	18
21	90	45	45	18	18	18	18	18	18	18	18	18
20	90	45	45	18	18	18	18	18	18	18	18	18
19	81	36	36	18	18	18	18	18	18	18	18	18
18	81	36	36	18	18	18	18	18	18	18	18	18
17	72	36	36	18	18	18	18	18	18	18	18	18
16	72	36	36	18	18	18	18	18	18	18	18	18
15	63	27	27	9	9	9	9	9	9	9	9	9
14	63	27	27	9	9	9	9	9	9	9	9	9
13	54	27	27	9	9	9	9	9	9	9	9	9
12	54	27	27	9	9	9	9	9	9	9	9	9
11	45	18	18	9	9	9	9	9	9	9	9	9
10	45	18	18	9	9	9	9	9	9	9	9	9
9	36	18	18	9	9	9	9	9	9	9	9	9
8	36	18	18	9	9	9	9	9	9	9	9	9
7	27	9	9	0	0	0	0	0	0	0	0	0
6	27	9	9	0	0	0	0	0	0	0	0	0
5	18	9	9	0	0	0	0	0	0	0	0	0
4	18	9	9	0	0	0	0	0	0	0	0	0
3	9	0	0	0	0	0	0	0	0	0	0	0
2	9	0	0	0	0	0	0	0	0	0	0	0

continued

$m=9$												
ν	8	7		6								
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{10}$	$\mathbb{G}_0$	$\mathbb{G}_9$	$\mathbb{G}_{11}$	$\mathbb{G}_{115}$	$\mathbb{G}_{141}$	$\mathbb{G}_{148}$	$\mathbb{G}_{172}$	$\mathbb{G}_{175}$	$\mathbb{G}_{176}$
k_0	K	K	K	K	K	K	K	K	K	K	K	K
1	0	0	0	0	0	0	0	0	0	0	0	0

C.7 $m = 10, n = 1023$

$m=10$											
ν	9	8			7						
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
1022	9198	8176	8176	8176	7154	7154	7154	7154	7154	7154	7154
1021	9188	8166	8166	8166	7144	7144	7144	7144	7144	7144	7144
1020	9178	8156	8156	8156	7134	7134	7134	7134	7134	7134	7134
1019	9168	8146	8146	8146	7124	7124	7124	7124	7124	7124	7124
1018	9158	8136	8136	8136	7114	7114	7114	7114	7114	7114	7114
1017	9148	8126	8126	8126	7104	7104	7104	7104	7104	7104	7104
1016	9138	8116	8116	8116	7094	7094	7094	7094	7094	7094	7094
1015	9128	8106	8106	8106	7084	7084	7084	7084	7084	7084	7084
1014	9118	8096	8096	8096	7074	7074	7074	7074	7074	7074	7074
1013	9108	8086	8086	8086	7064	7064	7064	7064	7064	7064	7064
1012	9098	8076	8076	8076	7054	7054	7054	7054	7054	7054	7054
1011	9088	8066	8066	8066	7044	7044	7044	7044	7044	7044	7044
1010	9078	8056	8056	8056	7034	7034	7034	7034	7034	7034	7034
1009	9068	8046	8046	8046	7024	7024	7024	7024	7024	7024	7024
1008	9058	8036	8036	8036	7014	7014	7014	7014	7014	7014	7014
1007	9048	8026	8026	8026	7004	7004	7004	7004	7004	7004	7004
1006	9038	8016	8016	8016	6994	6994	6994	6994	6994	6994	6994
1005	9028	8006	8006	8006	6984	6984	6984	6984	6984	6984	6984
1004	9018	7996	7996	7996	6974	6974	6974	6974	6974	6974	6974
1003	9008	7986	7986	7986	6964	6964	6964	6964	6964	6964	6964
1002	8998	7976	7976	7976	6954	6954	6954	6954	6954	6954	6954
1001	8988	7966	7966	7966	6944	6944	6944	6944	6944	6944	6944
1000	8978	7956	7956	7956	6934	6934	6934	6934	6934	6934	6934
999	8968	7946	7946	7946	6924	6924	6924	6924	6924	6924	6924
998	8958	7936	7936	7936	6914	6914	6914	6914	6914	6914	6914
997	8948	7926	7926	7926	6904	6904	6904	6904	6904	6904	6904
996	8938	7916	7916	7916	6894	6894	6894	6894	6894	6894	6894
995	8928	7906	7906	7906	6884	6884	6884	6884	6884	6884	6884
994	8918	7896	7896	7896	6874	6874	6874	6874	6874	6874	6874
993	8908	7886	7886	7886	6864	6864	6864	6864	6864	6864	6864
992	8898	7876	7876	7876	6854	6854	6854	6854	6854	6854	6854
991	8888	7866	7866	7866	6844	6844	6844	6844	6844	6844	6844
990	8878	7856	7856	7856	6834	6834	6834	6834	6834	6834	6834
989	8868	7846	7846	7846	6824	6824	6824	6824	6824	6824	6824
988	8858	7836	7836	7836	6814	6814	6814	6814	6814	6814	6814
987	8848	7826	7826	7826	6804	6804	6804	6804	6804	6804	6804
986	8838	7816	7816	7816	6794	6794	6794	6794	6794	6794	6794
985	8828	7806	7806	7806	6784	6784	6784	6784	6784	6784	6784
984	8818	7796	7796	7796	6774	6774	6774	6774	6774	6774	6774
983	8808	7786	7786	7786	6764	6764	6764	6764	6764	6764	6764
982	8798	7776	7776	7776	6754	6754	6754	6754	6754	6754	6754

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
981	8788	7766	7766	7766	6744	6744	6744	6744	6744	6744	6744
980	8778	7756	7756	7756	6734	6734	6734	6734	6734	6734	6734
979	8768	7746	7746	7746	6724	6724	6724	6724	6724	6724	6724
978	8758	7736	7736	7736	6714	6714	6714	6714	6714	6714	6714
977	8748	7726	7726	7726	6704	6704	6704	6704	6704	6704	6704
976	8738	7716	7716	7716	6694	6694	6694	6694	6694	6694	6694
975	8728	7706	7706	7706	6684	6684	6684	6684	6684	6684	6684
974	8718	7696	7696	7696	6674	6674	6674	6674	6674	6674	6674
973	8708	7686	7686	7686	6664	6664	6664	6664	6664	6664	6664
972	8698	7676	7676	7676	6654	6654	6654	6654	6654	6654	6654
971	8688	7666	7666	7666	6644	6644	6644	6644	6644	6644	6644
970	8678	7656	7656	7656	6634	6634	6634	6634	6634	6634	6634
969	8668	7646	7646	7646	6624	6624	6624	6624	6624	6624	6624
968	8658	7636	7636	7636	6614	6614	6614	6614	6614	6614	6614
967	8648	7626	7626	7626	6604	6604	6604	6604	6604	6604	6604
966	8638	7616	7616	7616	6594	6594	6594	6594	6594	6594	6594
965	8628	7606	7606	7606	6584	6584	6584	6584	6584	6584	6584
964	8618	7596	7596	7596	6574	6574	6574	6574	6574	6574	6574
963	8608	7586	7586	7586	6564	6564	6564	6564	6564	6564	6564
962	8598	7576	7576	7576	6554	6554	6554	6554	6554	6554	6554
961	8588	7566	7566	7566	6544	6544	6544	6544	6544	6544	6544
960	8578	7556	7556	7556	6534	6534	6534	6534	6534	6534	6534
959	8568	7546	7546	7546	6524	6524	6524	6524	6524	6524	6524
958	8558	7536	7536	7536	6514	6514	6514	6514	6514	6514	6514
957	8548	7526	7526	7526	6504	6504	6504	6504	6504	6504	6504
956	8538	7516	7516	7516	6494	6494	6494	6494	6494	6494	6494
955	8528	7506	7506	7506	6484	6484	6484	6484	6484	6484	6484
954	8518	7496	7496	7496	6474	6474	6474	6474	6474	6474	6474
953	8508	7486	7486	7486	6464	6464	6464	6464	6464	6464	6464
952	8498	7476	7476	7476	6454	6454	6454	6454	6454	6454	6454
951	8488	7466	7466	7466	6444	6444	6444	6444	6444	6444	6444
950	8478	7456	7456	7456	6434	6434	6434	6434	6434	6434	6434
949	8468	7446	7446	7446	6424	6424	6424	6424	6424	6424	6424
948	8458	7436	7436	7436	6414	6414	6414	6414	6414	6414	6414
947	8448	7426	7426	7426	6404	6404	6404	6404	6404	6404	6404
946	8438	7416	7416	7416	6394	6394	6394	6394	6394	6394	6394
945	8428	7406	7406	7406	6384	6384	6384	6384	6384	6384	6384
944	8418	7396	7396	7396	6374	6374	6374	6374	6374	6374	6374
943	8408	7386	7386	7386	6364	6364	6364	6364	6364	6364	6364
942	8398	7376	7376	7376	6354	6354	6354	6354	6354	6354	6354
941	8388	7366	7366	7366	6344	6344	6344	6344	6344	6344	6344
940	8378	7356	7356	7356	6334	6334	6334	6334	6334	6334	6334
939	8368	7346	7346	7346	6324	6324	6324	6324	6324	6324	6324
938	8358	7336	7336	7336	6314	6314	6314	6314	6314	6314	6314
937	8348	7326	7326	7326	6304	6304	6304	6304	6304	6304	6304
936	8338	7316	7316	7316	6294	6294	6294	6294	6294	6294	6294
935	8328	7306	7306	7306	6284	6284	6284	6284	6284	6284	6284
934	8318	7296	7296	7296	6274	6274	6274	6274	6274	6274	6274
933	8308	7286	7286	7286	6264	6264	6264	6264	6264	6264	6264
932	8298	7276	7276	7276	6254	6254	6254	6254	6254	6254	6254
931	8288	7266	7266	7266	6244	6244	6244	6244	6244	6244	6244

continued

$m=10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
930	8278	7256	7256	7256	6234	6234	6234	6234	6234	6234	6234
929	8268	7246	7246	7246	6224	6224	6224	6224	6224	6224	6224
928	8258	7236	7236	7236	6214	6214	6214	6214	6214	6214	6214
927	8248	7226	7226	7226	6204	6204	6204	6204	6204	6204	6204
926	8238	7216	7216	7216	6194	6194	6194	6194	6194	6194	6194
925	8228	7206	7206	7206	6184	6184	6184	6184	6184	6184	6184
924	8218	7196	7196	7196	6174	6174	6174	6174	6174	6174	6174
923	8208	7186	7186	7186	6164	6164	6164	6164	6164	6164	6164
922	8198	7176	7176	7176	6154	6154	6154	6154	6154	6154	6154
921	8188	7166	7166	7166	6144	6144	6144	6144	6144	6144	6144
920	8178	7156	7156	7156	6134	6134	6134	6134	6134	6134	6134
919	8168	7146	7146	7146	6124	6124	6124	6124	6124	6124	6124
918	8158	7136	7136	7136	6114	6114	6114	6114	6114	6114	6114
917	8148	7126	7126	7126	6104	6104	6104	6104	6104	6104	6104
916	8138	7116	7116	7116	6094	6094	6094	6094	6094	6094	6094
915	8128	7106	7106	7106	6084	6084	6084	6084	6084	6084	6084
914	8118	7096	7096	7096	6074	6074	6074	6074	6074	6074	6074
913	8108	7086	7086	7086	6064	6064	6064	6064	6064	6064	6064
912	8098	7076	7076	7076	6054	6054	6054	6054	6054	6054	6054
911	8088	7066	7066	7066	6044	6044	6044	6044	6044	6044	6044
910	8078	7056	7056	7056	6034	6034	6034	6034	6034	6034	6034
909	8068	7046	7046	7046	6024	6024	6024	6024	6024	6024	6024
908	8058	7036	7036	7036	6014	6014	6014	6014	6014	6014	6014
907	8048	7026	7026	7026	6004	6004	6004	6004	6004	6004	6004
906	8038	7016	7016	7016	5994	5994	5994	5994	5994	5994	5994
905	8028	7006	7006	7006	5984	5984	5984	5984	5984	5984	5984
904	8018	6996	6996	6996	5974	5974	5974	5974	5974	5974	5974
903	8008	6986	6986	6986	5964	5964	5964	5964	5964	5964	5964
902	7998	6976	6976	6976	5954	5954	5954	5954	5954	5954	5954
901	7988	6966	6966	6966	5944	5944	5944	5944	5944	5944	5944
900	7978	6956	6956	6956	5934	5934	5934	5934	5934	5934	5934
899	7968	6946	6946	6946	5924	5924	5924	5924	5924	5924	5924
898	7958	6936	6936	6936	5914	5914	5914	5914	5914	5914	5914
897	7948	6926	6926	6926	5904	5904	5904	5904	5904	5904	5904
896	7938	6916	6916	6916	5894	5894	5894	5894	5894	5894	5894
895	7928	6906	6906	6906	5884	5884	5884	5884	5884	5884	5884
894	7918	6896	6896	6896	5884	5884	5884	5884	5884	5884	5884
893	7908	6886	6886	6886	5874	5874	5874	5874	5874	5874	5874
892	7898	6876	6876	6876	5864	5864	5864	5864	5864	5864	5864
891	7888	6866	6866	6866	5854	5854	5854	5854	5854	5854	5854
890	7878	6856	6856	6856	5844	5844	5844	5844	5844	5844	5849 $\star$
889	7868	6846	6846	6846	5834	5834	5834	5834	5834	5834	5839 $\star$
888	7858	6836	6836	6836	5824	5824	5824	5824	5824	5824	5829 $\star$
887	7848	6826	6826	6826	5814	5814	5814	5814	5814	5814	5819 $\star$
886	7838	6816	6816	6816	5804	5804	5804	5804	5804	5804	5809 $\star$
885	7828	6806	6806	6806	5794	5794	5794	5794	5794	5794	5799 $\star$
884	7818	6796	6796	6796	5784	5784	5784	5784	5784	5784	5789 $\star$
883	7808	6786	6786	6786	5774	5774	5774	5774	5774	5774	5779 $\star$
882	7798	6776	6776	6776	5764	5764	5764	5764	5764	5764	5769 $\star$
881	7788	6766	6766	6766	5754	5754	5754	5754	5754	5754	5759 $\star$
880	7778	6756	6756	6756	5744	5744	5744	5744	5744	5744	5749 $\star$

continued

$m=10$											
ν	9	8			7						
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
879	7768	6746	6746	6746	5734	5734	5734	5734	5734	5734	5739 ⋆
878	7758	6736	6736	6736	5724	5724	5724	5724	5724	5724	5729 ⋆
877	7748	6726	6726	6726	5714	5714	5714	5714	5714	5714	5719 ⋆
876	7738	6716	6716	6716	5704	5704	5704	5704	5704	5704	5709 ⋆
875	7728	6706	6706	6706	5694	5694	5694	5694	5694	5694	5699 ⋆
874	7718	6696	6696	6696	5684	5684	5684	5684	5684	5684	5689 ⋆
873	7708	6686	6686	6686	5674	5674	5674	5674	5674	5674	5679 ⋆
872	7698	6676	6676	6676	5664	5664	5664	5664	5664	5664	5669 ⋆
871	7688	6666	6666	6666	5654	5654	5654	5654	5654	5654	5659 ⋆
870	7678	6656	6656	6656	5644	5644	5644	5644	5644	5644	5649 ⋆
869	7668	6646	6646	6646	5634	5634	5634	5634	5634	5634	5639 ⋆
868	7658	6636	6636	6636	5624	5624	5624	5624	5624	5624	5629 ⋆
867	7648	6626	6626	6626	5614	5614	5614	5614	5614	5614	5619 ⋆
866	7638	6616	6616	6616	5604	5604	5604	5604	5604	5604	5609 ⋆
865	7628	6606	6606	6606	5594	5594	5594	5594	5594	5594	5599 ⋆
864	7618	6596	6596	6596	5584	5584	5584	5584	5584	5584	5589 ⋆
863	7608	6586	6586	6586	5574	5574	5574	5574	5574	5574	5579 ⋆
862	7598	6576	6576	6576	5564	5564	5564	5564	5564	5564	5569 ⋆
861	7588	6566	6566	6566	5554	5554	5554	5554	5554	5554	5559 ⋆
860	7578	6556	6556	6556	5544	5544	5544	5544	5544	5544	5549 ⋆
859	7568	6546	6546	6546	5534	5534	5534	5534	5534	5534	5539 ⋆
858	7558	6536	6536	6536	5524	5524	5524	5524	5524	5524	5529 ⋆
857	7548	6526	6526	6526	5514	5514	5514	5514	5514	5514	5519 ⋆
856	7538	6516	6516	6516	5504	5504	5504	5504	5504	5504	5509 ⋆
855	7528	6506	6506	6506	5494	5494	5494	5494	5494	5494	5499 ⋆
854	7518	6496	6496	6496	5484	5484	5484	5484	5484	5484	5489 ⋆
853	7508	6486	6486	6486	5474	5474	5474	5474	5474	5474	5479 ⋆
852	7498	6476	6476	6476	5464	5464	5464	5464	5464	5464	5469 ⋆
851	7488	6466	6466	6466	5454	5454	5454	5454	5454	5454	5459 ⋆
850	7478	6456	6456	6456	5444	5444	5444	5444	5444	5444	5449 ⋆
849	7468	6446	6446	6446	5434	5434	5434	5434	5434	5434	5439 ⋆
848	7458	6436	6436	6436	5424	5424	5424	5424	5424	5424	5429 ⋆
847	7448	6426	6426	6426	5414	5414	5414	5414	5414	5414	5419 ⋆
846	7438	6416	6416	6416	5404	5404	5404	5404	5404	5404	5409 ⋆
845	7428	6406	6406	6406	5394	5394	5394	5394	5394	5394	5399 ⋆
844	7418	6396	6396	6396	5384	5384	5384	5384	5384	5384	5389 ⋆
843	7408	6386	6386	6386	5374	5374	5374	5374	5374	5374	5379 ⋆
842	7398	6376	6376	6376	5364	5364	5364	5364	5364	5364	5369 ⋆
841	7388	6366	6366	6366	5354	5354	5354	5354	5354	5354	5359 ⋆
840	7378	6356	6356	6356	5344	5344	5344	5344	5344	5344	5349 ⋆
839	7368	6346	6346	6346	5334	5334	5334	5334	5334	5334	5339 ⋆
838	7358	6336	6336	6336	5324	5324	5324	5324	5324	5324	5329 ⋆
837	7348	6326	6326	6326	5314	5314	5314	5314	5314	5314	5319 ⋆
836	7338	6316	6316	6316	5304	5304	5304	5304	5304	5304	5309 ⋆
835	7328	6306	6306	6306	5294	5294	5294	5294	5294	5294	5299 ⋆
834	7318	6296	6296	6296	5284	5284	5284	5284	5284	5284	5289 ⋆
833	7308	6286	6286	6286	5274	5274	5274	5274	5274	5274	5279 ⋆
832	7298	6276	6276	6276	5264	5264	5264	5264	5264	5264	5269 ⋆
831	7288	6266	6266	6266	5254	5254	5254	5254	5254	5254	5259 ⋆
830	7278	6256	6256	6256	5244	5244	5244	5244	5244	5244	5249 ⋆
829	7268	6246	6246	6246	5234	5234	5234	5234	5234	5234	5239 ⋆

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
828	7258	6236	6236	6236	5224	5224	5224	5224	5224	5224	5229 $\star$
827	7248	6226	6226	6226	5214	5214	5214	5214	5214	5214	5219 $\star$
826	7238	6216	6216	6216	5204	5204	5204	5204	5204	5204	5209 $\star$
825	7228	6206	6206	6206	5194	5194	5194	5194	5194	5194	5199 $\star$
824	7218	6196	6196	6196	5184	5184	5184	5184	5184	5184	5189 $\star$
823	7208	6186	6186	6186	5174	5174	5174	5174	5174	5174	5179 $\star$
822	7198	6176	6176	6176	5164	5164	5164	5164	5164	5164	5169 $\star$
821	7188	6166	6166	6166	5154	5154	5154	5154	5154	5154	5159 $\star$
820	7178	6156	6156	6156	5144	5144	5144	5144	5144	5144	5149 $\star$
819	7168	6146	6146	6146	5134	5134	5134	5134	5134	5134	5139 $\star$
818	7158	6136	6136	6136	5124	5124	5124	5124	5124	5124	5129 $\star$
817	7148	6126	6126	6126	5114	5114	5114	5114	5114	5114	5119 $\star$
816	7138	6116	6116	6116	5104	5104	5104	5104	5104	5104	5109 $\star$
815	7128	6106	6106	6106	5094	5094	5094	5094	5094	5094	5099 $\star$
814	7118	6096	6096	6096	5084	5084	5084	5084	5084	5084	5089 $\star$
813	7108	6086	6086	6086	5074	5074	5074	5074	5074	5074	5079 $\star$
812	7098	6076	6076	6076	5064	5064	5064	5064	5064	5064	5069 $\star$
811	7088	6066	6066	6066	5054	5054	5054	5054	5054	5054	5059 $\star$
810	7078	6056	6056	6056	5044	5044	5044	5044	5044	5044	5049 $\star$
809	7068	6046	6046	6046	5034	5034	5034	5034	5034	5034	5039 $\star$
808	7058	6036	6036	6036	5024	5024	5024	5024	5024	5024	5029 $\star$
807	7048	6026	6026	6026	5014	5014	5014	5014	5014	5014	5019 $\star$
806	7038	6016	6016	6016	5004	5004	5004	5004	5004	5004	5009 $\star$
805	7028	6006	6006	6006	4994	4994	4994	4994	4994	4994	4999 $\star$
804	7018	5996	5996	5996	4984	4984	4984	4984	4984	4984	4989 $\star$
803	7008	5986	5986	5986	4974	4974	4974	4974	4974	4974	4979 $\star$
802	6998	5976	5976	5976	4964	4964	4964	4964	4964	4964	4969 $\star$
801	6988	5966	5966	5966	4954	4954	4954	4954	4954	4954	4959 $\star$
800	6978	5956	5956	5956	4944	4944	4944	4944	4944	4944	4949 $\star$
799	6968	5946	5946	5946	4934	4934	4934	4934	4934	4934	4939 $\star$
798	6958	5936	5936	5936	4924	4924	4924	4924	4924	4924	4929 $\star$
797	6948	5926	5926	5926	4914	4914	4914	4914	4914	4914	4919 $\star$
796	6938	5916	5916	5916	4904	4904	4904	4904	4904	4904	4909 $\star$
795	6928	5906	5906	5906	4894	4894	4894	4894	4894	4894	4899 $\star$
794	6918	5896	5896	5896	4884	4884	4884	4884	4884	4884	4889 $\star$
793	6908	5886	5886	5886	4874	4874	4874	4874	4874	4874	4879 $\star$
792	6898	5876	5876	5876	4864	4864	4864	4864	4864	4864	4869 $\star$
791	6888	5866	5866	5866	4854	4854	4854	4854	4854	4854	4859 $\star$
790	6878	5856	5856	5856	4844	4844	4844	4844	4844	4844	4849 $\star$
789	6868	5846	5846	5846	4834	4834	4834	4834	4834	4834	4839 $\star$
788	6858	5836	5836	5836	4824	4824	4824	4824	4824	4824	4829 $\star$
787	6848	5826	5826	5826	4814	4814	4814	4814	4814	4814	4819 $\star$
786	6838	5816	5816	5816	4804	4804	4804	4804	4804	4804	4809 $\star$
785	6828	5806	5806	5806	4794	4794	4794	4794	4794	4794	4799 $\star$
784	6818	5796	5796	5796	4784	4784	4784	4784	4784	4784	4789 $\star$
783	6808	5786	5786	5786	4774	4774	4774	4774	4774	4774	4779 $\star$
782	6798	5776	5776	5776	4764	4764	4764	4764	4764	4764	4769 $\star$
781	6788	5766	5766	5766	4754	4754	4754	4754	4754	4754	4759 $\star$
780	6778	5756	5756	5756	4744	4744	4744	4744	4744	4744	4749 $\star$
779	6768	5746	5746	5746	4734	4734	4734	4734	4734	4734	4739 $\star$
778	6758	5736	5736	5736	4724	4724	4724	4724	4724	4724	4729 $\star$

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
777	6748	5726	5726	5726	4714	4714	4714	4714	4714	4714	4719 ⋆
776	6738	5716	5716	5716	4704	4704	4704	4704	4704	4704	4709 ⋆
775	6728	5706	5706	5706	4694	4694	4694	4694	4694	4694	4699 ⋆
774	6718	5696	5696	5696	4684	4684	4684	4684	4684	4684	4689 ⋆
773	6708	5686	5686	5686	4674	4674	4674	4674	4674	4674	4679 ⋆
772	6698	5676	5676	5676	4664	4664	4664	4664	4664	4664	4669 ⋆
771	6688	5666	5666	5666	4654	4654	4654	4654	4654	4654	4659 ⋆
770	6678	5656	5656	5656	4644	4644	4644	4644	4644	4644	4649 ⋆
769	6668	5646	5646	5646	4634	4634	4634	4634	4634	4634	4639 ⋆
768	6658	5636	5636	5636	4624	4624	4624	4624	4624	4624	4629 ⋆
767	6648	5626	5626	5626	4614	4614	4614	4614	4614	4614	4619 ⋆
766	6638	5626	5626	5626	4614	4614	4614	4614	4614	4614	4619 ⋆
765	6628	5616	5616	5616	4604	4604	4614⋆	4604	4604	4604	4609 †
764	6618	5606	5606	5606	4594	4594	4604⋆	4594	4594	4604⋆	4599 †
763	6608	5596	5596	5596	4584	4584	4594⋆	4584	4584	4594⋆	4589 †
762	6598	5586	5586	5586	4574	4574	4584†	4574	4574	4584†	4589 ⋆
761	6588	5576	5576	5576	4564	4564	4574†	4564	4564	4574†	4579 ⋆
760	6578	5566	5566	5566	4554	4554	4564†	4554	4554	4564†	4569 ⋆
759	6568	5556	5556	5556	4544	4544	4554†	4544	4544	4554†	4559 ⋆
758	6558	5546	5551⋆	5546	4539	4539	4549†	4539	4539	4549†	4554 ⋆
757	6548	5536	5541⋆	5536	4529	4529	4539†	4529	4529	4539†	4544 ⋆
756	6538	5526	5531⋆	5526	4519	4519	4529†	4519	4519	4529†	4534 ⋆
755	6528	5516	5521⋆	5516	4509	4509	4519†	4509	4509	4519†	4524 ⋆
754	6518	5506	5511⋆	5506	4499	4499	4509†	4499	4499	4509†	4514 ⋆
753	6508	5496	5501⋆	5496	4489	4489	4499†	4489	4489	4499†	4504 ⋆
752	6498	5486	5491⋆	5486	4479	4479	4489†	4479	4479	4489†	4494 ⋆
751	6488	5476	5481⋆	5476	4469	4469	4479†	4469	4469	4479†	4484 ⋆
750	6478	5466	5471†	5476⋆	4469	4469	4479⋆	4469	4469	4479⋆	4474 †
749	6468	5456	5461†	5466⋆	4459	4459	4469⋆	4459	4459	4469⋆	4464 †
748	6458	5446	5451†	5456⋆	4449	4449	4459⋆	4449	4449	4459⋆	4454 †
747	6448	5436	5441†	5446⋆	4439	4439	4449⋆	4439	4439	4449⋆	4444 †
746	6438	5426	5431†	5436⋆	4429	4429	4439⋆	4429	4429	4439⋆	4434 †
745	6428	5416	5421†	5426⋆	4419	4419	4429⋆	4419	4419	4429⋆	4424 †
744	6418	5406	5411†	5416⋆	4409	4409	4419⋆	4409	4409	4419⋆	4414 †
743	6408	5396	5401†	5406⋆	4399	4399	4409⋆	4399	4399	4409⋆	4404 †
742	6398	5386	5391†	5396⋆	4389	4389	4399⋆	4389	4389	4399⋆	4394 †
741	6388	5376	5381†	5386⋆	4379	4379	4389⋆	4379	4379	4389⋆	4384 †
740	6378	5366	5371†	5376⋆	4369	4369	4379⋆	4369	4369	4379⋆	4374 †
739	6368	5356	5361†	5366⋆	4359	4359	4369⋆	4359	4359	4369⋆	4364 †
738	6358	5346	5351†	5356⋆	4349	4349	4359⋆	4349	4349	4359⋆	4354 †
737	6348	5336	5341†	5346⋆	4339	4339	4349⋆	4339	4339	4349⋆	4344 †
736	6338	5326	5331†	5336⋆	4329	4329	4339⋆	4329	4329	4339⋆	4334 †
735	6328	5316	5321†	5326⋆	4319	4319	4329⋆	4319	4319	4329⋆	4324 †
734	6318	5306	5311†	5316⋆	4319	4319	4329⋆	4319	4319	4319	4324 †
733	6308	5296	5301†	5306⋆	4309	4309	4319⋆	4309	4309	4309	4314 †
732	6298	5286	5291†	5296⋆	4299	4299	4309⋆	4299	4299	4299	4304 †
731	6288	5276	5281†	5286⋆	4289	4289	4299⋆	4289	4289	4289	4294 †
730	6278	5266	5271†	5276⋆	4279	4279	4289⋆	4279	4279	4279	4284 †
729	6268	5256	5261†	5266⋆	4269	4269	4279⋆	4269	4269	4269	4274 †
728	6258	5246	5251†	5256⋆	4259	4259	4269⋆	4259	4259	4259	4264 †
727	6248	5236	5241†	5246⋆	4249	4249	4259⋆	4249	4249	4249	4254 †

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
726	6238	5226	5231†	5236⋆	4239	4239	4249⋆	4239	4239	4239	4244 †
725	6228	5216	5221†	5226⋆	4229	4229	4239⋆	4229	4229	4229	4234 †
724	6218	5206	5211†	5216⋆	4219	4219	4229⋆	4219	4219	4219	4224 †
723	6208	5196	5201†	5206⋆	4209	4209	4219⋆	4209	4209	4209	4214 †
722	6198	5186	5191†	5196⋆	4199	4199	4209⋆	4199	4199	4199	4204 †
721	6188	5176	5181†	5186⋆	4189	4189	4199⋆	4189	4189	4189	4194 †
720	6178	5166	5171†	5176⋆	4179	4179	4189⋆	4179	4179	4179	4184 †
719	6168	5156	5161†	5166⋆	4169	4169	4179⋆	4169	4169	4169	4174 †
718	6158	5146	5151†	5156⋆	4159	4159	4169⋆	4159	4159	4159	4164 †
717	6148	5136	5141†	5146⋆	4149	4149	4159⋆	4149	4149	4149	4154 †
716	6138	5126	5131†	5136⋆	4139	4139	4149⋆	4139	4139	4139	4144 †
715	6128	5116	5121†	5126⋆	4129	4129	4139⋆	4129	4129	4129	4134 †
714	6118	5106	5111†	5116⋆	4119	4119	4129⋆	4119	4119	4119	4124 †
713	6108	5096	5101†	5106⋆	4109	4109	4119⋆	4109	4109	4109	4114 †
712	6098	5086	5091†	5096⋆	4099	4099	4109⋆	4099	4099	4099	4104 †
711	6088	5076	5081†	5086⋆	4089	4089	4099⋆	4089	4089	4089	4094 †
710	6078	5066	5071†	5076⋆	4079	4079	4089⋆	4079	4079	4079	4084 †
709	6068	5056	5061†	5066⋆	4069	4069	4079⋆	4069	4069	4069	4074 †
708	6058	5046	5051†	5056⋆	4059	4059	4069⋆	4059	4059	4059	4064 †
707	6048	5036	5041†	5046⋆	4049	4049	4059⋆	4049	4049	4049	4054 †
706	6038	5026	5031†	5036⋆	4039	4039	4049⋆	4039	4039	4039	4044 †
705	6028	5016	5021†	5026⋆	4029	4029	4039⋆	4029	4029	4029	4034 †
704	6018	5006	5011†	5016⋆	4019	4019	4029⋆	4019	4019	4019	4024 †
703	6008	4996	5001†	5006⋆	4009	4009	4019⋆	4009	4009	4009	4014 †
702	5998	4986	4991†	5006⋆	4009	4009	4009	4009	4009	4009	4014 ⋆
701	5988	4976	4981†	4996⋆	3999	3999	3999	3999	3999	3999	4004 ⋆
700	5978	4966	4971†	4986⋆	3989	3989	3989	3989	3989	3989	4004 ⋆
699	5968	4956	4961†	4976⋆	3979	3979	3979	3979	3979	3979	3994 ⋆
698	5958	4946	4951†	4976⋆	3969	3979†	3969	3969	3969	3969	3984 ⋆
697	5948	4936	4941†	4966⋆	3959	3969†	3959	3959	3959	3959	3974 ⋆
696	5938	4926	4931†	4956⋆	3949	3959†	3949	3949	3949	3949	3964 ⋆
695	5928	4916	4921†	4946⋆	3939	3949†	3939	3939	3939	3939	3954 ⋆
694	5918	4906	4911†	4936⋆	3929	3939†	3929	3929	3929	3929	3954 ⋆
693	5908	4896	4901†	4926⋆	3919	3929†	3919	3919	3919	3919	3944 ⋆
692	5898	4886	4891†	4916⋆	3909	3919†	3909	3909	3909	3909	3939 ⋆
691	5888	4876	4881†	4906⋆	3899	3909†	3899	3899	3899	3899	3929 ⋆
690	5878	4866	4871†	4896⋆	3889	3899†	3889	3889	3889	3889	3919 ⋆
689	5868	4856	4861†	4886⋆	3879	3889†	3879	3879	3879	3879	3909 ⋆
688	5858	4846	4851†	4876⋆	3869	3879†	3869	3869	3869	3869	3899 ⋆
687	5848	4836	4841†	4866⋆	3859	3869†	3859	3859	3859	3859	3889 ⋆
686	5838	4826	4831†	4866⋆	3849	3869†	3849	3849	3849	3849	3879 ⋆
685	5828	4816	4821†	4856⋆	3839	3859†	3839	3839	3839	3839	3869 ⋆
684	5818	4806	4811†	4846⋆	3829	3849†	3829	3829	3829	3829	3859 ⋆
683	5808	4796	4801†	4836⋆	3819	3839†	3819	3819	3819	3819	3849 ⋆
682	5798	4786	4791†	4836⋆	3809	3839⋆	3809	3809	3809	3809	3839 ⋆
681	5788	4776	4781†	4828⋆	3799	3831⋆	3799	3799	3799	3799	3829 †
680	5778	4766	4771†	4818⋆	3789	3821⋆	3789	3789	3789	3789	3819 †
679	5768	4756	4761†	4808⋆	3779	3811⋆	3779	3779	3779	3779	3809 †
678	5758	4746	4751†	4798⋆	3769	3801⋆	3769	3769	3769	3769	3799 †
677	5748	4736	4741†	4788⋆	3759	3791⋆	3759	3759	3759	3759	3789 †
676	5738	4726	4731†	4778⋆	3749	3781⋆	3749	3749	3749	3749	3779 †

continued

$m=10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
675	5728	4716	4721†	4768⋆	3739	3771⋆	3739	3739	3739	3739	3769 †
674	5718	4706	4711†	4758⋆	3729	3761⋆	3729	3729	3729	3729	3759 †
673	5708	4696	4701†	4748⋆	3719	3751⋆	3719	3719	3719	3719	3749 †
672	5698	4686	4691†	4738⋆	3709	3741⋆	3709	3709	3709	3709	3739 †
671	5688	4676	4681†	4728⋆	3699	3731⋆	3699	3699	3699	3699	3729 †
670	5678	4666	4671†	4718⋆	3689	3721⋆	3689	3689	3689	3689	3719 †
669	5668	4656	4661†	4708⋆	3679	3711⋆	3679	3679	3679	3679	3709 †
668	5658	4646	4651†	4698⋆	3669	3701⋆	3669	3669	3669	3669	3699 †
667	5648	4636	4641†	4688⋆	3659	3691⋆	3659	3659	3659	3659	3689 †
666	5638	4626	4631†	4678⋆	3649	3681⋆	3649	3649	3649	3649	3679 †
665	5628	4616	4621†	4668⋆	3639	3671⋆	3639	3639	3639	3639	3669 †
664	5618	4606	4611†	4658⋆	3629	3661⋆	3629	3629	3629	3629	3659 †
663	5608	4596	4601†	4648⋆	3619	3651⋆	3619	3619	3619	3619	3649 †
662	5598	4586	4591†	4638⋆	3609	3641⋆	3609	3609	3609	3609	3639 †
661	5588	4576	4581†	4628⋆	3599	3631⋆	3599	3599	3599	3599	3629 †
660	5578	4566	4571†	4618⋆	3589	3621⋆	3589	3589	3589	3589	3619 †
659	5568	4556	4561†	4608⋆	3579	3611⋆	3579	3579	3579	3579	3609 †
658	5558	4546	4551†	4598⋆	3569	3601⋆	3569	3569	3569	3569	3599 †
657	5548	4536	4541†	4588⋆	3559	3591⋆	3559	3559	3559	3559	3589 †
656	5538	4526	4531†	4578⋆	3549	3581⋆	3549	3549	3549	3549	3579 †
655	5528	4516	4521†	4568⋆	3539	3571⋆	3539	3539	3539	3539	3569 †
654	5518	4506	4511†	4558⋆	3529	3561⋆	3529	3529	3529	3529	3559 †
653	5508	4496	4501†	4548⋆	3519	3551⋆	3519	3519	3519	3519	3549 †
652	5498	4486	4491†	4538⋆	3509	3541⋆	3509	3509	3509	3509	3539 †
651	5488	4476	4481†	4528⋆	3499	3531⋆	3499	3499	3499	3499	3529 †
650	5478	4466	4471†	4518⋆	3489	3521⋆	3489	3489	3489	3489	3519 †
649	5468	4456	4461†	4508⋆	3479	3511⋆	3479	3479	3479	3479	3509 †
648	5458	4446	4451†	4498⋆	3469	3501⋆	3469	3469	3469	3469	3499 †
647	5448	4436	4441†	4488⋆	3459	3491⋆	3459	3459	3459	3459	3489 †
646	5438	4426	4431†	4478⋆	3449	3481⋆	3449	3449	3449	3449	3479 †
645	5428	4416	4421†	4468⋆	3439	3471⋆	3439	3439	3439	3439	3469 †
644	5418	4406	4411†	4458⋆	3429	3461⋆	3429	3429	3429	3429	3459 †
643	5408	4396	4401†	4448⋆	3419	3451⋆	3419	3419	3419	3419	3449 †
642	5398	4386	4391†	4438⋆	3409	3441⋆	3409	3409	3409	3409	3439 †
641	5388	4376	4381†	4428⋆	3399	3431⋆	3399	3399	3399	3399	3429 †
640	5378	4366	4371†	4418⋆	3389	3421⋆	3389	3389	3389	3389	3419 †
639	5368	4356	4361†	4408⋆	3379	3411⋆	3379	3379	3379	3379	3409 †
638	5358	4346	4351†	4398⋆	3379	3411⋆	3379	3379	3379	3379	3409 †
637	5348	4336	4341†	4388⋆	3369	3401⋆	3369	3369	3379†	3369	3399 †
636	5338	4326	4331†	4378⋆	3359	3391⋆	3359	3369†	3369†	3359	3389 †
635	5328	4316	4321†	4368⋆	3349	3381⋆	3349	3359†	3359†	3349	3379 †
634	5318	4306	4311†	4358⋆	3339	3371†	3339	3349†	3349†	3339	3379 ⋆
633	5308	4296	4301†	4348⋆	3329	3361†	3329	3339†	3339†	3329	3369 ⋆
632	5298	4286	4291†	4338⋆	3319	3351†	3319	3329†	3329†	3319	3359 ⋆
631	5288	4276	4281†	4328⋆	3309	3341†	3309	3319†	3319†	3309	3349 ⋆
630	5278	4266	4271†	4318⋆	3299	3331†	3299	3309†	3309†	3299	3349 ⋆
629	5268	4256	4261†	4308⋆	3289	3321†	3289	3299†	3299†	3289	3339 ⋆
628	5258	4246	4251†	4298⋆	3279	3311†	3279	3289†	3289†	3279	3329 ⋆
627	5248	4236	4241†	4288⋆	3269	3301†	3269	3279†	3279†	3269	3319 ⋆
626	5238	4226	4231†	4278⋆	3259	3291†	3259	3269†	3269†	3259	3314 ⋆
625	5228	4216	4221†	4268⋆	3249	3281†	3249	3259†	3259†	3249	3304 ⋆

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
624	5218	4206	4211†	4258⋆	3239	3271†	3239	3249†	3249†	3239	3294 ⋆
623	5208	4196	4201†	4248⋆	3229	3261†	3229	3239†	3239†	3229	3284 ⋆
622	5198	4186	4191†	4238⋆	3219	3251†	3219	3229†	3229†	3229†	3274 ⋆
621	5188	4176	4181†	4228⋆	3209	3241†	3209	3219†	3219†	3219†	3264 ⋆
620	5178	4166	4171†	4218⋆	3199	3231†	3199	3209†	3209†	3209†	3254 ⋆
619	5168	4156	4161†	4208⋆	3189	3221†	3189	3199†	3199†	3199†	3244 ⋆
618	5158	4146	4151†	4198⋆	3179	3211†	3179	3189†	3189†	3189†	3234 ⋆
617	5148	4136	4141†	4188⋆	3169	3201†	3169	3179†	3179†	3179†	3224 ⋆
616	5138	4126	4131†	4178⋆	3159	3191†	3159	3169†	3169†	3169†	3214 ⋆
615	5128	4116	4121†	4168⋆	3149	3181†	3149	3159†	3159†	3159†	3204 ⋆
614	5118	4106	4111†	4158⋆	3139	3171†	3139	3149†	3149†	3149†	3194 ⋆
613	5108	4096	4101†	4148⋆	3129	3161†	3129	3139†	3139†	3139†	3184 ⋆
612	5098	4086	4091†	4138⋆	3119	3151†	3119	3129†	3129†	3129†	3174 ⋆
611	5088	4076	4081†	4128⋆	3109	3141†	3109	3119†	3119†	3119†	3164 ⋆
610	5078	4066	4071†	4118⋆	3099	3131†	3099	3109†	3109†	3109†	3154 ⋆
609	5068	4056	4061†	4108⋆	3089	3121†	3089	3099†	3099†	3099†	3144 ⋆
608	5058	4046	4051†	4098⋆	3079	3111†	3079	3089†	3089†	3089†	3134 ⋆
607	5048	4036	4041†	4088⋆	3069	3101†	3069	3079†	3079†	3079†	3124 ⋆
606	5038	4026	4031†	4078⋆	3059	3091†	3069†	3069†	3069†	3069†	3114 ⋆
605	5028	4016	4021†	4068⋆	3049	3081†	3059†	3059†	3059†	3059†	3104 ⋆
604	5018	4006	4011†	4058⋆	3039	3071†	3049†	3049†	3049†	3049†	3094 ⋆
603	5008	3996	4001†	4048⋆	3029	3061†	3039†	3039†	3039†	3039†	3084 ⋆
602	4998	3986	3991†	4038⋆	3019	3051†	3029†	3029†	3029†	3029†	3074 ⋆
601	4988	3976	3981†	4028⋆	3009	3041†	3019†	3019†	3019†	3019†	3064 ⋆
600	4978	3966	3971†	4018⋆	2999	3031†	3009†	3009†	3009†	3009†	3054 ⋆
599	4968	3956	3961†	4008⋆	2989	3021†	2999†	2999†	2999†	2999†	3044 ⋆
598	4958	3946	3951†	3998⋆	2979	3011†	2989†	2989†	2989†	2989†	3034 ⋆
597	4948	3936	3941†	3988⋆	2969	3001†	2979†	2979†	2979†	2979†	3024 ⋆
596	4938	3926	3931†	3978⋆	2959	2991†	2969†	2969†	2969†	2969†	3014 ⋆
595	4928	3916	3921†	3968⋆	2949	2981†	2959†	2959†	2959†	2959†	3004 ⋆
594	4918	3906	3911†	3958⋆	2939	2971†	2949†	2949†	2949†	2949†	2994 ⋆
593	4908	3896	3901†	3948⋆	2929	2961†	2939†	2939†	2939†	2939†	2984 ⋆
592	4898	3886	3891†	3938⋆	2919	2951†	2929†	2929†	2929†	2929†	2974 ⋆
591	4888	3876	3881†	3928⋆	2909	2941†	2919†	2919†	2919†	2919†	2964 ⋆
590	4878	3866	3871†	3918⋆	2899	2931†	2909†	2909†	2909†	2909†	2954 ⋆
589	4868	3856	3861†	3908⋆	2889	2921†	2899†	2899†	2899†	2899†	2944 ⋆
588	4858	3846	3851†	3898⋆	2879	2911†	2889†	2889†	2889†	2889†	2934 ⋆
587	4848	3836	3841†	3888⋆	2869	2901†	2879†	2879†	2879†	2879†	2924 ⋆
586	4838	3826	3831†	3878⋆	2859	2891†	2869†	2869†	2869†	2869†	2914 ⋆
585	4828	3816	3821†	3868⋆	2849	2881†	2859†	2859†	2859†	2859†	2904 ⋆
584	4818	3806	3811†	3858⋆	2839	2871†	2849†	2849†	2849†	2849†	2894 ⋆
583	4808	3796	3801†	3848⋆	2829	2861†	2839†	2839†	2839†	2839†	2884 ⋆
582	4798	3786	3791†	3838⋆	2819	2851†	2829†	2829†	2829†	2829†	2874 ⋆
581	4788	3776	3781†	3828⋆	2809	2841†	2819†	2819†	2819†	2819†	2864 ⋆
580	4778	3766	3771†	3818⋆	2799	2831†	2809†	2809†	2809†	2809†	2854 ⋆
579	4768	3756	3761†	3808⋆	2789	2821†	2799†	2799†	2799†	2799†	2844 ⋆
578	4758	3746	3751†	3798⋆	2779	2811†	2789†	2789†	2789†	2789†	2834 ⋆
577	4748	3736	3741†	3788⋆	2769	2801†	2779†	2779†	2779†	2779†	2824 ⋆
576	4738	3726	3731†	3778⋆	2759	2791†	2769†	2769†	2769†	2769†	2814 ⋆
575	4728	3716	3721†	3768⋆	2749	2781†	2759†	2759†	2759†	2759†	2804 ⋆
574	4718	3706	3711†	3758⋆	2739	2771†	2749†	2749†	2749†	2749†	2794 ⋆

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
573	4708	3696	3701†	3748⋆	2729	2761†	2739†	2739†	2739†	2739†	2784⋆
572	4698	3686	3691†	3738⋆	2719	2751†	2729†	2729†	2729†	2729†	2774⋆
571	4688	3676	3681†	3728⋆	2709	2741†	2719†	2719†	2719†	2719†	2764⋆
570	4678	3666	3671†	3718⋆	2699	2731†	2709†	2709†	2709†	2709†	2754⋆
569	4668	3656	3661†	3708⋆	2689	2721†	2699†	2699†	2699†	2699†	2744⋆
568	4658	3646	3651†	3698⋆	2679	2711†	2689†	2689†	2689†	2689†	2734⋆
567	4648	3636	3641†	3688⋆	2669	2701†	2679†	2679†	2679†	2679†	2724⋆
566	4638	3626	3631†	3678⋆	2659	2691†	2669†	2669†	2669†	2669†	2714⋆
565	4628	3616	3621†	3668⋆	2649	2681†	2659†	2659†	2659†	2659†	2704⋆
564	4618	3606	3611†	3658⋆	2639	2671†	2649†	2649†	2649†	2649†	2694⋆
563	4608	3596	3601†	3648⋆	2629	2661†	2639†	2639†	2639†	2639†	2684⋆
562	4598	3586	3591†	3638⋆	2619	2651†	2629†	2629†	2629†	2629†	2674⋆
561	4588	3576	3581†	3628⋆	2609	2641†	2619†	2619†	2619†	2619†	2664⋆
560	4578	3566	3571†	3618⋆	2599	2631†	2609†	2609†	2609†	2609†	2654⋆
559	4568	3556	3561†	3608⋆	2589	2621†	2599†	2599†	2599†	2599†	2644⋆
558	4558	3546	3551†	3598⋆	2579	2611†	2589†	2589†	2589†	2589†	2634⋆
557	4548	3536	3541†	3588⋆	2569	2601†	2579†	2579†	2579†	2579†	2624⋆
556	4538	3526	3531†	3578⋆	2559	2591†	2569†	2569†	2569†	2569†	2614⋆
555	4528	3516	3521†	3568⋆	2549	2581†	2559†	2559†	2559†	2559†	2604⋆
554	4518	3506	3511†	3558⋆	2539	2571†	2549†	2549†	2549†	2549†	2594⋆
553	4508	3496	3501†	3548⋆	2529	2561†	2539†	2539†	2539†	2539†	2584⋆
552	4498	3486	3491†	3538⋆	2519	2551†	2529†	2529†	2529†	2529†	2574⋆
551	4488	3476	3481†	3528⋆	2509	2541†	2519†	2519†	2519†	2519†	2564⋆
550	4478	3466	3471†	3518⋆	2499	2531†	2509†	2509†	2509†	2509†	2554⋆
549	4468	3456	3461†	3508⋆	2489	2521†	2499†	2499†	2499†	2499†	2544⋆
548	4458	3446	3451†	3498⋆	2479	2511†	2489†	2489†	2489†	2489†	2534⋆
547	4448	3436	3441†	3488⋆	2469	2501†	2479†	2479†	2479†	2479†	2524⋆
546	4438	3426	3431†	3478⋆	2459	2491†	2469†	2469†	2469†	2469†	2514⋆
545	4428	3416	3421†	3468⋆	2449	2481†	2459†	2459†	2459†	2459†	2504⋆
544	4418	3406	3411†	3458⋆	2439	2471†	2449†	2449†	2449†	2449†	2494⋆
543	4408	3396	3401†	3448⋆	2429	2461†	2439†	2439†	2439†	2439†	2484⋆
542	4398	3386	3391†	3438⋆	2419	2451†	2429†	2429†	2429†	2429†	2474⋆
541	4388	3376	3381†	3428⋆	2409	2441†	2419†	2419†	2419†	2419†	2464⋆
540	4378	3366	3371†	3418⋆	2399	2431†	2409†	2409†	2409†	2409†	2454⋆
539	4368	3356	3361†	3408⋆	2389	2421†	2399†	2399†	2399†	2399†	2444⋆
538	4358	3346	3351†	3398⋆	2379	2411†	2389†	2389†	2389†	2389†	2434⋆
537	4348	3336	3341†	3388⋆	2369	2401†	2379†	2379†	2379†	2379†	2424⋆
536	4338	3326	3331†	3378⋆	2359	2391†	2369†	2369†	2369†	2369†	2414⋆
535	4328	3316	3321†	3368⋆	2349	2381†	2359†	2359†	2359†	2359†	2404⋆
534	4318	3306	3311†	3358⋆	2339	2371†	2349†	2349†	2349†	2349†	2394⋆
533	4308	3296	3301†	3348⋆	2329	2361†	2339†	2339†	2339†	2339†	2384⋆
532	4298	3286	3291†	3338⋆	2319	2351†	2329†	2329†	2329†	2329†	2374⋆
531	4288	3276	3281†	3328⋆	2309	2341†	2319†	2319†	2319†	2319†	2364⋆
530	4278	3266	3271†	3318⋆	2299	2331†	2309†	2309†	2309†	2309†	2354⋆
529	4268	3256	3261†	3308⋆	2289	2321†	2299†	2299†	2299†	2299†	2344⋆
528	4258	3246	3251†	3298⋆	2279	2311†	2289†	2289†	2289†	2289†	2334⋆
527	4248	3236	3241†	3288⋆	2269	2301†	2279†	2279†	2279†	2279†	2324⋆
526	4238	3226	3231†	3278⋆	2259	2291†	2269†	2269†	2269†	2269†	2314⋆
525	4228	3216	3221†	3268⋆	2249	2281†	2259†	2259†	2259†	2259†	2304⋆
524	4218	3206	3211†	3258⋆	2239	2271†	2249†	2249†	2249†	2249†	2294⋆
523	4208	3196	3201†	3248⋆	2229	2261†	2239†	2239†	2239†	2239†	2284⋆

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
522	4198	3186	3191†	3238⋆	2219	2251†	2229†	2229†	2229†	2229†	2274 ⋆
521	4188	3176	3181†	3228⋆	2209	2241†	2219†	2219†	2219†	2219†	2264 ⋆
520	4178	3166	3171†	3218⋆	2199	2231†	2209†	2209†	2209†	2209†	2254 ⋆
519	4168	3156	3161†	3208⋆	2189	2221†	2199†	2199†	2199†	2199†	2244 ⋆
518	4158	3146	3151†	3198⋆	2179	2211†	2189†	2189†	2189†	2189†	2234 ⋆
517	4148	3136	3141†	3188⋆	2169	2201†	2179†	2179†	2179†	2179†	2224 ⋆
516	4138	3126	3131†	3178⋆	2159	2191†	2169†	2169†	2169†	2169†	2214 ⋆
515	4128	3116	3121†	3168⋆	2149	2181†	2159†	2159†	2159†	2159†	2204 ⋆
514	4118	3106	3111†	3158⋆	2139	2171†	2149†	2149†	2149†	2149†	2194 ⋆
513	4108	3096	3101†	3148⋆	2129	2161†	2139†	2139†	2139†	2139†	2184 ⋆
512	4098	3086	3091†	3138⋆	2119	2151†	2129†	2129†	2129†	2129†	2174 ⋆
511	4088	3076	3081†	3128⋆	2109	2141†	2119†	2119†	2119†	2119†	2164 ⋆
510	4088	3076	3081†	3128⋆	2109	2141†	2119†	2119†	2119†	2119†	2164 ⋆
509	4078	3076	3081†	3128⋆	2109	2141†	2119†	2119†	2119†	2119†	2164 ⋆
508	4068	3076	3081†	3118⋆	2109	2141†	2119†	2119†	2119†	2119†	2164 ⋆
507	4058	3066	3071†	3108⋆	2109	2141†	2119†	2119†	2119†	2119†	2164 ⋆
506	4048	3066	3071†	3108⋆	2109	2141†	2119†	2119†	2119†	2119†	2164 ⋆
505	4038	3056	3061†	3108⋆	2109	2141†	2119†	2119†	2109	2119†	2164 ⋆
504	4028	3046	3051†	3098⋆	2109	2141†	2109	2119†	2109	2119†	2164 ⋆
503	4018	3036	3041†	3088⋆	2099	2131†	2099	2109†	2099	2109†	2154 ⋆
502	4008	3036	3041†	3078⋆	2099	2131†	2099	2109†	2099	2109†	2154 ⋆
501	3998	3026	3031†	3068⋆	2099	2131†	2099	2099	2099	2109†	2154 ⋆
500	3988	3016	3021†	3058⋆	2099	2121†	2099	2099	2099	2109†	2154 ⋆
499	3978	3006	3011†	3048⋆	2089	2111†	2089	2089	2099†	2099†	2144 ⋆
498	3968	2996	3001†	3038⋆	2089	2111†	2089	2089	2099†	2089	2144 ⋆
497	3958	2986	2991†	3028⋆	2079	2101†	2089†	2079	2089†	2079	2134 ⋆
496	3948	2976	2981†	3018⋆	2069	2091†	2079†	2069	2079†	2069	2124 ⋆
495	3938	2966	2971†	3008⋆	2059	2081†	2069†	2059	2069†	2059	2114 ⋆
494	3933	2966	2966	3008⋆	2059	2081†	2069†	2059	2069†	2059	2109 ⋆
493	3923	2956	2956	3008⋆	2059	2081†	2069†	2059	2069†	2059	2099 ⋆
492	3913	2946	2946	2998⋆	2059	2081†	2069†	2059	2069†	2059	2089 ⋆
491	3903	2936	2936	2988⋆	2049	2071†	2059†	2059†	2059†	2049	2079 ⋆
490	3893	2926	2926	2988⋆	2049	2071⋆	2059†	2059†	2059†	2049	2069 †
489	3883	2916	2916	2988⋆	2039	2071⋆	2049†	2049†	2049†	2039	2059 †
488	3873	2906	2906	2978⋆	2029	2061⋆	2039†	2039†	2049†	2029	2049 †
487	3863	2896	2896	2968⋆	2019	2051⋆	2029†	2029†	2039†	2019	2039 †
486	3853	2886	2886	2958⋆	2019	2051⋆	2029†	2029†	2039†	2019	2029 †
485	3843	2876	2876	2948⋆	2009	2041⋆	2019†	2019†	2029†	2019†	2019 †
484	3833	2866	2866	2938⋆	1999	2031⋆	2019†	2009†	2019†	2009†	2009 †
483	3823	2856	2856	2928⋆	1989	2021⋆	2009†	1999†	2009†	1999†	1999 †
482	3813	2846	2846	2918⋆	1979	2011⋆	1999†	1989†	1999†	1989†	1989 †
481	3803	2836	2836	2908⋆	1969	2001⋆	1989†	1979†	1989†	1979†	1979 †
480	3793	2826	2826	2898⋆	1959	1991⋆	1979†	1969†	1979†	1969†	1969 †
479	3783	2816	2816	2888⋆	1949	1981⋆	1969†	1959†	1969†	1959†	1959 †
478	3783	2816	2816	2888⋆	1949	1981⋆	1969†	1959†	1969†	1959†	1959 †
477	3773	2816	2816	2888⋆	1949	1981⋆	1969†	1959†	1969†	1959†	1959 †
476	3763	2806	2806	2878⋆	1949	1971⋆	1969†	1959†	1969†	1959†	1959 †
475	3753	2796	2796	2868⋆	1939	1961⋆	1959†	1949†	1959†	1949†	1959 †
474	3743	2786	2786	2858⋆	1939	1961⋆	1959†	1949†	1959†	1949†	1959 †
473	3733	2776	2776	2848⋆	1929	1951†	1949†	1939†	1949†	1939†	1959 ⋆
472	3723	2766	2766	2838⋆	1919	1941†	1939†	1939†	1939†	1929†	1949 ⋆

continued

$m = 10$												
ν	9	8			7							
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
471	3713	2756	2756	2828⋆	1909	1931†	1929†	1929†	1929†	1919†	1939 ⋆
470	3703	2756	2756	2818⋆	1909	1931†	1929†	1929†	1929†	1919†	1939 ⋆
469	3693	2746	2746	2808⋆	1899	1921†	1919†	1919†	1919†	1909†	1939 ⋆
468	3683	2736	2736	2798⋆	1889	1911†	1909†	1909†	1909†	1899†	1929 ⋆
467	3673	2726	2726	2788⋆	1879	1901†	1899†	1899†	1899†	1889†	1919 ⋆
466	3663	2716	2716	2778⋆	1869	1891†	1889†	1889†	1899†	1879†	1909 ⋆
465	3653	2706	2706	2768⋆	1859	1881†	1879†	1879†	1889†	1869†	1899 ⋆
464	3643	2696	2696	2758⋆	1849	1871†	1869†	1869†	1879†	1859†	1889 ⋆
463	3633	2686	2686	2748⋆	1839	1861†	1859†	1859†	1869†	1849†	1879 ⋆
462	3623	2686	2686	2738⋆	1839	1861†	1859†	1859†	1869†	1849†	1879 ⋆
461	3613	2676	2681†	2728⋆	1834	1856†	1854†	1854†	1864†	1844†	1874 ⋆
460	3603	2666	2671†	2718⋆	1824	1846†	1844†	1844†	1854†	1844†	1864 ⋆
459	3593	2656	2661†	2708⋆	1814	1836†	1834†	1834†	1844†	1834†	1854 ⋆
458	3583	2646	2651†	2698⋆	1804	1826†	1834†	1824†	1834†	1824†	1844 ⋆
457	3573	2636	2641†	2688⋆	1794	1816†	1824†	1814†	1824†	1814†	1834 ⋆
456	3563	2626	2631†	2678⋆	1784	1806†	1814†	1804†	1814†	1804†	1824 ⋆
455	3553	2616	2621†	2668⋆	1774	1796†	1804†	1794†	1804†	1794†	1814 ⋆
454	3543	2606	2611†	2658⋆	1774	1796†	1804⋆	1794†	1804⋆	1794†	1804 ⋆
453	3533	2596	2601†	2648⋆	1764	1786†	1794⋆	1784†	1794⋆	1784†	1794 ⋆
452	3523	2586	2591†	2638⋆	1754	1776†	1784⋆	1774†	1784⋆	1774†	1784 ⋆
451	3513	2576	2581†	2628⋆	1744	1766†	1774⋆	1764†	1774⋆	1764†	1774 ⋆
450	3503	2566	2571†	2618⋆	1734	1756†	1764⋆	1754†	1764⋆	1754†	1764 ⋆
449	3493	2556	2561†	2608⋆	1724	1746†	1754⋆	1744†	1754⋆	1744†	1754 ⋆
448	3483	2546	2551†	2598⋆	1714	1736†	1744⋆	1734†	1744⋆	1734†	1744 ⋆
447	3473	2536	2541†	2588⋆	1704	1726†	1734⋆	1724†	1734⋆	1724†	1734 ⋆
446	3473	2536	2541†	2588⋆	1704	1726†	1734⋆	1724†	1734⋆	1724†	1734 ⋆
445	3463	2536	2541†	2588⋆	1704	1726†	1734⋆	1724†	1734⋆	1724†	1734 ⋆
444	3453	2536	2541†	2578⋆	1704	1726†	1734⋆	1724†	1734⋆	1724†	1734 ⋆
443	3443	2526	2531†	2568⋆	1704	1726†	1734⋆	1724†	1734⋆	1724†	1734 ⋆
442	3433	2526	2531†	2568⋆	1704	1726†	1734⋆	1724†	1734⋆	1724†	1734 ⋆
441	3423	2516	2521†	2568⋆	1704	1726†	1734⋆	1724†	1724†	1724†	1734 ⋆
440	3413	2506	2511†	2558⋆	1704	1726†	1724†	1724†	1724†	1724†	1734 ⋆
439	3403	2496	2501†	2548⋆	1694	1716†	1714†	1714†	1714†	1714†	1724 ⋆
438	3403	2496	2501†	2548⋆	1694	1716†	1714†	1714†	1714†	1714†	1724 ⋆
437	3393	2486	2491†	2538⋆	1684	1706†	1704†	1704†	1704†	1704†	1714 ⋆
436	3383	2476	2481†	2528⋆	1674	1696†	1694†	1694†	1694†	1694†	1714 ⋆
435	3373	2466	2471†	2518⋆	1664	1686†	1684†	1684†	1684†	1684†	1704 ⋆
434	3363	2456	2461†	2508⋆	1664	1686†	1684†	1684†	1684†	1684†	1704 ⋆
433	3353	2446	2451†	2498⋆	1654	1676†	1674†	1674†	1674†	1674†	1694 ⋆
432	3343	2436	2441†	2488⋆	1644	1666†	1664†	1664†	1664†	1664†	1684 ⋆
431	3333	2426	2431†	2478⋆	1634	1656†	1654†	1654†	1654†	1654†	1674 ⋆
430	3323	2426	2431†	2478⋆	1634	1656†	1654†	1654†	1654†	1654†	1674 ⋆
429	3313	2416	2421†	2478⋆	1634	1656†	1654†	1654†	1654†	1644†	1674 ⋆
428	3303	2406	2416†	2468⋆	1629	1651†	1649†	1649†	1649†	1639†	1669 ⋆
427	3293	2396	2406†	2458⋆	1619	1641†	1639†	1639†	1639†	1629†	1659 ⋆
426	3283	2386	2396†	2458⋆	1619	1641†	1639†	1639†	1639†	1629†	1649 ⋆
425	3273	2376	2386†	2458⋆	1609	1641⋆	1629†	1629†	1629†	1619†	1639 †
424	3263	2366	2376†	2448⋆	1599	1631⋆	1619†	1619†	1619†	1609†	1629 †
423	3253	2356	2366†	2438⋆	1589	1621⋆	1609†	1609†	1609†	1599†	1619 †
422	3243	2346	2356†	2438⋆	1589	1621⋆	1609†	1609†	1609†	1599†	1609 †
421	3233	2336	2346†	2428⋆	1579	1611⋆	1599†	1599†	1599†	1589†	1599 †

continued

$m = 10$											
ν	9	8			7						
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
420	3223	2326	2336†	2418⋆	1569	1601⋆	1589†	1589†	1589†	1579†	1589 †
419	3213	2316	2326†	2408⋆	1559	1591⋆	1579†	1579†	1579†	1569†	1579 †
418	3203	2306	2316†	2398⋆	1549	1581⋆	1569†	1569†	1579†	1559†	1569 †
417	3193	2296	2306†	2388⋆	1539	1571⋆	1559†	1559†	1569†	1549†	1559 †
416	3183	2286	2296†	2378⋆	1529	1561⋆	1549†	1549†	1559†	1539†	1549 †
415	3173	2276	2286†	2368⋆	1519	1551⋆	1539†	1539†	1549†	1529†	1539 †
414	3163	2276	2286†	2368⋆	1519	1551⋆	1539†	1539†	1549†	1529†	1539 †
413	3153	2266	2276†	2368⋆	1519	1551⋆	1539†	1539†	1549†	1519	1539 †
412	3143	2256	2276†	2358⋆	1519	1551⋆	1539†	1539†	1549†	1519	1539 †
411	3133	2246	2266†	2348⋆	1509	1541⋆	1529†	1529†	1539†	1509	1539 †
410	3123	2246	2266†	2348⋆	1509	1541⋆	1529†	1529†	1539†	1509	1539 †
409	3113	2236	2256†	2348⋆	1499	1541⋆	1519†	1519†	1529†	1499	1529 †
408	3103	2226	2246†	2338⋆	1489	1531⋆	1509†	1509†	1519†	1489	1519 †
407	3093	2216	2236†	2328⋆	1479	1521⋆	1499†	1499†	1509†	1479	1509 †
406	3083	2206	2226†	2318⋆	1479	1521⋆	1499†	1489†	1509†	1479	1509 †
405	3073	2196	2216†	2308⋆	1469	1511⋆	1489†	1479†	1499†	1469	1509 †
404	3063	2186	2206†	2298⋆	1459	1501⋆	1479†	1469†	1489†	1459	1499 †
403	3053	2176	2196†	2288⋆	1449	1491⋆	1469†	1459†	1479†	1449	1489 †
402	3043	2166	2186†	2278⋆	1439	1481⋆	1469†	1449†	1469†	1439	1479 †
401	3033	2156	2176†	2268⋆	1429	1471⋆	1459†	1439†	1459†	1429	1469 †
400	3023	2146	2166†	2258⋆	1419	1461⋆	1449†	1429†	1449†	1419	1459 †
399	3013	2136	2156†	2248⋆	1409	1451⋆	1439†	1419†	1439†	1409	1449 †
398	3003	2126	2146†	2238⋆	1409	1451⋆	1439†	1409	1439†	1409	1449 †
397	2993	2116	2136†	2228⋆	1399	1441†	1429†	1399	1429†	1399	1449 ⋆
396	2983	2106	2126†	2218⋆	1389	1431†	1419†	1389	1419†	1389	1449 ⋆
395	2973	2096	2116†	2208⋆	1379	1421†	1409†	1379	1409†	1379	1444 ⋆
394	2963	2086	2106†	2198⋆	1369	1411†	1399†	1369	1399†	1369	1434 ⋆
393	2953	2076	2096†	2188⋆	1359	1401†	1389†	1359	1389†	1359	1424 ⋆
392	2943	2066	2086†	2178⋆	1349	1391†	1379†	1349	1379†	1349	1414 ⋆
391	2933	2056	2076†	2168⋆	1339	1381†	1369†	1339	1369†	1339	1404 ⋆
390	2923	2046	2066†	2158⋆	1329	1371†	1359†	1329	1359†	1329	1394 ⋆
389	2913	2036	2056†	2148⋆	1319	1361†	1349†	1319	1349†	1319	1384 ⋆
388	2903	2026	2046†	2138⋆	1309	1351†	1339†	1309	1339†	1309	1374 ⋆
387	2893	2016	2036†	2128⋆	1299	1341†	1329†	1299	1329†	1299	1364 ⋆
386	2883	2006	2026†	2118⋆	1289	1331†	1319†	1289	1319†	1289	1354 ⋆
385	2873	1996	2016†	2108⋆	1279	1321†	1309†	1279	1309†	1279	1344 ⋆
384	2863	1986	2006†	2098⋆	1269	1311†	1299†	1269	1299†	1269	1334 ⋆
383	2853	1976	1996†	2088⋆	1259	1301†	1289†	1259	1289†	1259	1324 ⋆
382	2853	1976	1996†	2088⋆	1259	1301†	1289†	1259	1289†	1259	1324 ⋆
381	2843	1976	1996†	2088⋆	1259	1301†	1289†	1259	1289†	1259	1324 ⋆
380	2833	1976	1996†	2078⋆	1259	1301†	1289†	1259	1289†	1259	1324 ⋆
379	2823	1966	1986†	2068⋆	1259	1301†	1289†	1259	1289†	1259	1324 ⋆
378	2823	1966	1986†	2068⋆	1259	1301†	1289†	1259	1289†	1259	1324 ⋆
377	2813	1956	1976†	2068⋆	1259	1301†	1289†	1259	1279†	1259	1324 ⋆
376	2803	1946	1966†	2058⋆	1259	1301†	1279†	1259	1279†	1259	1324 ⋆
375	2793	1936	1956†	2048⋆	1249	1291†	1269†	1249	1269†	1249	1314 ⋆
374	2793	1936	1956†	2048⋆	1249	1291†	1269†	1249	1269†	1249	1314 ⋆
373	2783	1936	1956†	2048⋆	1249	1291†	1269†	1249	1269†	1249	1314 ⋆
372	2773	1926	1946†	2038⋆	1249	1281†	1269†	1249	1269†	1249	1314 ⋆
371	2763	1916	1936†	2028⋆	1239	1271†	1259†	1239	1269†	1239	1304 ⋆
370	2753	1916	1936†	2018⋆	1239	1271†	1259†	1239	1269†	1239	1304 ⋆

continued

$m=10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
369	2743	1906	1926†	2008⋆	1229	1261†	1259†	1229	1259†	1229	1294 ⋆
368	2733	1896	1916†	1998⋆	1219	1251†	1249†	1219	1249†	1219	1284 ⋆
367	2723	1886	1906†	1988⋆	1209	1241†	1239†	1209	1239†	1209	1274 ⋆
366	2723	1886	1906†	1988⋆	1209	1241†	1239†	1209	1239†	1209	1274 ⋆
365	2713	1886	1906†	1988⋆	1209	1241†	1239†	1209	1239†	1209	1274 ⋆
364	2703	1886	1906†	1978⋆	1209	1241†	1239†	1209	1239†	1209	1274 ⋆
363	2693	1876	1896†	1968⋆	1209	1241†	1239†	1209	1239†	1209	1274 ⋆
362	2688	1876	1891†	1968⋆	1209	1241†	1239†	1209	1239†	1209	1269 ⋆
361	2678	1866	1881†	1968⋆	1199	1241†	1229†	1199	1229†	1199	1259 ⋆
360	2668	1856	1871†	1958⋆	1189	1231†	1219†	1189	1229†	1189	1249 ⋆
359	2658	1846	1861†	1948⋆	1179	1221†	1209†	1179	1219†	1179	1239 ⋆
358	2648	1846	1851†	1948⋆	1179	1221†	1209†	1179	1219†	1179	1229 ⋆
357	2638	1836	1841†	1948⋆	1179	1221⋆	1209†	1179	1219†	1179	1219 †
356	2628	1826	1831†	1938⋆	1169	1211⋆	1209†	1169	1209†	1169	1209 †
355	2618	1816	1821†	1928⋆	1159	1201⋆	1199†	1159	1199†	1159	1199 †
354	2608	1806	1811†	1918⋆	1159	1201⋆	1199†	1159	1199†	1159	1189 †
353	2598	1796	1801†	1908⋆	1149	1191⋆	1189†	1149	1189†	1149	1179 †
352	2588	1786	1791†	1898⋆	1139	1181⋆	1179†	1139	1179†	1139	1169 †
351	2578	1776	1781†	1888⋆	1129	1171⋆	1169†	1129	1169†	1129	1159 †
350	2578	1776	1781†	1888⋆	1129	1171⋆	1169†	1129	1169†	1129	1159 †
349	2568	1776	1781†	1888⋆	1129	1171⋆	1169†	1129	1169†	1129	1159 †
348	2558	1776	1781†	1878⋆	1129	1171⋆	1169†	1129	1169†	1129	1159 †
347	2548	1766	1771†	1868⋆	1129	1171⋆	1169†	1129	1169†	1129	1159 †
346	2548	1766	1771†	1868⋆	1129	1171⋆	1169†	1129	1169†	1129	1159 †
345	2538	1756	1761†	1868⋆	1129	1171⋆	1169†	1129	1159†	1129	1159 †
344	2528	1746	1751†	1858⋆	1129	1171⋆	1159†	1129	1159†	1129	1159 †
343	2518	1736	1741†	1848⋆	1119	1161⋆	1149†	1119	1149†	1119	1149 †
342	2518	1736	1741†	1848⋆	1119	1161⋆	1149†	1119	1149†	1119	1149 †
341	2508	1736	1741†	1848⋆	1119	1161⋆	1149†	1119	1149†	1119	1149 †
340	2500	1730	1735†	1840⋆	1115	1155⋆	1145†	1115	1145†	1115	1145 †
339	2490	1720	1725†	1830⋆	1105	1145⋆	1135†	1105	1135†	1105	1135 †
338	2480	1710	1715†	1820⋆	1095	1135⋆	1125†	1095	1125†	1095	1125 †
337	2470	1700	1705†	1810⋆	1085	1125⋆	1115†	1085	1115†	1085	1115 †
336	2460	1690	1695†	1800⋆	1075	1115⋆	1105†	1075	1105†	1075	1105 †
335	2450	1680	1685†	1790⋆	1065	1105⋆	1095†	1065	1095†	1065	1095 †
334	2440	1670	1675†	1780⋆	1065	1095⋆	1095⋆	1065	1095⋆	1065	1095 ⋆
333	2430	1660	1665†	1770⋆	1055	1085†	1085†	1055	1085†	1055	1095 ⋆
332	2420	1650	1655†	1760⋆	1055	1075†	1085†	1055	1085†	1055	1095 ⋆
331	2410	1640	1645†	1750⋆	1045	1065†	1075†	1045	1075†	1045	1085 ⋆
330	2400	1630	1635†	1740⋆	1045	1055†	1075†	1045	1075†	1045	1085 ⋆
329	2390	1620	1625†	1730⋆	1035	1045†	1065†	1035	1065†	1035	1080 ⋆
328	2380	1610	1615†	1720⋆	1025	1035†	1055†	1025	1055†	1025	1070 ⋆
327	2370	1600	1605†	1710⋆	1015	1025†	1045†	1015	1045†	1015	1060 ⋆
326	2360	1590	1595†	1700⋆	1005	1015†	1035†	1005	1045†	1005	1050 ⋆
325	2350	1580	1585†	1690⋆	995	1005†	1025†	995	1035†	995	1040 ⋆
324	2340	1570	1575†	1680⋆	985	995†	1015†	985	1035⋆	985	1030 †
323	2330	1560	1565†	1670⋆	975	985†	1005†	975	1025⋆	975	1020 †
322	2320	1550	1555†	1660⋆	965	975†	995†	965	1015⋆	965	1010 †
321	2310	1540	1545†	1650⋆	955	965†	985†	955	1005⋆	955	1000 †
320	2300	1530	1535†	1640⋆	945	955†	975†	945	995⋆	945	990 †
319	2290	1520	1525†	1630⋆	935	945†	965†	935	985⋆	935	980 †
											continued

$m = 10$											
ν	9	8			7						
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
318	2280	1520	1525†	1620⋆	935	945†	965†	935	985⋆	935	980 †
317	2270	1510	1515†	1610⋆	935	945†	955†	935	985⋆	935	980 †
316	2260	1510	1515†	1600⋆	935	945†	955†	935	985⋆	935	980 †
315	2250	1500	1505†	1590⋆	925	935†	945†	925	975⋆	935†	970 †
314	2240	1500	1505†	1580⋆	925	935†	945†	925	975⋆	935†	970 †
313	2230	1490	1495†	1570⋆	915	925†	935†	915	965†	925†	970 ⋆
312	2220	1480	1495†	1560⋆	915	925†	935†	915	965†	925†	970 ⋆
311	2210	1470	1485†	1550⋆	905	915†	925†	905	955†	915†	960 ⋆
310	2200	1470	1485†	1540⋆	905	915†	925†	905	955†	915†	960 ⋆
309	2190	1460	1475†	1530⋆	905	915†	915†	905	955†	915†	960 ⋆
308	2180	1460	1475†	1520⋆	905	915†	915†	905	955†	915†	960 ⋆
307	2170	1450	1465†	1510⋆	895	905†	905†	895	945†	905†	950 ⋆
306	2160	1440	1455†	1500⋆	895	895	905†	895	945†	905†	950 ⋆
305	2150	1430	1445†	1490⋆	885	885	895†	885	935†	895†	940 ⋆
304	2140	1420	1435†	1480⋆	875	875	885†	875	925†	885†	940 ⋆
303	2130	1410	1425†	1470⋆	865	865	875†	865	915†	875†	930 ⋆
302	2120	1410	1425†	1460⋆	865	865	875†	865	915†	875†	930 ⋆
301	2110	1400	1415†	1450⋆	865	865	865	865	915†	875†	930 ⋆
300	2100	1400	1415†	1440⋆	865	865	865	865	915†	875†	930 ⋆
299	2090	1390	1405†	1430⋆	855	855	855	855	905†	875†	920 ⋆
298	2080	1390	1405†	1420⋆	855	855	855	855	905†	875†	920 ⋆
297	2070	1380	1395†	1410⋆	845	845	845	845	895†	865†	920 ⋆
296	2060	1370	1390†	1400⋆	840	840	840	840	890†	860†	915 ⋆
295	2050	1360	1380†	1390⋆	830	830	830	830	880†	850†	905 ⋆
294	2040	1350	1370†	1380⋆	830	830	830	830	880†	850†	895 ⋆
293	2030	1340	1360†	1370⋆	820	820	820	820	870†	840†	885 ⋆
292	2020	1330	1350†	1360⋆	820	820	820	820	870†	840†	875 ⋆
291	2010	1320	1340†	1350⋆	810	810	810	810	860†	830†	865 ⋆
290	2000	1310	1330†	1340⋆	800	800	800	800	850†	820†	855 ⋆
289	1990	1300	1320†	1330⋆	790	790	790	790	840†	810†	845 ⋆
288	1980	1290	1310†	1320⋆	780	780	780	780	830†	800†	835 ⋆
287	1970	1280	1300†	1310⋆	770	770	770	770	820†	790†	825 ⋆
286	1960	1270	1290†	1300⋆	770	770	770	770	810†	790†	825 ⋆
285	1950	1260	1280†	1290⋆	760	760	760	770†	800†	780†	815 ⋆
284	1940	1250	1270†	1280⋆	760	760	760	770†	790†	780†	815 ⋆
283	1930	1240	1260†	1270⋆	750	750	750	760†	780†	770†	805 ⋆
282	1920	1230	1250†	1260⋆	750	750	750	760†	770†	770†	805 ⋆
281	1910	1220	1240†	1250⋆	740	740	740	760†	760†	760†	795 ⋆
280	1900	1210	1230†	1240⋆	730	730	730	750†	750†	750†	795 ⋆
279	1890	1200	1220†	1230⋆	720	720	720	740†	740†	740†	785 ⋆
278	1880	1190	1210†	1220⋆	720	720	720	740†	730†	740†	785 ⋆
277	1870	1180	1200†	1210⋆	710	710	710	740†	720†	730†	775 ⋆
276	1860	1170	1190†	1200⋆	710	710	710	740†	710	730†	775 ⋆
275	1850	1160	1180†	1190⋆	700	700	700	730†	700	720†	765 ⋆
274	1840	1150	1170†	1180⋆	690	690	690	720†	690	720†	755 ⋆
273	1830	1140	1160†	1170⋆	680	680	680	710†	680	710†	745 ⋆
272	1820	1130	1150†	1160⋆	670	670	670	700†	670	700†	735 ⋆
271	1810	1120	1140†	1150⋆	660	660	660	690†	660	690†	725 ⋆
270	1800	1110	1130†	1140⋆	650	650	650	680†	650	680†	715 ⋆
269	1790	1100	1120†	1130⋆	640	640	640	670†	640	670†	705 ⋆
268	1780	1090	1110†	1120⋆	630	630	630	660†	630	660†	695 ⋆

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
267	1770	1080	1100†	1110⋆	620	620	620	650†	620	650†	685 ⋆
266	1760	1070	1090†	1100⋆	610	610	610	640†	610	640†	675 ⋆
265	1750	1060	1080†	1090⋆	600	600	600	630†	600	630†	665 ⋆
264	1740	1050	1070†	1080⋆	590	590	590	620†	590	620†	655 ⋆
263	1730	1040	1060†	1070⋆	580	580	580	610†	580	610†	645 ⋆
262	1720	1030	1050†	1060⋆	570	570	570	600†	570	600†	635 ⋆
261	1710	1020	1040†	1050⋆	560	560	560	590†	560	590†	625 ⋆
260	1700	1010	1030†	1040⋆	550	550	550	580†	550	580†	615 ⋆
259	1690	1000	1020†	1030⋆	540	540	540	570†	540	570†	605 ⋆
258	1680	990	1010†	1020⋆	530	530	530	560†	530	560†	595 ⋆
257	1670	980	1000†	1010⋆	520	520	520	550†	520	550†	585 ⋆
256	1660	970	990†	1000⋆	510	510	510	540†	510	540†	575 ⋆
255	1650	960	980†	990⋆	500	500	500	530†	500	530†	565 ⋆
254	1650	960	980†	990⋆	500	500	500	530†	500	530†	565 ⋆
253	1640	960	980†	990⋆	500	500	500	530†	500	530†	565 ⋆
252	1640	960	980†	990⋆	500	500	500	530†	500	530†	565 ⋆
251	1630	950	970†	980⋆	500	500	500	530†	500	530†	565 ⋆
250	1630	950	970†	980⋆	500	500	500	530†	500	530†	565 ⋆
249	1620	950	970†	980⋆	500	500	500	530†	500	530†	565 ⋆
248	1610	950	970†	980⋆	500	500	500	530†	500	530†	565 ⋆
247	1600	940	960†	970⋆	490	490	490	520†	490	520†	555 ⋆
246	1600	940	960†	970⋆	490	490	490	520†	490	520†	555 ⋆
245	1590	940	960†	970⋆	490	490	490	520†	490	520†	555 ⋆
244	1590	940	960†	970⋆	490	490	490	520†	490	520†	555 ⋆
243	1580	930	950†	960⋆	490	490	490	520†	490	520†	555 ⋆
242	1570	930	950⋆	950⋆	490	490	490	520†	490	520†	555 ⋆
241	1560	920	940⋆	940⋆	490	490	490	510†	490	520†	555 ⋆
240	1550	910	930⋆	930⋆	490	490	490	510†	490	510†	555 ⋆
239	1540	900	920⋆	920⋆	480	480	480	500†	480	500†	545 ⋆
238	1540	900	920⋆	920⋆	480	480	480	500†	480	500†	545 ⋆
237	1530	900	920⋆	920⋆	480	480	480	500†	480	500†	545 ⋆
236	1530	900	920⋆	920⋆	480	480	480	500†	480	500†	545 ⋆
235	1520	890	910⋆	910⋆	480	480	480	500†	480	500†	545 ⋆
234	1520	890	910⋆	910⋆	480	480	480	500†	480	500†	545 ⋆
233	1510	890	910⋆	910⋆	480	480	480	500†	480	500†	545 ⋆
232	1500	890	910⋆	910⋆	480	480	480	500†	480	500†	545 ⋆
231	1490	880	900⋆	900⋆	470	470	470	490†	470	490†	535 ⋆
230	1485	880	895†	900⋆	470	470	470	490†	470	490†	530 ⋆
229	1475	870	885†	900⋆	470	470	470	490†	470	490†	520 ⋆
228	1465	870	875†	900⋆	470	470	470	490†	470	490†	510 ⋆
227	1455	860	865†	890⋆	460	460	460	490†	460	480†	500 ⋆
226	1445	850	855†	880⋆	460	460	460	490⋆	460	480†	490 ⋆
225	1435	840	845†	870⋆	450	450	450	480⋆	450	480⋆	480 ⋆
224	1425	830	835†	860⋆	440	440	440	470⋆	440	470⋆	470 ⋆
223	1415	820	825†	850⋆	430	430	430	460⋆	430	460⋆	460 ⋆
222	1415	820	825†	850⋆	430	430	430	460⋆	430	460⋆	460 ⋆
221	1405	820	825†	850⋆	430	430	430	460⋆	430	460⋆	460 ⋆
220	1405	820	825†	850⋆	430	430	430	460⋆	430	460⋆	460 ⋆
219	1395	810	815†	840⋆	430	430	430	460⋆	430	460⋆	460 ⋆
218	1395	810	815†	840⋆	430	430	430	460⋆	430	460⋆	460 ⋆
217	1385	810	815†	840⋆	430	430	430	460⋆	430	460⋆	460 ⋆

continued

$m=10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
216	1375	810	815†	840⋆	430	430	430	460⋆	430	460⋆	460 ⋆
215	1365	800	805†	830⋆	420	420	420	450⋆	420	450⋆	450 ⋆
214	1365	800	805†	830⋆	420	420	420	450⋆	420	450⋆	450 ⋆
213	1355	800	805†	830⋆	420	420	420	450⋆	420	450⋆	450 ⋆
212	1355	800	805†	830⋆	420	420	420	450⋆	420	450⋆	450 ⋆
211	1345	790	795†	820⋆	420	420	420	450⋆	420	450⋆	450 ⋆
210	1335	790	795†	810⋆	420	420	420	450⋆	420	450⋆	450 ⋆
209	1325	780	785†	800⋆	420	420	420	440†	420	450⋆	450 ⋆
208	1315	770	775†	790⋆	420	420	420	440†	420	440†	450 ⋆
207	1305	760	765†	780⋆	410	410	410	430†	410	430†	440 ⋆
206	1305	760	765†	780⋆	410	410	410	430†	410	430†	440 ⋆
205	1295	760	765†	780⋆	410	410	410	430†	410	430†	440 ⋆
204	1295	760	765†	780⋆	410	410	410	430†	410	430†	440 ⋆
203	1285	750	755†	770⋆	400	400	400	420†	400	420†	440 ⋆
202	1275	750	755†	760⋆	400	400	400	420†	400	420†	440 ⋆
201	1265	740	755⋆	750†	400	400	400	420†	400	420†	440 ⋆
200	1255	730	745⋆	740†	400	400	400	420†	400	420†	440 ⋆
199	1245	720	735⋆	730†	390	390	390	410†	390	410†	430 ⋆
198	1235	720	735⋆	720	390	390	390	410†	390	410†	430 ⋆
197	1225	710	730⋆	710	385	385	385	405†	385	405†	425 ⋆
196	1215	700	720⋆	700	385	385	385	405†	385	405†	415 ⋆
195	1205	690	710⋆	690	375	375	375	395†	375	395†	405 ⋆
194	1195	680	700⋆	680	375	375	375	395⋆	375	395⋆	395 ⋆
193	1185	670	690⋆	670	365	365	365	385⋆	365	385⋆	385 ⋆
192	1175	660	680⋆	660	355	355	355	375⋆	355	375⋆	375 ⋆
191	1165	650	670⋆	650	345	345	345	365⋆	345	365⋆	365 ⋆
190	1165	650	670⋆	650	345	345	345	365⋆	345	365⋆	365 ⋆
189	1155	650	670⋆	650	345	345	345	365⋆	345	365⋆	365 ⋆
188	1155	650	670⋆	650	345	345	345	365⋆	345	365⋆	365 ⋆
187	1145	640	660⋆	640	345	345	345	365⋆	345	365⋆	365 ⋆
186	1145	640	660⋆	640	345	345	345	365⋆	345	365⋆	365 ⋆
185	1135	640	660⋆	640	345	345	345	365⋆	345	365⋆	365 ⋆
184	1125	640	660⋆	640	345	345	345	365⋆	345	365⋆	365 ⋆
183	1115	630	650⋆	630	335	335	335	355⋆	335	355⋆	355 ⋆
182	1115	630	650⋆	630	335	335	335	355⋆	335	355⋆	355 ⋆
181	1105	630	650⋆	630	335	335	335	355⋆	335	355⋆	355 ⋆
180	1105	630	650⋆	630	335	335	335	355⋆	335	355⋆	355 ⋆
179	1095	620	640⋆	620	335	335	335	355⋆	335	355⋆	355 ⋆
178	1095	620	640⋆	620	335	335	335	355⋆	335	355⋆	355 ⋆
177	1085	610	630⋆	610	335	335	335	345†	335	355⋆	355 ⋆
176	1075	600	620⋆	600	335	335	335	345†	335	345†	355 ⋆
175	1065	590	610⋆	590	325	325	325	335†	325	335†	345 ⋆
174	1065	590	610⋆	590	325	325	325	335†	325	335†	345 ⋆
173	1055	590	610⋆	590	325	325	325	335†	325	335†	345 ⋆
172	1055	590	610⋆	590	325	325	325	335†	325	335†	345 ⋆
171	1045	580	600⋆	580	325	325	325	335†	325	335†	345 ⋆
170	1045	580	600⋆	580	325	325	325	335†	325	335†	345 ⋆
169	1035	580	600⋆	580	325	325	325	335†	325	335†	345 ⋆
168	1025	580	600⋆	580	325	325	325	335†	325	335†	345 ⋆
167	1015	570	590⋆	570	315	315	315	325†	315	325†	335 ⋆
166	1015	570	590⋆	570	315	315	315	325†	315	325†	335 ⋆

continued

$m = 10$												
ν	9	8			7							
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
165	1005	570	590⋆	570	315	315	315	325†	315	325†	335 ⋆
164	1000	570	585⋆	570	315	315	315	325†	315	325†	330 ⋆
163	990	560	575⋆	560	305	305	305	325⋆	305	315†	320 †
162	980	560	565⋆	560	305	305	305	325⋆	305	315†	310 †
161	970	550	555⋆	550	295	295	295	315⋆	295	315⋆	300 †
160	960	540	545⋆	540	285	285	285	305⋆	285	305⋆	290 †
159	950	530	535⋆	530	275	275	275	295⋆	275	295⋆	280 †
158	950	530	535⋆	530	275	275	275	295⋆	275	295⋆	280 †
157	940	530	535⋆	530	275	275	275	295⋆	275	295⋆	280 †
156	940	530	535⋆	530	275	275	275	295⋆	275	295⋆	280 †
155	930	520	525⋆	520	275	275	275	295⋆	275	295⋆	280 †
154	930	520	525⋆	520	275	275	275	295⋆	275	295⋆	280 †
153	920	520	525⋆	520	275	275	275	295⋆	275	295⋆	280 †
152	910	520	525⋆	520	275	275	275	295⋆	275	295⋆	280 †
151	900	510	515⋆	510	265	265	265	285⋆	265	285⋆	270 †
150	900	510	515⋆	510	265	265	265	285⋆	265	285⋆	270 †
149	890	510	515⋆	510	265	265	265	285⋆	265	285⋆	270 †
148	890	510	515⋆	510	265	265	265	285⋆	265	285⋆	270 †
147	880	500	505⋆	500	265	265	265	285⋆	265	285⋆	270 †
146	880	500	505⋆	500	265	265	265	285⋆	265	285⋆	270 †
145	870	490	495⋆	490	255	255	255	275⋆	255	275⋆	260 †
144	860	480	485⋆	480	255	255	255	275⋆	255	275⋆	260 †
143	850	470	475⋆	470	245	245	245	265⋆	245	265⋆	250 †
142	840	470	475⋆	470	245	245	245	265⋆	245	265⋆	250 †
141	830	460	465†	470⋆	245	245	245	265⋆	245	255†	250 †
140	820	460	465†	470⋆	245	245	245	265⋆	245	255†	250 †
139	810	450	455†	460⋆	235	235	235	255⋆	235	245†	250 †
138	800	450	455†	460⋆	235	235	235	255⋆	235	245†	250 †
137	790	440	445†	460⋆	235	235	235	255⋆	235	235	250 †
136	780	440	445†	460⋆	235	235	235	255⋆	235	235	250 †
135	770	430	435†	450⋆	225	225	225	245⋆	225	225	240 †
134	760	420	425†	440⋆	225	225	225	235†	225	225	240 ⋆
133	750	410	415†	430⋆	215	215	215	225†	215	215	240 ⋆
132	740	400	405†	420⋆	215	215	215	215	215	215	240 ⋆
131	730	390	395†	410⋆	205	205	205	205	205	205	235 ⋆
130	720	380	385†	400⋆	195	195	195	195	195	195	225 ⋆
129	710	370	375†	390⋆	185	185	185	185	185	185	215 ⋆
128	700	360	365†	380⋆	175	175	175	175	175	175	205 ⋆
127	690	350	355†	370⋆	165	165	165	165	165	165	195 ⋆
126	690	350	355†	370⋆	165	165	165	165	165	165	195 ⋆
125	680	350	355†	370⋆	165	165	165	165	165	165	195 ⋆
124	680	350	355†	370⋆	165	165	165	165	165	165	195 ⋆
123	670	340	345†	360⋆	165	165	165	165	165	165	195 ⋆
122	670	340	345†	360⋆	165	165	165	165	165	165	195 ⋆
121	660	340	345†	360⋆	165	165	165	165	165	165	195 ⋆
120	660	340	345†	360⋆	165	165	165	165	165	165	195 ⋆
119	650	330	335†	350⋆	155	155	155	155	155	155	185 ⋆
118	650	330	335†	350⋆	155	155	155	155	155	155	185 ⋆
117	640	330	335†	350⋆	155	155	155	155	155	155	185 ⋆
116	640	330	335†	350⋆	155	155	155	155	155	155	185 ⋆
115	630	320	325†	340⋆	155	155	155	155	155	155	185 ⋆

continued

$m = 10$											
ν	9	8			7						
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
114	630	320	325†	340⋆	155	155	155	155	155	155	185 ⋆
113	620	320	325†	340⋆	155	155	155	155	155	155	185 ⋆
112	610	320	325†	330⋆	155	155	155	155	155	155	185 ⋆
111	600	310	315†	320⋆	145	145	145	145	145	145	175 ⋆
110	600	310	315†	320⋆	145	145	145	145	145	145	175 ⋆
109	590	310	315†	320⋆	145	145	145	145	145	145	175 ⋆
108	590	310	315†	320⋆	145	145	145	145	145	145	175 ⋆
107	580	300	305†	310⋆	145	145	145	145	145	145	175 ⋆
106	580	300	305†	310⋆	145	145	145	145	145	145	175 ⋆
105	570	300	305†	310⋆	145	145	145	145	145	145	175 ⋆
104	570	300	305†	310⋆	145	145	145	145	145	145	175 ⋆
103	560	290	295†	300⋆	135	135	135	135	135	135	165 ⋆
102	560	290	295†	300⋆	135	135	135	135	135	135	165 ⋆
101	550	290	295†	300⋆	135	135	135	135	135	135	165 ⋆
100	550	290	295†	300⋆	135	135	135	135	135	135	165 ⋆
99	540	280	285†	290⋆	135	135	135	135	135	135	165 ⋆
98	535	280	280	290⋆	135	135	135	135	135	135	160 ⋆
97	525	270	270	290⋆	135	135	135	135	135	135	150 ⋆
96	515	260	260	280⋆	135	135	135	135	135	135	140 ⋆
95	505	250	250	270⋆	125	125	125	125	125	125	130 ⋆
94	505	250	250	270⋆	125	125	125	125	125	125	130 ⋆
93	495	250	250	270⋆	125	125	125	125	125	125	130 ⋆
92	495	250	250	270⋆	125	125	125	125	125	125	130 ⋆
91	485	240	240	260⋆	125	125	125	125	125	125	130 ⋆
90	485	240	240	260⋆	125	125	125	125	125	125	130 ⋆
89	475	240	240	260⋆	125	125	125	125	125	125	130 ⋆
88	475	240	240	260⋆	125	125	125	125	125	125	130 ⋆
87	465	230	230	250⋆	115	115	115	115	115	115	120 ⋆
86	465	230	230	250⋆	115	115	115	115	115	115	120 ⋆
85	455	230	230	250⋆	115	115	115	115	115	115	120 ⋆
84	455	230	230	250⋆	115	115	115	115	115	115	120 ⋆
83	445	220	220	240⋆	115	115	115	115	115	115	120 ⋆
82	445	220	220	240⋆	115	115	115	115	115	115	120 ⋆
81	435	220	220	240⋆	115	115	115	115	115	115	120 ⋆
80	425	220	220	230⋆	115	115	115	115	115	115	120 ⋆
79	415	210	210	220⋆	105	105	105	105	105	105	110 ⋆
78	415	210	210	220⋆	105	105	105	105	105	105	110 ⋆
77	405	210	210	220⋆	105	105	105	105	105	105	110 ⋆
76	405	210	210	220⋆	105	105	105	105	105	105	110 ⋆
75	395	200	200	210⋆	105	105	105	105	105	105	110 ⋆
74	395	200	200	210⋆	105	105	105	105	105	105	110 ⋆
73	385	200	200	210⋆	105	105	105	105	105	105	110 ⋆
72	385	200	200	210⋆	105	105	105	105	105	105	110 ⋆
71	375	190	190	200⋆	95	95	95	95	95	95	100 ⋆
70	375	190	190	200⋆	95	95	95	95	95	95	100 ⋆
69	365	190	190	200⋆	95	95	95	95	95	95	100 ⋆
68	365	190	190	200⋆	95	95	95	95	95	95	100 ⋆
67	355	180	180	190⋆	85	85	85	85	85	85	100 ⋆
66	345	180	180	180	85	85	85	85	85	85	100 ⋆
65	335	170	175⋆	170	80	80	80	80	80	80	95 ⋆
64	325	160	165⋆	160	80	80	80	80	80	80	85 ⋆

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
63	315	150	155⋆	150	70	70	70	70	70	70	75 ⋆
62	315	150	155⋆	150	70	70	70	70	70	70	75 ⋆
61	305	150	155⋆	150	70	70	70	70	70	70	75 ⋆
60	305	150	155⋆	150	70	70	70	70	70	70	75 ⋆
59	295	140	145⋆	140	70	70	70	70	70	70	75 ⋆
58	295	140	145⋆	140	70	70	70	70	70	70	75 ⋆
57	285	140	145⋆	140	70	70	70	70	70	70	75 ⋆
56	285	140	145⋆	140	70	70	70	70	70	70	75 ⋆
55	275	130	135⋆	130	60	60	60	60	60	60	65 ⋆
54	275	130	135⋆	130	60	60	60	60	60	60	65 ⋆
53	265	130	135⋆	130	60	60	60	60	60	60	65 ⋆
52	265	130	135⋆	130	60	60	60	60	60	60	65 ⋆
51	255	120	125⋆	120	60	60	60	60	60	60	65 ⋆
50	255	120	125⋆	120	60	60	60	60	60	60	65 ⋆
49	245	120	125⋆	120	60	60	60	60	60	60	65 ⋆
48	245	120	125⋆	120	60	60	60	60	60	60	65 ⋆
47	235	110	115⋆	110	50	50	50	50	50	50	55 ⋆
46	235	110	115⋆	110	50	50	50	50	50	50	55 ⋆
45	225	110	115⋆	110	50	50	50	50	50	50	55 ⋆
44	225	110	115⋆	110	50	50	50	50	50	50	55 ⋆
43	215	100	105⋆	100	50	50	50	50	50	50	55 ⋆
42	215	100	105⋆	100	50	50	50	50	50	50	55 ⋆
41	205	100	105⋆	100	50	50	50	50	50	50	55 ⋆
40	205	100	105⋆	100	50	50	50	50	50	50	55 ⋆
39	195	90	95⋆	90	40	40	40	40	40	40	45 ⋆
38	195	90	95⋆	90	40	40	40	40	40	40	45 ⋆
37	185	90	95⋆	90	40	40	40	40	40	40	45 ⋆
36	185	90	95⋆	90	40	40	40	40	40	40	45 ⋆
35	175	80	85⋆	80	40	40	40	40	40	40	45 ⋆
34	175	80	85⋆	80	40	40	40	40	40	40	45 ⋆
33	165	80	85⋆	80	40	40	40	40	40	40	45 ⋆
32	160	80	80	80	40	40	40	40	40	40	40
31	150	70	70	70	30	30	30	30	30	30	30
30	150	70	70	70	30	30	30	30	30	30	30
29	140	70	70	70	30	30	30	30	30	30	30
28	140	70	70	70	30	30	30	30	30	30	30
27	130	60	60	60	30	30	30	30	30	30	30
26	130	60	60	60	30	30	30	30	30	30	30
25	120	60	60	60	30	30	30	30	30	30	30
24	120	60	60	60	30	30	30	30	30	30	30
23	110	50	50	50	20	20	20	20	20	20	20
22	110	50	50	50	20	20	20	20	20	20	20
21	100	50	50	50	20	20	20	20	20	20	20
20	100	50	50	50	20	20	20	20	20	20	20
19	90	40	40	40	20	20	20	20	20	20	20
18	90	40	40	40	20	20	20	20	20	20	20
17	80	40	40	40	20	20	20	20	20	20	20
16	80	40	40	40	20	20	20	20	20	20	20
15	70	30	30	30	10	10	10	10	10	10	10
14	70	30	30	30	10	10	10	10	10	10	10
13	60	30	30	30	10	10	10	10	10	10	10

continued

$m = 10$											
ν	9	8			7						
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{11}$	$\mathbb{G}_{19}$	$\mathbb{G}_0$	$\mathbb{G}_{23}$	$\mathbb{G}_{557}$	$\mathbb{G}_{559}$	$\mathbb{G}_{614}$	$\mathbb{G}_{621}$	$\mathbb{G}_{632}$
k_0	K	K	K	K	K	K	K	K	K	K	K
12	60	30	30	30	10	10	10	10	10	10	10
11	50	20	20	20	10	10	10	10	10	10	10
10	50	20	20	20	10	10	10	10	10	10	10
9	40	20	20	20	10	10	10	10	10	10	10
8	40	20	20	20	10	10	10	10	10	10	10
7	30	10	10	10	0	0	0	0	0	0	0
6	30	10	10	10	0	0	0	0	0	0	0
5	20	10	10	10	0	0	0	0	0	0	0
4	20	10	10	10	0	0	0	0	0	0	0
3	10	0	0	0	0	0	0	0	0	0	0
2	10	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0

C.8 $m = 11, n = 2047$

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
2046	20460	18414
2045	20449	18403
2044	20438	18392
2043	20427	18381
2042	20416	18370
2041	20405	18359
2040	20394	18348
2039	20383	18337
2038	20372	18326
2037	20361	18315
2036	20350	18304
2035	20339	18293
2034	20328	18282
2033	20317	18271
2032	20306	18260
2031	20295	18249
2030	20284	18238
2029	20273	18227
2028	20262	18216
2027	20251	18205
2026	20240	18194
2025	20229	18183
2024	20218	18172
2023	20207	18161
2022	20196	18150
2021	20185	18139
2020	20174	18128
2019	20163	18117
2018	20152	18106
2017	20141	18095

continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
2016	20130	18084
2015	20119	18073
2014	20108	18062
2013	20097	18051
2012	20086	18040
2011	20075	18029
2010	20064	18018
2009	20053	18007
2008	20042	17996
2007	20031	17985
2006	20020	17974
2005	20009	17963
2004	19998	17952
2003	19987	17941
2002	19976	17930
2001	19965	17919
2000	19954	17908
1999	19943	17897
1998	19932	17886
1997	19921	17875
1996	19910	17864
1995	19899	17853
1994	19888	17842
1993	19877	17831
1992	19866	17820
1991	19855	17809
1990	19844	17798
1989	19833	17787
1988	19822	17776
1987	19811	17765
1986	19800	17754
1985	19789	17743
1984	19778	17732
1983	19767	17721
1982	19756	17710
1981	19745	17699
1980	19734	17688
1979	19723	17677
1978	19712	17666
1977	19701	17655
1976	19690	17644
1975	19679	17633
1974	19668	17622
1973	19657	17611
1972	19646	17600
1971	19635	17589
1970	19624	17578
1969	19613	17567
1968	19602	17556
1967	19591	17545
1966	19580	17534

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1965	19569	17523
1964	19558	17512
1963	19547	17501
1962	19536	17490
1961	19525	17479
1960	19514	17468
1959	19503	17457
1958	19492	17446
1957	19481	17435
1956	19470	17424
1955	19459	17413
1954	19448	17402
1953	19437	17391
1952	19426	17380
1951	19415	17369
1950	19404	17358
1949	19393	17347
1948	19382	17336
1947	19371	17325
1946	19360	17314
1945	19349	17303
1944	19338	17292
1943	19327	17281
1942	19316	17270
1941	19305	17259
1940	19294	17248
1939	19283	17237
1938	19272	17226
1937	19261	17215
1936	19250	17204
1935	19239	17193
1934	19228	17182
1933	19217	17171
1932	19206	17160
1931	19195	17149
1930	19184	17138
1929	19173	17127
1928	19162	17116
1927	19151	17105
1926	19140	17094
1925	19129	17083
1924	19118	17072
1923	19107	17061
1922	19096	17050
1921	19085	17039
1920	19074	17028
1919	19063	17017
1918	19052	17006
1917	19041	16995
1916	19030	16984
1915	19019	16973
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1914	19008	16962
1913	18997	16951
1912	18986	16940
1911	18975	16929
1910	18964	16918
1909	18953	16907
1908	18942	16896
1907	18931	16885
1906	18920	16874
1905	18909	16863
1904	18898	16852
1903	18887	16841
1902	18876	16830
1901	18865	16819
1900	18854	16808
1899	18843	16797
1898	18832	16786
1897	18821	16775
1896	18810	16764
1895	18799	16753
1894	18788	16742
1893	18777	16731
1892	18766	16720
1891	18755	16709
1890	18744	16698
1889	18733	16687
1888	18722	16676
1887	18711	16665
1886	18700	16654
1885	18689	16643
1884	18678	16632
1883	18667	16621
1882	18656	16610
1881	18645	16599
1880	18634	16588
1879	18623	16577
1878	18612	16566
1877	18601	16555
1876	18590	16544
1875	18579	16533
1874	18568	16522
1873	18557	16511
1872	18546	16500
1871	18535	16489
1870	18524	16478
1869	18513	16467
1868	18502	16456
1867	18491	16445
1866	18480	16434
1865	18469	16423
1864	18458	16412

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1863	18447	16401
1862	18436	16390
1861	18425	16379
1860	18414	16368
1859	18403	16357
1858	18392	16346
1857	18381	16335
1856	18370	16324
1855	18359	16313
1854	18348	16302
1853	18337	16291
1852	18326	16280
1851	18315	16269
1850	18304	16258
1849	18293	16247
1848	18282	16236
1847	18271	16225
1846	18260	16214
1845	18249	16203
1844	18238	16192
1843	18227	16181
1842	18216	16170
1841	18205	16159
1840	18194	16148
1839	18183	16137
1838	18172	16126
1837	18161	16115
1836	18150	16104
1835	18139	16093
1834	18128	16082
1833	18117	16071
1832	18106	16060
1831	18095	16049
1830	18084	16038
1829	18073	16027
1828	18062	16016
1827	18051	16005
1826	18040	15994
1825	18029	15983
1824	18018	15972
1823	18007	15961
1822	17996	15950
1821	17985	15939
1820	17974	15928
1819	17963	15917
1818	17952	15906
1817	17941	15895
1816	17930	15884
1815	17919	15873
1814	17908	15862
1813	17897	15851

continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1812	17886	15840
1811	17875	15829
1810	17864	15818
1809	17853	15807
1808	17842	15796
1807	17831	15785
1806	17820	15774
1805	17809	15763
1804	17798	15752
1803	17787	15741
1802	17776	15730
1801	17765	15719
1800	17754	15708
1799	17743	15697
1798	17732	15686
1797	17721	15675
1796	17710	15664
1795	17699	15653
1794	17688	15642
1793	17677	15631
1792	17666	15620
1791	17655	15609
1790	17644	15598
1789	17633	15587
1788	17622	15576
1787	17611	15565
1786	17600	15554
1785	17589	15543
1784	17578	15532
1783	17567	15521
1782	17556	15510
1781	17545	15499
1780	17534	15488
1779	17523	15477
1778	17512	15466
1777	17501	15455
1776	17490	15444
1775	17479	15433
1774	17468	15422
1773	17457	15411
1772	17446	15400
1771	17435	15389
1770	17424	15378
1769	17413	15367
1768	17402	15356
1767	17391	15345
1766	17380	15334
1765	17369	15323
1764	17358	15312
1763	17347	15301
1762	17336	15290
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1761	17325	15279
1760	17314	15268
1759	17303	15257
1758	17292	15246
1757	17281	15235
1756	17270	15224
1755	17259	15213
1754	17248	15202
1753	17237	15191
1752	17226	15180
1751	17215	15169
1750	17204	15158
1749	17193	15147
1748	17182	15136
1747	17171	15125
1746	17160	15114
1745	17149	15103
1744	17138	15092
1743	17127	15081
1742	17116	15070
1741	17105	15059
1740	17094	15048
1739	17083	15037
1738	17072	15026
1737	17061	15015
1736	17050	15004
1735	17039	14993
1734	17028	14982
1733	17017	14971
1732	17006	14960
1731	16995	14949
1730	16984	14938
1729	16973	14927
1728	16962	14916
1727	16951	14905
1726	16940	14894
1725	16929	14883
1724	16918	14872
1723	16907	14861
1722	16896	14850
1721	16885	14839
1720	16874	14828
1719	16863	14817
1718	16852	14806
1717	16841	14795
1716	16830	14784
1715	16819	14773
1714	16808	14762
1713	16797	14751
1712	16786	14740
1711	16775	14729

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1710	16764	14718
1709	16753	14707
1708	16742	14696
1707	16731	14685
1706	16720	14674
1705	16709	14663
1704	16698	14652
1703	16687	14641
1702	16676	14630
1701	16665	14619
1700	16654	14608
1699	16643	14597
1698	16632	14586
1697	16621	14575
1696	16610	14564
1695	16599	14553
1694	16588	14542
1693	16577	14531
1692	16566	14520
1691	16555	14509
1690	16544	14498
1689	16533	14487
1688	16522	14476
1687	16511	14465
1686	16500	14454
1685	16489	14443
1684	16478	14432
1683	16467	14421
1682	16456	14410
1681	16445	14399
1680	16434	14388
1679	16423	14377
1678	16412	14366
1677	16401	14355
1676	16390	14344
1675	16379	14333
1674	16368	14322
1673	16357	14311
1672	16346	14300
1671	16335	14289
1670	16324	14278
1669	16313	14267
1668	16302	14256
1667	16291	14245
1666	16280	14234
1665	16269	14223
1664	16258	14212
1663	16247	14201
1662	16236	14190
1661	16225	14179
1660	16214	14168
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1659	16203	14157
1658	16192	14146
1657	16181	14135
1656	16170	14124
1655	16159	14113
1654	16148	14102
1653	16137	14091
1652	16126	14080
1651	16115	14069
1650	16104	14058
1649	16093	14047
1648	16082	14036
1647	16071	14025
1646	16060	14014
1645	16049	14003
1644	16038	13992
1643	16027	13981
1642	16016	13970
1641	16005	13959
1640	15994	13948
1639	15983	13937
1638	15972	13926
1637	15961	13915
1636	15950	13904
1635	15939	13893
1634	15928	13882
1633	15917	13871
1632	15906	13860
1631	15895	13849
1630	15884	13838
1629	15873	13827
1628	15862	13816
1627	15851	13805
1626	15840	13794
1625	15829	13783
1624	15818	13772
1623	15807	13761
1622	15796	13750
1621	15785	13739
1620	15774	13728
1619	15763	13717
1618	15752	13706
1617	15741	13695
1616	15730	13684
1615	15719	13673
1614	15708	13662
1613	15697	13651
1612	15686	13640
1611	15675	13629
1610	15664	13618
1609	15653	13607

continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1608	15642	13596
1607	15631	13585
1606	15620	13574
1605	15609	13563
1604	15598	13552
1603	15587	13541
1602	15576	13530
1601	15565	13519
1600	15554	13508
1599	15543	13497
1598	15532	13486
1597	15521	13475
1596	15510	13464
1595	15499	13453
1594	15488	13442
1593	15477	13431
1592	15466	13420
1591	15455	13409
1590	15444	13398
1589	15433	13387
1588	15422	13376
1587	15411	13365
1586	15400	13354
1585	15389	13343
1584	15378	13332
1583	15367	13321
1582	15356	13310
1581	15345	13299
1580	15334	13288
1579	15323	13277
1578	15312	13266
1577	15301	13255
1576	15290	13244
1575	15279	13233
1574	15268	13222
1573	15257	13211
1572	15246	13200
1571	15235	13189
1570	15224	13178
1569	15213	13167
1568	15202	13156
1567	15191	13145
1566	15180	13134
1565	15169	13123
1564	15158	13112
1563	15147	13101
1562	15136	13090
1561	15125	13079
1560	15114	13068
1559	15103	13057
1558	15092	13046
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1557	15081	13035
1556	15070	13024
1555	15059	13013
1554	15048	13002
1553	15037	12991
1552	15026	12980
1551	15015	12969
1550	15004	12958
1549	14993	12947
1548	14982	12936
1547	14971	12925
1546	14960	12914
1545	14949	12903
1544	14938	12892
1543	14927	12881
1542	14916	12870
1541	14905	12859
1540	14894	12848
1539	14883	12837
1538	14872	12826
1537	14861	12815
1536	14850	12804
1535	14839	12793
1534	14828	12793
1533	14817	12782
1532	14806	12771
1531	14795	12760
1530	14784	12749
1529	14773	12738
1528	14762	12727
1527	14751	12716
1526	14740	12705
1525	14729	12694
1524	14718	12683
1523	14707	12672
1522	14696	12661
1521	14685	12650
1520	14674	12639
1519	14663	12628
1518	14652	12617
1517	14641	12606
1516	14630	12595
1515	14619	12584
1514	14608	12573
1513	14597	12562
1512	14586	12551
1511	14575	12540
1510	14564	12529
1509	14553	12518
1508	14542	12507
1507	14531	12496
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1506	14520	12485
1505	14509	12474
1504	14498	12463
1503	14487	12452
1502	14476	12441
1501	14465	12430
1500	14454	12419
1499	14443	12408
1498	14432	12397
1497	14421	12386
1496	14410	12375
1495	14399	12364
1494	14388	12353
1493	14377	12342
1492	14366	12331
1491	14355	12320
1490	14344	12309
1489	14333	12298
1488	14322	12287
1487	14311	12276
1486	14300	12265
1485	14289	12254
1484	14278	12243
1483	14267	12232
1482	14256	12221
1481	14245	12210
1480	14234	12199
1479	14223	12188
1478	14212	12177
1477	14201	12166
1476	14190	12155
1475	14179	12144
1474	14168	12133
1473	14157	12122
1472	14146	12111
1471	14135	12100
1470	14124	12089
1469	14113	12078
1468	14102	12067
1467	14091	12056
1466	14080	12045
1465	14069	12034
1464	14058	12023
1463	14047	12012
1462	14036	12001
1461	14025	11990
1460	14014	11979
1459	14003	11968
1458	13992	11957
1457	13981	11946
1456	13970	11935
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1455	13959	11924
1454	13948	11913
1453	13937	11902
1452	13926	11891
1451	13915	11880
1450	13904	11869
1449	13893	11858
1448	13882	11847
1447	13871	11836
1446	13860	11825
1445	13849	11814
1444	13838	11803
1443	13827	11792
1442	13816	11781
1441	13805	11770
1440	13794	11759
1439	13783	11748
1438	13772	11737
1437	13761	11726
1436	13750	11715
1435	13739	11704
1434	13728	11693
1433	13717	11682
1432	13706	11671
1431	13695	11660
1430	13684	11649
1429	13673	11638
1428	13662	11627
1427	13651	11616
1426	13640	11605
1425	13629	11594
1424	13618	11583
1423	13607	11572
1422	13596	11561
1421	13585	11550
1420	13574	11539
1419	13563	11528
1418	13552	11517
1417	13541	11506
1416	13530	11495
1415	13519	11484
1414	13508	11473
1413	13497	11462
1412	13486	11451
1411	13475	11440
1410	13464	11429
1409	13453	11418
1408	13442	11407
1407	13431	11396
1406	13420	11385
1405	13409	11374
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1404	13398	11363
1403	13387	11352
1402	13376	11341
1401	13365	11330
1400	13354	11319
1399	13343	11308
1398	13332	11297
1397	13321	11286
1396	13310	11275
1395	13299	11264
1394	13288	11253
1393	13277	11242
1392	13266	11231
1391	13255	11220
1390	13244	11209
1389	13233	11198
1388	13222	11187
1387	13211	11176
1386	13200	11165
1385	13189	11154
1384	13178	11143
1383	13167	11132
1382	13156	11121
1381	13145	11110
1380	13134	11099
1379	13123	11088
1378	13112	11077
1377	13101	11066
1376	13090	11055
1375	13079	11044
1374	13068	11033
1373	13057	11022
1372	13046	11011
1371	13035	11000
1370	13024	10989
1369	13013	10978
1368	13002	10967
1367	12991	10956
1366	12980	10945
1365	12969	10934
1364	12958	10923
1363	12947	10912
1362	12936	10901
1361	12925	10890
1360	12914	10879
1359	12903	10868
1358	12892	10857
1357	12881	10846
1356	12870	10835
1355	12859	10824
1354	12848	10813
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1353	12837	10802
1352	12826	10791
1351	12815	10780
1350	12804	10769
1349	12793	10758
1348	12782	10747
1347	12771	10736
1346	12760	10725
1345	12749	10714
1344	12738	10703
1343	12727	10692
1342	12716	10681
1341	12705	10670
1340	12694	10659
1339	12683	10648
1338	12672	10637
1337	12661	10626
1336	12650	10615
1335	12639	10604
1334	12628	10593
1333	12617	10582
1332	12606	10571
1331	12595	10560
1330	12584	10549
1329	12573	10538
1328	12562	10527
1327	12551	10516
1326	12540	10505
1325	12529	10494
1324	12518	10483
1323	12507	10472
1322	12496	10461
1321	12485	10450
1320	12474	10439
1319	12463	10428
1318	12452	10417
1317	12441	10406
1316	12430	10395
1315	12419	10384
1314	12408	10373
1313	12397	10362
1312	12386	10351
1311	12375	10340
1310	12364	10329
1309	12353	10318
1308	12342	10307
1307	12331	10296
1306	12320	10285
1305	12309	10274
1304	12298	10263
1303	12287	10252

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1302	12276	10241
1301	12265	10230
1300	12254	10219
1299	12243	10208
1298	12232	10197
1297	12221	10186
1296	12210	10175
1295	12199	10164
1294	12188	10153
1293	12177	10142
1292	12166	10131
1291	12155	10120
1290	12144	10109
1289	12133	10098
1288	12122	10087
1287	12111	10076
1286	12100	10065
1285	12089	10054
1284	12078	10043
1283	12067	10032
1282	12056	10021
1281	12045	10010
1280	12034	9999
1279	12023	9988
1278	12012	9977
1277	12001	9966
1276	11990	9955
1275	11979	9944
1274	11968	9933
1273	11957	9922
1272	11946	9911
1271	11935	9900
1270	11924	9889
1269	11913	9878
1268	11902	9867
1267	11891	9856
1266	11880	9845
1265	11869	9834
1264	11858	9823
1263	11847	9812
1262	11836	9801
1261	11825	9790
1260	11814	9779
1259	11803	9768
1258	11792	9757
1257	11781	9746
1256	11770	9735
1255	11759	9724
1254	11748	9713
1253	11737	9702
1252	11726	9691

continued

$m = 11$		
ν	10	9
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1251	11715	9680
1250	11704	9669
1249	11693	9658
1248	11682	9647
1247	11671	9636
1246	11660	9625
1245	11649	9614
1244	11638	9603
1243	11627	9592
1242	11616	9581
1241	11605	9570
1240	11594	9559
1239	11583	9548
1238	11572	9537
1237	11561	9526
1236	11550	9515
1235	11539	9504
1234	11528	9493
1233	11517	9482
1232	11506	9471
1231	11495	9460
1230	11484	9449
1229	11473	9438
1228	11462	9427
1227	11451	9416
1226	11440	9405
1225	11429	9394
1224	11418	9383
1223	11407	9372
1222	11396	9361
1221	11385	9350
1220	11374	9339
1219	11363	9328
1218	11352	9317
1217	11341	9306
1216	11330	9295
1215	11319	9284
1214	11308	9273
1213	11297	9262
1212	11286	9251
1211	11275	9240
1210	11264	9229
1209	11253	9218
1208	11242	9207
1207	11231	9196
1206	11220	9185
1205	11209	9174
1204	11198	9163
1203	11187	9152
1202	11176	9141
1201	11165	9130
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1200	11154	9119
1199	11143	9108
1198	11132	9097
1197	11121	9086
1196	11110	9075
1195	11099	9064
1194	11088	9053
1193	11077	9042
1192	11066	9031
1191	11055	9020
1190	11044	9009
1189	11033	8998
1188	11022	8987
1187	11011	8976
1186	11000	8965
1185	10989	8954
1184	10978	8943
1183	10967	8932
1182	10956	8921
1181	10945	8910
1180	10934	8899
1179	10923	8888
1178	10912	8877
1177	10901	8866
1176	10890	8855
1175	10879	8844
1174	10868	8833
1173	10857	8822
1172	10846	8811
1171	10835	8800
1170	10824	8789
1169	10813	8778
1168	10802	8767
1167	10791	8756
1166	10780	8745
1165	10769	8734
1164	10758	8723
1163	10747	8712
1162	10736	8701
1161	10725	8690
1160	10714	8679
1159	10703	8668
1158	10692	8657
1157	10681	8646
1156	10670	8635
1155	10659	8624
1154	10648	8613
1153	10637	8602
1152	10626	8591
1151	10615	8580
1150	10604	8569

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1149	10593	8558
1148	10582	8547
1147	10571	8536
1146	10560	8525
1145	10549	8514
1144	10538	8503
1143	10527	8492
1142	10516	8481
1141	10505	8470
1140	10494	8459
1139	10483	8448
1138	10472	8437
1137	10461	8426
1136	10450	8415
1135	10439	8404
1134	10428	8393
1133	10417	8382
1132	10406	8371
1131	10395	8360
1130	10384	8349
1129	10373	8338
1128	10362	8327
1127	10351	8316
1126	10340	8305
1125	10329	8294
1124	10318	8283
1123	10307	8272
1122	10296	8261
1121	10285	8250
1120	10274	8239
1119	10263	8228
1118	10252	8217
1117	10241	8206
1116	10230	8195
1115	10219	8184
1114	10208	8173
1113	10197	8162
1112	10186	8151
1111	10175	8140
1110	10164	8129
1109	10153	8118
1108	10142	8107
1107	10131	8096
1106	10120	8085
1105	10109	8074
1104	10098	8063
1103	10087	8052
1102	10076	8041
1101	10065	8030
1100	10054	8019
1099	10043	8008
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1098	10032	7997
1097	10021	7986
1096	10010	7975
1095	9999	7964
1094	9988	7953
1093	9977	7942
1092	9966	7931
1091	9955	7920
1090	9944	7909
1089	9933	7898
1088	9922	7887
1087	9911	7876
1086	9900	7865
1085	9889	7854
1084	9878	7843
1083	9867	7832
1082	9856	7821
1081	9845	7810
1080	9834	7799
1079	9823	7788
1078	9812	7777
1077	9801	7766
1076	9790	7755
1075	9779	7744
1074	9768	7733
1073	9757	7722
1072	9746	7711
1071	9735	7700
1070	9724	7689
1069	9713	7678
1068	9702	7667
1067	9691	7656
1066	9680	7645
1065	9669	7634
1064	9658	7623
1063	9647	7612
1062	9636	7601
1061	9625	7590
1060	9614	7579
1059	9603	7568
1058	9592	7557
1057	9581	7546
1056	9570	7535
1055	9559	7524
1054	9548	7513
1053	9537	7502
1052	9526	7491
1051	9515	7480
1050	9504	7469
1049	9493	7458
1048	9482	7447

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
1047	9471	7436
1046	9460	7425
1045	9449	7414
1044	9438	7403
1043	9427	7392
1042	9416	7381
1041	9405	7370
1040	9394	7359
1039	9383	7348
1038	9372	7337
1037	9361	7326
1036	9350	7315
1035	9339	7304
1034	9328	7293
1033	9317	7282
1032	9306	7271
1031	9295	7260
1030	9284	7249
1029	9273	7238
1028	9262	7227
1027	9251	7216
1026	9240	7205
1025	9229	7194
1024	9218	7183
1023	9207	7172
1022	9207	7172
1021	9196	7172
1020	9185	7172
1019	9174	7161
1018	9163	7161
1017	9152	7150
1016	9141	7139
1015	9130	7128
1014	9119	7128
1013	9108	7117
1012	9097	7106
1011	9086	7095
1010	9075	7084
1009	9064	7073
1008	9053	7062
1007	9042	7051
1006	9031	7051
1005	9020	7040
1004	9009	7029
1003	8998	7018
1002	8987	7007
1001	8976	6996
1000	8965	6985
999	8954	6974
998	8943	6963
997	8932	6952

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
996	8921	6941
995	8910	6930
994	8899	6919
993	8888	6908
992	8877	6897
991	8866	6886
990	8866	6886
989	8855	6875
988	8844	6864
987	8833	6853
986	8822	6842
985	8811	6831
984	8800	6820
983	8789	6809
982	8778	6798
981	8767	6787
980	8756	6776
979	8745	6765
978	8734	6754
977	8723	6743
976	8712	6732
975	8701	6721
974	8690	6721
973	8679	6710
972	8668	6699
971	8657	6688
970	8646	6677
969	8635	6666
968	8624	6655
967	8613	6644
966	8602	6633
965	8591	6622
964	8580	6611
963	8569	6600
962	8558	6589
961	8547	6578
960	8536	6567
959	8525	6556
958	8525	6556
957	8514	6556
956	8503	6556
955	8492	6545
954	8481	6534
953	8470	6523
952	8459	6512
951	8448	6501
950	8437	6501
949	8426	6490
948	8415	6479
947	8404	6468
946	8393	6457
continued		

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
945	8382	6446
944	8371	6435
943	8360	6424
942	8349	6424
941	8338	6413
940	8327	6402
939	8316	6391
938	8305	6380
937	8294	6369
936	8283	6358
935	8272	6347
934	8261	6336
933	8250	6325
932	8239	6314
931	8228	6303
930	8217	6292
929	8206	6281
928	8195	6270
927	8184	6259
926	8173	6259
925	8162	6248
924	8151	6237
923	8140	6226
922	8129	6215
921	8118	6204
920	8107	6193
919	8096	6182
918	8085	6171
917	8074	6160
916	8063	6149
915	8052	6138
914	8041	6127
913	8030	6116
912	8019	6105
911	8008	6094
910	7997	6083
909	7986	6072
908	7975	6061
907	7964	6050
906	7953	6039
905	7942	6028
904	7931	6017
903	7920	6006
902	7909	5995
901	7898	5984
900	7887	5973
899	7876	5962
898	7865	5951
897	7854	5940
896	7843	5929
895	7832	5918

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
894	7832	5918
893	7821	5918
892	7810	5918
891	7799	5907
890	7788	5907
889	7777	5896
888	7766	5885
887	7755	5874
886	7755	5874
885	7744	5863
884	7733	5852
883	7722	5841
882	7711	5830
881	7700	5819
880	7689	5808
879	7678	5797
878	7678	5797
877	7667	5797
876	7656	5786
875	7645	5775
874	7634	5764
873	7623	5753
872	7612	5742
871	7601	5731
870	7590	5720
869	7579	5709
868	7568	5698
867	7557	5687
866	7546	5676
865	7535	5665
864	7524	5654
863	7513	5643
862	7502	5643
861	7491	5632
860	7480	5621
859	7469	5610
858	7458	5610
857	7447	5599
856	7436	5588
855	7425	5577
854	7414	5566
853	7403	5555
852	7392	5544
851	7381	5533
850	7370	5522
849	7359	5511
848	7348	5500
847	7337	5489
846	7326	5478
845	7315	5467
844	7304	5456

continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
843	7293	5445
842	7282	5434
841	7271	5423
840	7260	5412
839	7249	5401
838	7238	5390
837	7227	5379
836	7216	5368
835	7205	5357
834	7194	5346
833	7183	5335
832	7172	5324
831	7161	5313
830	7150	5313
829	7139	5302
828	7128	5291
827	7117	5280
826	7106	5280
825	7095	5269
824	7084	5258
823	7073	5247
822	7062	5247
821	7051	5236
820	7040	5225
819	7029	5214
818	7018	5203
817	7007	5192
816	6996	5181
815	6985	5170
814	6974	5159
813	6963	5148
812	6952	5137
811	6941	5126
810	6930	5115
809	6919	5104
808	6908	5093
807	6897	5082
806	6886	5071
805	6875	5060
804	6864	5049
803	6853	5038
802	6842	5027
801	6831	5016
800	6820	5005
799	6809	4994
798	6798	4983
797	6787	4972
796	6776	4961
795	6765	4950
794	6754	4939
793	6743	4928
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
792	*6732*	*4917*
791	6721	4906
790	6710	4895
789	6699	4884
788	6688	4873
787	6677	4862
786	*6666*	*4851*
785	6655	4840
784	6644	4829
783	*6633*	*4818*
782	6622	4807
781	6611	4796
780	6600	4785
779	6589	4774
778	6578	4763
777	*6567*	*4752*
776	6556	4741
775	6545	4730
774	*6534*	*4719*
773	6523	4708
772	6512	4697
771	6501	4686
770	6490	4675
769	6479	4664
768	6468	*4653*
767	6457	4642
766	6457	4642
765	*6446*	*4642*
764	6435	4642
763	6424	4631
762	6424	*4631*
761	6413	4620
760	6402	*4609*
759	6391	4598
758	6391	4598
757	6380	4598
756	*6369*	*4587*
755	6358	4576
754	6347	4576
753	*6336*	4565
752	6325	4554
751	6314	4543
750	6314	4543
749	6303	4543
748	6292	4543
747	*6281*	*4532*
746	6270	4532
745	6259	4521
744	*6248*	4510
743	6237	4499
742	6226	4499

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
741	6215	4488
740	6204	4477
739	6193	4466
738	6182	4455
737	6171	4444
736	6160	4433
735	6149	4422
734	6149	4422
733	6138	4422
732	6127	4422
731	6116	4411
730	6116	4411
729	6105	4400
728	6094	4389
727	6083	4378
726	6083	4378
725	6072	4367
724	6061	4356
723	6050	4345
722	6039	4334
721	6028	4323
720	6017	4312
719	6006	4301
718	5995	4301
717	5984	4290
716	5973	4279
715	5962	4268
714	5951	4268
713	5940	4257
712	5929	4246
711	5918	4235
710	5907	4224
709	5896	4213
708	5885	4202
707	5874	4191
706	5863	4180
705	5852	4169
704	5841	4158
703	5830	4147
702	5830	4147
701	5819	4147
700	5808	4147
699	5797	4136
698	5797	4136
697	5786	4125
696	5775	4114
695	5764	4103
694	5764	4103
693	5753	4103
692	5742	4092
691	5731	4081
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
690	5720	4081
689	5709	4070
688	5698	4059
687	5687	4048
686	5687	4048
685	5676	4048
684	5665	4048
683	5654	4037
682	5654	4037
681	5643	4026
680	5632	4015
679	5621	4004
678	5610	3993
677	5599	3982
676	5588	3971
675	5577	3960
674	5566	3949
673	5555	3938
672	5544	3927
671	5533	3916
670	5522	3905
669	5511	3894
668	5500	3883
667	5489	3872
666	5478	3861
665	5467	3850
664	5456	3839
663	5445	3828
662	5434	3817
661	5423	3806
660	5412	3795
659	5401	3784
658	5390	3773
657	5379	3762
656	5368	3751
655	5357	3740
654	5346	3729
653	5335	3718
652	5324	3707
651	5313	3696
650	5302	3685
649	5291	3674
648	5280	3663
647	5269	3652
646	5258	3641
645	5247	3630
644	5236	3619
643	5225	3608
642	5214	3597
641	5203	3586
640	5192	3575
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
639	5181	3564
638	5170	3564
637	5159	3553
636	5148	3553
635	5137	3542
634	5126	3542
633	5115	3531
632	5104	3520
631	5093	3509
630	5082	3509
629	5071	3498
628	5060	3498
627	5049	3487
626	5038	3476
625	5027	3465
624	5016	3454
623	5005	3443
622	4994	3443
621	4983	3432
620	4972	3432
619	4961	3421
618	4950	3421
617	4939	3410
616	4928	3399
615	4917	3388
614	4906	3377
613	4895	3366
612	4884	3355
611	4873	3344
610	4862	3333
609	4851	3322
608	4840	3311
607	4829	3300
606	4818	3300
605	4807	3289
604	4796	3289
603	4785	3278
602	4774	3278
601	4763	3267
600	4752	3256
599	4741	3245
598	4730	3245
597	4719	3234
596	4708	3234
595	4697	3223
594	4686	3212
593	4675	3201
592	4664	3190
591	4653	3179
590	4642	3168
589	4631	3157

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
588	4620	3146
587	4609	3135
586	4598	3124
585	4587	3113
584	4576	3102
583	4565	3091
582	4554	3080
581	4543	3069
580	4532	3058
579	4521	3047
578	4510	3036
577	4499	3025
576	4488	3014
575	4477	3003
574	4466	2992
573	4455	2981
572	4444	2970
571	4433	2959
570	4422	2948
569	4411	2937
568	4400	2926
567	4389	2915
566	4378	2904
565	4367	2893
564	4356	2882
563	4345	2871
562	4334	2860
561	4323	2849
560	4312	2838
559	4301	2827
558	4290	2816
557	4279	2805
556	4268	2794
555	4257	2783
554	4246	2772
553	4235	2761
552	4224	2750
551	4213	2739
550	4202	2728
549	4191	2717
548	4180	2706
547	4169	2695
546	4158	2684
545	4147	2673
544	4136	2662
543	4125	2651
542	4114	2640
541	4103	2629
540	4092	2618
539	4081	2607
538	4070	2596
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
537	4059	2585
536	4048	2574
535	4037	2563
534	4026	2552
533	4015	2541
532	4004	2530
531	3993	2519
530	3982	2508
529	3971	2497
528	3960	2486
527	3949	2475
526	3938	2464
525	3927	2453
524	3916	2442
523	3905	2431
522	3894	2420
521	3883	2409
520	3872	2398
519	3861	2387
518	3850	2376
517	3839	2365
516	3828	2354
515	3817	2343
514	3806	2332
513	3795	2321
512	3784	2310
511	3773	2299
510	3773	2299
509	3762	2299
508	3762	2299
507	3751	2288
506	3751	2288
505	3740	2288
504	3729	2288
503	3718	2277
502	3718	2277
501	3707	2277
500	3707	2277
499	3696	2266
498	3685	2266
497	3674	2255
496	3663	2244
495	3652	2233
494	3652	2233
493	3641	2233
492	3641	2233
491	3630	2222
490	3630	2222
489	3619	2222
488	3608	2222
487	3597	2211
		continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
486	3586	2211
485	3575	2200
484	3564	2200
483	3553	2189
482	3542	2178
481	3531	2167
480	3520	2156
479	3509	2145
478	3509	2145
477	3498	2145
476	3498	2145
475	3487	2134
474	3487	2134
473	3476	2134
472	3465	2134
471	3454	2123
470	3454	2123
469	3443	2123
468	3443	2123
467	3432	2112
466	3421	2112
465	3410	2101
464	3399	2090
463	3388	2079
462	3388	2079
461	3377	2068
460	3366	2068
459	3355	2057
458	3344	2057
457	3333	2046
456	3322	2035
455	3311	2024
454	3300	2024
453	3289	2013
452	3278	2002
451	3267	1991
450	3256	1980
449	3245	1969
448	3234	1958
447	3223	1947
446	3223	1947
445	3212	1947
444	3212	1947
443	3201	1936
442	3201	1936
441	3190	1936
440	3179	1936
439	3168	1925
438	3168	1925
437	3157	1925
436	3157	1925

continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
435	3146	1914
434	3135	1914
433	3124	1903
432	3113	1892
431	3102	1881
430	3102	1881
429	3091	1881
428	3091	1881
427	3080	1870
426	3080	1870
425	3069	1870
424	3058	1870
423	3047	1859
422	3047	1859
421	3036	1848
420	3025	1848
419	3014	1837
418	3003	1826
417	2992	1815
416	2981	1804
415	2970	1793
414	2970	1793
413	2959	1793
412	2959	1793
411	2948	1782
410	2948	1782
409	2937	1782
408	2926	1771
407	2915	1760
406	2904	1760
405	2893	1749
404	2882	1749
403	2871	1738
402	2860	1738
401	2849	1727
400	2838	1716
399	2827	1705
398	2816	1705
397	2805	1694
396	2794	1694
395	2783	1683
394	2772	1672
393	2761	1661
392	2750	1650
391	2739	1639
390	2728	1628
389	2717	1617
388	2706	1606
387	2695	1595
386	2684	1584
385	2673	1573

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
384	2662	1562
383	2651	1551
382	2651	1551
381	2640	1551
380	2640	1551
379	2629	1540
378	2629	1540
377	2618	1540
376	2607	1540
375	2596	1529
374	2596	1529
373	2585	1529
372	2585	1529
371	2574	1518
370	2574	1518
369	2563	1507
368	2552	1496
367	2541	1485
366	2541	1485
365	2530	1485
364	2530	1485
363	2519	1474
362	2519	1474
361	2508	1474
360	2497	1474
359	2486	1463
358	2486	1463
357	2475	1463
356	2464	1463
355	2453	1452
354	2442	1452
353	2431	1441
352	2420	1430
351	2409	1419
350	2409	1419
349	2398	1419
348	2398	1419
347	2387	1408
346	2387	1408
345	2376	1408
344	2365	1408
343	2354	1397
342	2354	1397
341	2343	1397
340	2343	1397
339	2332	1386
338	2332	1386
337	2321	1375
336	2310	1364
335	2299	1353
334	2299	1353

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
333	2288	1353
332	2288	1353
331	2277	1342
330	2277	1342
329	2266	1331
328	2255	1320
327	2244	1309
326	2233	1309
325	2222	1298
324	2211	1298
323	2200	1287
322	2189	1276
321	2178	1265
320	2167	1254
319	2156	1243
318	2156	1243
317	2145	1243
316	2145	1243
315	2134	1232
314	2134	1232
313	2123	1232
312	2112	1232
311	2101	1221
310	2101	1221
309	2090	1221
308	2090	1221
307	2079	1210
306	2079	1210
305	2068	1199
304	2057	1188
303	2046	1177
302	2046	1177
301	2035	1177
300	2035	1177
299	2024	1166
298	2024	1166
297	2013	1166
296	2002	1166
295	1991	1155
294	1991	1155
293	1980	1155
292	1980	1155
291	1969	1144
290	1958	1133
289	1947	1122
288	1936	1111
287	1925	1100
286	1914	1100
285	1903	1089
284	1892	1089
283	1881	1078

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
282	1870	1078
281	1859	1067
280	1848	1067
279	1837	1056
278	1826	1056
277	1815	1045
276	1804	1045
275	1793	1034
274	1782	1034
273	1771	1023
272	1760	1012
271	1749	1001
270	1738	990
269	1727	979
268	1716	968
267	1705	957
266	1694	946
265	1683	935
264	1672	924
263	1661	913
262	1650	902
261	1639	891
260	1628	880
259	1617	869
258	1606	858
257	1595	847
256	1584	836
255	1573	825
254	1573	825
253	1562	825
252	1562	825
251	1551	814
250	1551	814
249	1540	814
248	1540	814
247	1529	803
246	1529	803
245	1518	803
244	1518	803
243	1507	792
242	1507	792
241	1496	792
240	1485	792
239	1474	781
238	1474	781
237	1463	781
236	1463	781
235	1452	770
234	1452	770
233	1441	770
232	1441	770

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
231	1430	759
230	1430	759
229	1419	759
228	1419	759
227	1408	748
226	1397	748
225	1386	737
224	1375	726
223	1364	715
222	1364	715
221	1353	715
220	1353	715
219	1342	704
218	1342	704
217	1331	704
216	1331	704
215	1320	693
214	1320	693
213	1309	693
212	1309	693
211	1298	682
210	1298	682
209	1287	682
208	1276	682
207	1265	671
206	1265	671
205	1254	671
204	1254	671
203	1243	660
202	1243	660
201	1232	660
200	1232	660
199	1221	649
198	1221	649
197	1210	638
196	1199	638
195	1188	627
194	1177	627
193	1166	616
192	1155	605
191	1144	594
190	1144	594
189	1133	594
188	1133	594
187	1122	583
186	1122	583
185	1111	583
184	1111	583
183	1100	572
182	1100	572
181	1089	572

continued

$m = 11$		
ν	10	9
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
180	1089	572
179	1078	561
178	1078	561
177	1067	561
176	1056	561
175	1045	550
174	1045	550
173	1034	550
172	1034	550
171	1023	539
170	1023	539
169	1012	539
168	1012	539
167	1001	528
166	1001	528
165	990	528
164	990	528
163	979	517
162	979	517
161	968	506
160	957	495
159	946	484
158	946	484
157	935	484
156	935	484
155	924	473
154	924	473
153	913	473
152	913	473
151	902	462
150	902	462
149	891	462
148	891	462
147	880	451
146	880	451
145	869	451
144	858	451
143	847	440
142	847	440
141	836	440
140	836	440
139	825	429
138	825	429
137	814	429
136	814	429
135	803	418
134	792	418
133	781	407
132	770	407
131	759	396
130	748	385

continued

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
129	737	374
128	726	363
127	715	352
126	715	352
125	704	352
124	704	352
123	693	341
122	693	341
121	682	341
120	682	341
119	671	330
118	671	330
117	660	330
116	660	330
115	649	319
114	649	319
113	638	319
112	638	319
111	627	308
110	627	308
109	616	308
108	616	308
107	605	297
106	605	297
105	594	297
104	594	297
103	583	286
102	583	286
101	572	286
100	572	286
99	561	275
98	561	275
97	550	275
96	539	275
95	528	264
94	528	264
93	517	264
92	517	264
91	506	253
90	506	253
89	495	253
88	495	253
87	484	242
86	484	242
85	473	242
84	473	242
83	462	231
82	462	231
81	451	231
80	451	231
79	440	220

continued

$m = 11$		
ν	10	9
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
78	440	220
77	429	220
76	429	220
75	418	209
74	418	209
73	407	209
72	407	209
71	396	198
70	396	198
69	385	198
68	385	198
67	374	187
66	374	187
65	363	176
64	352	176
63	341	165
62	341	165
61	330	165
60	330	165
59	319	154
58	319	154
57	308	154
56	308	154
55	297	143
54	297	143
53	286	143
52	286	143
51	275	132
50	275	132
49	264	132
48	264	132
47	253	121
46	253	121
45	242	121
44	242	121
43	231	110
42	231	110
41	220	110
40	220	110
39	209	99
38	209	99
37	198	99
36	198	99
35	187	88
34	187	88
33	176	88
32	176	88
31	165	77
30	165	77
29	154	77
28	154	77
continued		

$m = 11$		
ν	10	9
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$
k_0	K	K
27	143	66
26	143	66
25	132	66
24	132	66
23	121	55
22	121	55
21	110	55
20	110	55
19	99	44
18	99	44
17	88	44
16	88	44
15	77	33
14	77	33
13	66	33
12	66	33
11	55	22
10	55	22
9	44	22
8	44	22
7	33	11
6	33	11
5	22	11
4	22	11
3	11	0
2	11	0
1	0	0

C.9 $m = 12, n = 4095$

$m = 12$							
ν	11	10					
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
4094	45034	40940	40940	40940	40940	40940	40940
4093	45022	40928	40928	40928	40928	40928	40928
4092	45010	40916	40916	40916	40916	40916	40916
4091	44998	40904	40904	40904	40904	40904	40904
4090	44986	40892	40892	40892	40892	40892	40892
4089	44974	40880	40880	40880	40880	40880	40880
4088	44962	40868	40868	40868	40868	40868	40868
4087	44950	40856	40856	40856	40856	40856	40856
4086	44938	40844	40844	40844	40844	40844	40844
4085	44926	40832	40832	40832	40832	40832	40832
4084	44914	40820	40820	40820	40820	40820	40820
4083	44902	40808	40808	40808	40808	40808	40808
4082	44890	40796	40796	40796	40796	40796	40796
4081	44878	40784	40784	40784	40784	40784	40784
4080	44866	40772	40772	40772	40772	40772	40772

continued

$m=12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
4079	44854	40760	40760	40760	40760	40760	40760
4078	44842	40748	40748	40748	40748	40748	40748
4077	44830	40736	40736	40736	40736	40736	40736
4076	44818	40724	40724	40724	40724	40724	40724
4075	44806	40712	40712	40712	40712	40712	40712
4074	44794	40700	40700	40700	40700	40700	40700
4073	44782	40688	40688	40688	40688	40688	40688
4072	44770	40676	40676	40676	40676	40676	40676
4071	44758	40664	40664	40664	40664	40664	40664
4070	44746	40652	40652	40652	40652	40652	40652
4069	44734	40640	40640	40640	40640	40640	40640
4068	44722	40628	40628	40628	40628	40628	40628
4067	44710	40616	40616	40616	40616	40616	40616
4066	44698	40604	40604	40604	40604	40604	40604
4065	44686	40592	40592	40592	40592	40592	40592
4064	44674	40580	40580	40580	40580	40580	40580
4063	44662	40568	40568	40568	40568	40568	40568
4062	44650	40556	40556	40556	40556	40556	40556
4061	44638	40544	40544	40544	40544	40544	40544
4060	44626	40532	40532	40532	40532	40532	40532
4059	44614	40520	40520	40520	40520	40520	40520
4058	44602	40508	40508	40508	40508	40508	40508
4057	44590	40496	40496	40496	40496	40496	40496
4056	44578	40484	40484	40484	40484	40484	40484
4055	44566	40472	40472	40472	40472	40472	40472
4054	44554	40460	40460	40460	40460	40460	40460
4053	44542	40448	40448	40448	40448	40448	40448
4052	44530	40436	40436	40436	40436	40436	40436
4051	44518	40424	40424	40424	40424	40424	40424
4050	44506	40412	40412	40412	40412	40412	40412
4049	44494	40400	40400	40400	40400	40400	40400
4048	44482	40388	40388	40388	40388	40388	40388
4047	44470	40376	40376	40376	40376	40376	40376
4046	44458	40364	40364	40364	40364	40364	40364
4045	44446	40352	40352	40352	40352	40352	40352
4044	44434	40340	40340	40340	40340	40340	40340
4043	44422	40328	40328	40328	40328	40328	40328
4042	44410	40316	40316	40316	40316	40316	40316
4041	44398	40304	40304	40304	40304	40304	40304
4040	44386	40292	40292	40292	40292	40292	40292
4039	44374	40280	40280	40280	40280	40280	40280
4038	44362	40268	40268	40268	40268	40268	40268
4037	44350	40256	40256	40256	40256	40256	40256
4036	44338	40244	40244	40244	40244	40244	40244
4035	44326	40232	40232	40232	40232	40232	40232
4034	44314	40220	40220	40220	40220	40220	40220
4033	44302	40208	40208	40208	40208	40208	40208
4032	44290	40196	40196	40196	40196	40196	40196
4031	44278	40184	40184	40184	40184	40184	40184
4030	44266	40172	40172	40172	40172	40172	40172
4029	44254	40160	40160	40160	40160	40160	40160

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
4028	44242	40148	40148	40148	40148	40148	40148
4027	44230	40136	40136	40136	40136	40136	40136
4026	44218	40124	40124	40124	40124	40124	40124
4025	44206	40112	40112	40112	40112	40112	40112
4024	44194	40100	40100	40100	40100	40100	40100
4023	44182	40088	40088	40088	40088	40088	40088
4022	44170	40076	40076	40076	40076	40076	40076
4021	44158	40064	40064	40064	40064	40064	40064
4020	44146	40052	40052	40052	40052	40052	40052
4019	44134	40040	40040	40040	40040	40040	40040
4018	44122	40028	40028	40028	40028	40028	40028
4017	44110	40016	40016	40016	40016	40016	40016
4016	44098	40004	40004	40004	40004	40004	40004
4015	44086	39992	39992	39992	39992	39992	39992
4014	44074	39980	39980	39980	39980	39980	39980
4013	44062	39968	39968	39968	39968	39968	39968
4012	44050	39956	39956	39956	39956	39956	39956
4011	44038	39944	39944	39944	39944	39944	39944
4010	44026	39932	39932	39932	39932	39932	39932
4009	44014	39920	39920	39920	39920	39920	39920
4008	44002	39908	39908	39908	39908	39908	39908
4007	43990	39896	39896	39896	39896	39896	39896
4006	43978	39884	39884	39884	39884	39884	39884
4005	43966	39872	39872	39872	39872	39872	39872
4004	43954	39860	39860	39860	39860	39860	39860
4003	43942	39848	39848	39848	39848	39848	39848
4002	43930	39836	39836	39836	39836	39836	39836
4001	43918	39824	39824	39824	39824	39824	39824
4000	43906	39812	39812	39812	39812	39812	39812
3999	43894	39800	39800	39800	39800	39800	39800
3998	43882	39788	39788	39788	39788	39788	39788
3997	43870	39776	39776	39776	39776	39776	39776
3996	43858	39764	39764	39764	39764	39764	39764
3995	43846	39752	39752	39752	39752	39752	39752
3994	43834	39740	39740	39740	39740	39740	39740
3993	43822	39728	39728	39728	39728	39728	39728
3992	43810	39716	39716	39716	39716	39716	39716
3991	43798	39704	39704	39704	39704	39704	39704
3990	43786	39692	39692	39692	39692	39692	39692
3989	43774	39680	39680	39680	39680	39680	39680
3988	43762	39668	39668	39668	39668	39668	39668
3987	43750	39656	39656	39656	39656	39656	39656
3986	43738	39644	39644	39644	39644	39644	39644
3985	43726	39632	39632	39632	39632	39632	39632
3984	43714	39620	39620	39620	39620	39620	39620
3983	43702	39608	39608	39608	39608	39608	39608
3982	43690	39596	39596	39596	39596	39596	39596
3981	43678	39584	39584	39584	39584	39584	39584
3980	43666	39572	39572	39572	39572	39572	39572
3979	43654	39560	39560	39560	39560	39560	39560
3978	43642	39548	39548	39548	39548	39548	39548

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3977	43630	39536	39536	39536	39536	39536	39536
3976	43618	39524	39524	39524	39524	39524	39524
3975	43606	39512	39512	39512	39512	39512	39512
3974	43594	39500	39500	39500	39500	39500	39500
3973	43582	39488	39488	39488	39488	39488	39488
3972	43570	39476	39476	39476	39476	39476	39476
3971	43558	39464	39464	39464	39464	39464	39464
3970	43546	39452	39452	39452	39452	39452	39452
3969	43534	39440	39440	39440	39440	39440	39440
3968	43522	39428	39428	39428	39428	39428	39428
3967	43510	39416	39416	39416	39416	39416	39416
3966	43498	39404	39404	39404	39404	39404	39404
3965	43486	39392	39392	39392	39392	39392	39392
3964	43474	39380	39380	39380	39380	39380	39380
3963	43462	39368	39368	39368	39368	39368	39368
3962	43450	39356	39356	39356	39356	39356	39356
3961	43438	39344	39344	39344	39344	39344	39344
3960	43426	39332	39332	39332	39332	39332	39332
3959	43414	39320	39320	39320	39320	39320	39320
3958	43402	39308	39308	39308	39308	39308	39308
3957	43390	39296	39296	39296	39296	39296	39296
3956	43378	39284	39284	39284	39284	39284	39284
3955	43366	39272	39272	39272	39272	39272	39272
3954	43354	39260	39260	39260	39260	39260	39260
3953	43342	39248	39248	39248	39248	39248	39248
3952	43330	39236	39236	39236	39236	39236	39236
3951	43318	39224	39224	39224	39224	39224	39224
3950	43306	39212	39212	39212	39212	39212	39212
3949	43294	39200	39200	39200	39200	39200	39200
3948	43282	39188	39188	39188	39188	39188	39188
3947	43270	39176	39176	39176	39176	39176	39176
3946	43258	39164	39164	39164	39164	39164	39164
3945	43246	39152	39152	39152	39152	39152	39152
3944	43234	39140	39140	39140	39140	39140	39140
3943	43222	39128	39128	39128	39128	39128	39128
3942	43210	39116	39116	39116	39116	39116	39116
3941	43198	39104	39104	39104	39104	39104	39104
3940	43186	39092	39092	39092	39092	39092	39092
3939	43174	39080	39080	39080	39080	39080	39080
3938	43162	39068	39068	39068	39068	39068	39068
3937	43150	39056	39056	39056	39056	39056	39056
3936	43138	39044	39044	39044	39044	39044	39044
3935	43126	39032	39032	39032	39032	39032	39032
3934	43114	39020	39020	39020	39020	39020	39020
3933	43102	39008	39008	39008	39008	39008	39008
3932	43090	38996	38996	38996	38996	38996	38996
3931	43078	38984	38984	38984	38984	38984	38984
3930	43066	38972	38972	38972	38972	38972	38972
3929	43054	38960	38960	38960	38960	38960	38960
3928	43042	38948	38948	38948	38948	38948	38948
3927	43030	38936	38936	38936	38936	38936	38936

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3926	43018	38924	38924	38924	38924	38924	38924
3925	43006	38912	38912	38912	38912	38912	38912
3924	42994	38900	38900	38900	38900	38900	38900
3923	42982	38888	38888	38888	38888	38888	38888
3922	42970	38876	38876	38876	38876	38876	38876
3921	42958	38864	38864	38864	38864	38864	38864
3920	42946	38852	38852	38852	38852	38852	38852
3919	42934	38840	38840	38840	38840	38840	38840
3918	42922	38828	38828	38828	38828	38828	38828
3917	42910	38816	38816	38816	38816	38816	38816
3916	42898	38804	38804	38804	38804	38804	38804
3915	42886	38792	38792	38792	38792	38792	38792
3914	42874	38780	38780	38780	38780	38780	38780
3913	42862	38768	38768	38768	38768	38768	38768
3912	42850	38756	38756	38756	38756	38756	38756
3911	42838	38744	38744	38744	38744	38744	38744
3910	42826	38732	38732	38732	38732	38732	38732
3909	42814	38720	38720	38720	38720	38720	38720
3908	42802	38708	38708	38708	38708	38708	38708
3907	42790	38696	38696	38696	38696	38696	38696
3906	42778	38684	38684	38684	38684	38684	38684
3905	42766	38672	38672	38672	38672	38672	38672
3904	42754	38660	38660	38660	38660	38660	38660
3903	42742	38648	38648	38648	38648	38648	38648
3902	42730	38636	38636	38636	38636	38636	38636
3901	42718	38624	38624	38624	38624	38624	38624
3900	42706	38612	38612	38612	38612	38612	38612
3899	42694	38600	38600	38600	38600	38600	38600
3898	42682	38588	38588	38588	38588	38588	38588
3897	42670	38576	38576	38576	38576	38576	38576
3896	42658	38564	38564	38564	38564	38564	38564
3895	42646	38552	38552	38552	38552	38552	38552
3894	42634	38540	38540	38540	38540	38540	38540
3893	42622	38528	38528	38528	38528	38528	38528
3892	42610	38516	38516	38516	38516	38516	38516
3891	42598	38504	38504	38504	38504	38504	38504
3890	42586	38492	38492	38492	38492	38492	38492
3889	42574	38480	38480	38480	38480	38480	38480
3888	42562	38468	38468	38468	38468	38468	38468
3887	42550	38456	38456	38456	38456	38456	38456
3886	42538	38444	38444	38444	38444	38444	38444
3885	42526	38432	38432	38432	38432	38432	38432
3884	42514	38420	38420	38420	38420	38420	38420
3883	42502	38408	38408	38408	38408	38408	38408
3882	42490	38396	38396	38396	38396	38396	38396
3881	42478	38384	38384	38384	38384	38384	38384
3880	42466	38372	38372	38372	38372	38372	38372
3879	42454	38360	38360	38360	38360	38360	38360
3878	42442	38348	38348	38348	38348	38348	38348
3877	42430	38336	38336	38336	38336	38336	38336
3876	42418	38324	38324	38324	38324	38324	38324

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3875	42406	38312	38312	38312	38312	38312	38312
3874	42394	38300	38300	38300	38300	38300	38300
3873	42382	38288	38288	38288	38288	38288	38288
3872	42370	38276	38276	38276	38276	38276	38276
3871	42358	38264	38264	38264	38264	38264	38264
3870	42346	38252	38252	38252	38252	38252	38252
3869	42334	38240	38240	38240	38240	38240	38240
3868	42322	38228	38228	38228	38228	38228	38228
3867	42310	38216	38216	38216	38216	38216	38216
3866	42298	38204	38204	38204	38204	38204	38204
3865	42286	38192	38192	38192	38192	38192	38192
3864	42274	38180	38180	38180	38180	38180	38180
3863	42262	38168	38168	38168	38168	38168	38168
3862	42250	38156	38156	38156	38156	38156	38156
3861	42238	38144	38144	38144	38144	38144	38144
3860	42226	38132	38132	38132	38132	38132	38132
3859	42214	38120	38120	38120	38120	38120	38120
3858	42202	38108	38108	38108	38108	38108	38108
3857	42190	38096	38096	38096	38096	38096	38096
3856	42178	38084	38084	38084	38084	38084	38084
3855	42166	38072	38072	38072	38072	38072	38072
3854	42154	38060	38060	38060	38060	38060	38060
3853	42142	38048	38048	38048	38048	38048	38048
3852	42130	38036	38036	38036	38036	38036	38036
3851	42118	38024	38024	38024	38024	38024	38024
3850	42106	38012	38012	38012	38012	38012	38012
3849	42094	38000	38000	38000	38000	38000	38000
3848	42082	37988	37988	37988	37988	37988	37988
3847	42070	37976	37976	37976	37976	37976	37976
3846	42058	37964	37964	37964	37964	37964	37964
3845	42046	37952	37952	37952	37952	37952	37952
3844	42034	37940	37940	37940	37940	37940	37940
3843	42022	37928	37928	37928	37928	37928	37928
3842	42010	37916	37916	37916	37916	37916	37916
3841	41998	37904	37904	37904	37904	37904	37904
3840	41986	37892	37892	37892	37892	37892	37892
3839	41974	37880	37880	37880	37880	37880	37880
3838	41962	37868	37868	37868	37868	37868	37868
3837	41950	37856	37856	37856	37856	37856	37856
3836	41938	37844	37844	37844	37844	37844	37844
3835	41926	37832	37832	37832	37832	37832	37832
3834	41914	37820	37820	37820	37820	37820	37820
3833	41902	37808	37808	37808	37808	37808	37808
3832	41890	37796	37796	37796	37796	37796	37796
3831	41878	37784	37784	37784	37784	37784	37784
3830	41866	37772	37772	37772	37772	37772	37772
3829	41854	37760	37760	37760	37760	37760	37760
3828	41842	37748	37748	37748	37748	37748	37748
3827	41830	37736	37736	37736	37736	37736	37736
3826	41818	37724	37724	37724	37724	37724	37724
3825	41806	37712	37712	37712	37712	37712	37712

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3824	41794	37700	37700	37700	37700	37700	37700
3823	41782	37688	37688	37688	37688	37688	37688
3822	41770	37676	37676	37676	37676	37676	37676
3821	41758	37664	37664	37664	37664	37664	37664
3820	41746	37652	37652	37652	37652	37652	37652
3819	41734	37640	37640	37640	37640	37640	37640
3818	41722	37628	37628	37628	37628	37628	37628
3817	41710	37616	37616	37616	37616	37616	37616
3816	41698	37604	37604	37604	37604	37604	37604
3815	41686	37592	37592	37592	37592	37592	37592
3814	41674	37580	37580	37580	37580	37580	37580
3813	41662	37568	37568	37568	37568	37568	37568
3812	41650	37556	37556	37556	37556	37556	37556
3811	41638	37544	37544	37544	37544	37544	37544
3810	41626	37532	37532	37532	37532	37532	37532
3809	41614	37520	37520	37520	37520	37520	37520
3808	41602	37508	37508	37508	37508	37508	37508
3807	41590	37496	37496	37496	37496	37496	37496
3806	41578	37484	37484	37484	37484	37484	37484
3805	41566	37472	37472	37472	37472	37472	37472
3804	41554	37460	37460	37460	37460	37460	37460
3803	41542	37448	37448	37448	37448	37448	37448
3802	41530	37436	37436	37436	37436	37436	37436
3801	41518	37424	37424	37424	37424	37424	37424
3800	41506	37412	37412	37412	37412	37412	37412
3799	41494	37400	37400	37400	37400	37400	37400
3798	41482	37388	37388	37388	37388	37388	37388
3797	41470	37376	37376	37376	37376	37376	37376
3796	41458	37364	37364	37364	37364	37364	37364
3795	41446	37352	37352	37352	37352	37352	37352
3794	41434	37340	37340	37340	37340	37340	37340
3793	41422	37328	37328	37328	37328	37328	37328
3792	41410	37316	37316	37316	37316	37316	37316
3791	41398	37304	37304	37304	37304	37304	37304
3790	41386	37292	37292	37292	37292	37292	37292
3789	41374	37280	37280	37280	37280	37280	37280
3788	41362	37268	37268	37268	37268	37268	37268
3787	41350	37256	37256	37256	37256	37256	37256
3786	41338	37244	37244	37244	37244	37244	37244
3785	41326	37232	37232	37232	37232	37232	37232
3784	41314	37220	37220	37220	37220	37220	37220
3783	41302	37208	37208	37208	37208	37208	37208
3782	41290	37196	37196	37196	37196	37196	37196
3781	41278	37184	37184	37184	37184	37184	37184
3780	41266	37172	37172	37172	37172	37172	37172
3779	41254	37160	37160	37160	37160	37160	37160
3778	41242	37148	37148	37148	37148	37148	37148
3777	41230	37136	37136	37136	37136	37136	37136
3776	41218	37124	37124	37124	37124	37124	37124
3775	41206	37112	37112	37112	37112	37112	37112
3774	41194	37100	37100	37100	37100	37100	37100

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3773	41182	37088	37088	37088	37088	37088	37088
3772	41170	37076	37076	37076	37076	37076	37076
3771	41158	37064	37064	37064	37064	37064	37064
3770	41146	37052	37052	37052	37052	37052	37052
3769	41134	37040	37040	37040	37040	37040	37040
3768	41122	37028	37028	37028	37028	37028	37028
3767	41110	37016	37016	37016	37016	37016	37016
3766	41098	37004	37004	37004	37004	37004	37004
3765	41086	36992	36992	36992	36992	36992	36992
3764	41074	36980	36980	36980	36980	36980	36980
3763	41062	36968	36968	36968	36968	36968	36968
3762	41050	36956	36956	36956	36956	36956	36956
3761	41038	36944	36944	36944	36944	36944	36944
3760	41026	36932	36932	36932	36932	36932	36932
3759	41014	36920	36920	36920	36920	36920	36920
3758	41002	36908	36908	36908	36908	36908	36908
3757	40990	36896	36896	36896	36896	36896	36896
3756	40978	36884	36884	36884	36884	36884	36884
3755	40966	36872	36872	36872	36872	36872	36872
3754	40954	36860	36860	36860	36860	36860	36860
3753	40942	36848	36848	36848	36848	36848	36848
3752	40930	36836	36836	36836	36836	36836	36836
3751	40918	36824	36824	36824	36824	36824	36824
3750	40906	36812	36812	36812	36812	36812	36812
3749	40894	36800	36800	36800	36800	36800	36800
3748	40882	36788	36788	36788	36788	36788	36788
3747	40870	36776	36776	36776	36776	36776	36776
3746	40858	36764	36764	36764	36764	36764	36764
3745	40846	36752	36752	36752	36752	36752	36752
3744	40834	36740	36740	36740	36740	36740	36740
3743	40822	36728	36728	36728	36728	36728	36728
3742	40810	36716	36716	36716	36716	36716	36716
3741	40798	36704	36704	36704	36704	36704	36704
3740	40786	36692	36692	36692	36692	36692	36692
3739	40774	36680	36680	36680	36680	36680	36680
3738	40762	36668	36668	36668	36668	36668	36668
3737	40750	36656	36656	36656	36656	36656	36656
3736	40738	36644	36644	36644	36644	36644	36644
3735	40726	36632	36632	36632	36632	36632	36632
3734	40714	36620	36620	36620	36620	36620	36620
3733	40702	36608	36608	36608	36608	36608	36608
3732	40690	36596	36596	36596	36596	36596	36596
3731	40678	36584	36584	36584	36584	36584	36584
3730	40666	36572	36572	36572	36572	36572	36572
3729	40654	36560	36560	36560	36560	36560	36560
3728	40642	36548	36548	36548	36548	36548	36548
3727	40630	36536	36536	36536	36536	36536	36536
3726	40618	36524	36524	36524	36524	36524	36524
3725	40606	36512	36512	36512	36512	36512	36512
3724	40594	36500	36500	36500	36500	36500	36500
3723	40582	36488	36488	36488	36488	36488	36488

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3722	40570	36476	36476	36476	36476	36476	36476
3721	40558	36464	36464	36464	36464	36464	36464
3720	40546	36452	36452	36452	36452	36452	36452
3719	40534	36440	36440	36440	36440	36440	36440
3718	40522	36428	36428	36428	36428	36428	36428
3717	40510	36416	36416	36416	36416	36416	36416
3716	40498	36404	36404	36404	36404	36404	36404
3715	40486	36392	36392	36392	36392	36392	36392
3714	40474	36380	36380	36380	36380	36380	36380
3713	40462	36368	36368	36368	36368	36368	36368
3712	40450	36356	36356	36356	36356	36356	36356
3711	40438	36344	36344	36344	36344	36344	36344
3710	40426	36332	36332	36332	36332	36332	36332
3709	40414	36320	36320	36320	36320	36320	36320
3708	40402	36308	36308	36308	36308	36308	36308
3707	40390	36296	36296	36296	36296	36296	36296
3706	40378	36284	36284	36284	36284	36284	36284
3705	40366	36272	36272	36272	36272	36272	36272
3704	40354	36260	36260	36260	36260	36260	36260
3703	40342	36248	36248	36248	36248	36248	36248
3702	40330	36236	36236	36236	36236	36236	36236
3701	40318	36224	36224	36224	36224	36224	36224
3700	40306	36212	36212	36212	36212	36212	36212
3699	40294	36200	36200	36200	36200	36200	36200
3698	40282	36188	36188	36188	36188	36188	36188
3697	40270	36176	36176	36176	36176	36176	36176
3696	40258	36164	36164	36164	36164	36164	36164
3695	40246	36152	36152	36152	36152	36152	36152
3694	40234	36140	36140	36140	36140	36140	36140
3693	40222	36128	36128	36128	36128	36128	36128
3692	40210	36116	36116	36116	36116	36116	36116
3691	40198	36104	36104	36104	36104	36104	36104
3690	40186	36092	36092	36092	36092	36092	36092
3689	40174	36080	36080	36080	36080	36080	36080
3688	40162	36068	36068	36068	36068	36068	36068
3687	40150	36056	36056	36056	36056	36056	36056
3686	40138	36044	36044	36044	36044	36044	36044
3685	40126	36032	36032	36032	36032	36032	36032
3684	40114	36020	36020	36020	36020	36020	36020
3683	40102	36008	36008	36008	36008	36008	36008
3682	40090	35996	35996	35996	35996	35996	35996
3681	40078	35984	35984	35984	35984	35984	35984
3680	40066	35972	35972	35972	35972	35972	35972
3679	40054	35960	35960	35960	35960	35960	35960
3678	40042	35948	35948	35948	35948	35948	35948
3677	40030	35936	35936	35936	35936	35936	35936
3676	40018	35924	35924	35924	35924	35924	35924
3675	40006	35912	35912	35912	35912	35912	35912
3674	39994	35900	35900	35900	35900	35900	35900
3673	39982	35888	35888	35888	35888	35888	35888
3672	39970	35876	35876	35876	35876	35876	35876

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3671	39958	35864	35864	35864	35864	35864	35864
3670	39946	35852	35852	35852	35852	35852	35852
3669	39934	35840	35840	35840	35840	35840	35840
3668	39922	35828	35828	35828	35828	35828	35828
3667	39910	35816	35816	35816	35816	35816	35816
3666	39898	35804	35804	35804	35804	35804	35804
3665	39886	35792	35792	35792	35792	35792	35792
3664	39874	35780	35780	35780	35780	35780	35780
3663	39862	35768	35768	35768	35768	35768	35768
3662	39850	35756	35756	35756	35756	35756	35756
3661	39838	35744	35744	35744	35744	35744	35744
3660	39826	35732	35732	35732	35732	35732	35732
3659	39814	35720	35720	35720	35720	35720	35720
3658	39802	35708	35708	35708	35708	35708	35708
3657	39790	35696	35696	35696	35696	35696	35696
3656	39778	35684	35684	35684	35684	35684	35684
3655	39766	35672	35672	35672	35672	35672	35672
3654	39754	35660	35660	35660	35660	35660	35660
3653	39742	35648	35648	35648	35648	35648	35648
3652	39730	35636	35636	35636	35636	35636	35636
3651	39718	35624	35624	35624	35624	35624	35624
3650	39706	35612	35612	35612	35612	35612	35612
3649	39694	35600	35600	35600	35600	35600	35600
3648	39682	35588	35588	35588	35588	35588	35588
3647	39670	35576	35576	35576	35576	35576	35576
3646	39658	35564	35564	35564	35564	35564	35564
3645	39646	35552	35552	35552	35552	35552	35552
3644	39634	35540	35540	35540	35540	35540	35540
3643	39622	35528	35528	35528	35528	35528	35528
3642	39610	35516	35516	35516	35516	35516	35516
3641	39598	35504	35504	35504	35504	35504	35504
3640	39586	35492	35492	35492	35492	35492	35492
3639	39574	35480	35480	35480	35480	35480	35480
3638	39562	35468	35468	35468	35468	35468	35468
3637	39550	35456	35456	35456	35456	35456	35456
3636	39538	35444	35444	35444	35444	35444	35444
3635	39526	35432	35432	35432	35432	35432	35432
3634	39514	35420	35420	35420	35420	35420	35420
3633	39502	35408	35408	35408	35408	35408	35408
3632	39490	35396	35396	35396	35396	35396	35396
3631	39478	35384	35384	35384	35384	35384	35384
3630	39466	35372	35372	35372	35372	35372	35372
3629	39454	35360	35360	35360	35360	35360	35360
3628	39442	35348	35348	35348	35348	35348	35348
3627	39430	35336	35336	35336	35336	35336	35336
3626	39418	35324	35324	35324	35324	35324	35324
3625	39406	35312	35312	35312	35312	35312	35312
3624	39394	35300	35300	35300	35300	35300	35300
3623	39382	35288	35288	35288	35288	35288	35288
3622	39370	35276	35276	35276	35276	35276	35276
3621	39358	35264	35264	35264	35264	35264	35264

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3620	39346	35252	35252	35252	35252	35252	35252
3619	39334	35240	35240	35240	35240	35240	35240
3618	39322	35228	35228	35228	35228	35228	35228
3617	39310	35216	35216	35216	35216	35216	35216
3616	39298	35204	35204	35204	35204	35204	35204
3615	39286	35192	35192	35192	35192	35192	35192
3614	39274	35180	35180	35180	35180	35180	35180
3613	39262	35168	35168	35168	35168	35168	35168
3612	39250	35156	35156	35156	35156	35156	35156
3611	39238	35144	35144	35144	35144	35144	35144
3610	39226	35132	35132	35132	35132	35132	35132
3609	39214	35120	35120	35120	35120	35120	35120
3608	39202	35108	35108	35108	35108	35108	35108
3607	39190	35096	35096	35096	35096	35096	35096
3606	39178	35084	35084	35084	35084	35084	35084
3605	39166	35072	35072	35072	35072	35072	35072
3604	39154	35060	35060	35060	35060	35060	35060
3603	39142	35048	35048	35048	35048	35048	35048
3602	39130	35036	35036	35036	35036	35036	35036
3601	39118	35024	35024	35024	35024	35024	35024
3600	39106	35012	35012	35012	35012	35012	35012
3599	39094	35000	35000	35000	35000	35000	35000
3598	39082	34988	34988	34988	34988	34988	34988
3597	39070	34976	34976	34976	34976	34976	34976
3596	39058	34964	34964	34964	34964	34964	34964
3595	39046	34952	34952	34952	34952	34952	34952
3594	39034	34940	34940	34940	34940	34940	34940
3593	39022	34928	34928	34928	34928	34928	34928
3592	39010	34916	34916	34916	34916	34916	34916
3591	38998	34904	34904	34904	34904	34904	34904
3590	38986	34892	34892	34892	34892	34892	34892
3589	38974	34880	34880	34880	34880	34880	34880
3588	38962	34868	34868	34868	34868	34868	34868
3587	38950	34856	34856	34856	34856	34856	34856
3586	38938	34844	34844	34844	34844	34844	34844
3585	38926	34832	34832	34832	34832	34832	34832
3584	38914	34820	34820	34820	34820	34820	34820
3583	38902	34808	34808	34808	34808	34808	34808
3582	38890	34796	34796	34796	34796	34796	34796
3581	38878	34784	34784	34784	34784	34784	34784
3580	38866	34772	34772	34772	34772	34772	34772
3579	38854	34760	34760	34760	34760	34760	34760
3578	38842	34748	34748	34748	34748	34748	34748
3577	38830	34736	34736	34736	34736	34736	34736
3576	38818	34724	34724	34724	34724	34724	34724
3575	38806	34712	34712	34712	34712	34712	34712
3574	38794	34700	34700	34700	34700	34700	34700
3573	38782	34688	34688	34688	34688	34688	34688
3572	38770	34676	34676	34676	34676	34676	34676
3571	38758	34664	34664	34664	34664	34664	34664
3570	38746	34652	34652	34652	34652	34652	34652

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3569	38734	34640	34640	34640	34640	34640	34640
3568	38722	34628	34628	34628	34628	34628	34628
3567	38710	34616	34616	34616	34616	34616	34616
3566	38698	34604	34604	34604	34604	34604	34604
3565	38686	34592	34592	34592	34592	34592	34592
3564	38674	34580	34580	34580	34580	34580	34580
3563	38662	34568	34568	34568	34568	34568	34568
3562	38650	34556	34556	34556	34556	34556	34556
3561	38638	34544	34544	34544	34544	34544	34544
3560	38626	34532	34532	34532	34532	34532	34532
3559	38614	34520	34520	34520	34520	34520	34520
3558	38602	34508	34508	34508	34508	34508	34508
3557	38590	34496	34496	34496	34496	34496	34496
3556	38578	34484	34484	34484	34484	34484	34484
3555	38566	34472	34472	34472	34472	34472	34472
3554	38554	34460	34460	34460	34460	34460	34460
3553	38542	34448	34448	34448	34448	34448	34448
3552	38530	34436	34436	34436	34436	34436	34436
3551	38518	34424	34424	34424	34424	34424	34424
3550	38506	34412	34412	34412	34412	34412	34412
3549	38494	34400	34400	34400	34400	34400	34400
3548	38482	34388	34388	34388	34388	34388	34388
3547	38470	34376	34376	34376	34376	34376	34376
3546	38458	34364	34364	34364	34364	34364	34364
3545	38446	34352	34352	34352	34352	34352	34352
3544	38434	34340	34340	34340	34340	34340	34340
3543	38422	34328	34328	34328	34328	34328	34328
3542	38410	34316	34316	34316	34316	34316	34316
3541	38398	34304	34304	34304	34304	34304	34304
3540	38386	34292	34292	34292	34292	34292	34292
3539	38374	34280	34280	34280	34280	34280	34280
3538	38362	34268	34268	34268	34268	34268	34268
3537	38350	34256	34256	34256	34256	34256	34256
3536	38338	34244	34244	34244	34244	34244	34244
3535	38326	34232	34232	34232	34232	34232	34232
3534	38314	34220	34220	34220	34220	34220	34220
3533	38302	34208	34208	34208	34208	34208	34208
3532	38290	34196	34196	34196	34196	34196	34196
3531	38278	34184	34184	34184	34184	34184	34184
3530	38266	34172	34172	34172	34172	34172	34172
3529	38254	34160	34160	34160	34160	34160	34160
3528	38242	34148	34148	34148	34148	34148	34148
3527	38230	34136	34136	34136	34136	34136	34136
3526	38218	34124	34124	34124	34124	34124	34124
3525	38206	34112	34112	34112	34112	34112	34112
3524	38194	34100	34100	34100	34100	34100	34100
3523	38182	34088	34088	34088	34088	34088	34088
3522	38170	34076	34076	34076	34076	34076	34076
3521	38158	34064	34064	34064	34064	34064	34064
3520	38146	34052	34052	34052	34052	34052	34052
3519	38134	34040	34040	34040	34040	34040	34040

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3518	38122	34028	34028	34028	34028	34028	34028
3517	38110	34016	34016	34016	34016	34016	34016
3516	38098	34004	34004	34004	34004	34004	34004
3515	38086	33992	33992	33992	33992	33992	33992
3514	38074	33980	33980	33980	33980	33980	33980
3513	38062	33968	33968	33968	33968	33968	33968
3512	38050	33956	33956	33956	33956	33956	33956
3511	38038	33944	33944	33944	33944	33944	33944
3510	38026	33932	33932	33932	33932	33932	33932
3509	38014	33920	33920	33920	33920	33920	33920
3508	38002	33908	33908	33908	33908	33908	33908
3507	37990	33896	33896	33896	33896	33896	33896
3506	37978	33884	33884	33884	33884	33884	33884
3505	37966	33872	33872	33872	33872	33872	33872
3504	37954	33860	33860	33860	33860	33860	33860
3503	37942	33848	33848	33848	33848	33848	33848
3502	37930	33836	33836	33836	33836	33836	33836
3501	37918	33824	33824	33824	33824	33824	33824
3500	37906	33812	33812	33812	33812	33812	33812
3499	37894	33800	33800	33800	33800	33800	33800
3498	37882	33788	33788	33788	33788	33788	33788
3497	37870	33776	33776	33776	33776	33776	33776
3496	37858	33764	33764	33764	33764	33764	33764
3495	37846	33752	33752	33752	33752	33752	33752
3494	37834	33740	33740	33740	33740	33740	33740
3493	37822	33728	33728	33728	33728	33728	33728
3492	37810	33716	33716	33716	33716	33716	33716
3491	37798	33704	33704	33704	33704	33704	33704
3490	37786	33692	33692	33692	33692	33692	33692
3489	37774	33680	33680	33680	33680	33680	33680
3488	37762	33668	33668	33668	33668	33668	33668
3487	37750	33656	33656	33656	33656	33656	33656
3486	37738	33644	33644	33644	33644	33644	33644
3485	37726	33632	33632	33632	33632	33632	33632
3484	37714	33620	33620	33620	33620	33620	33620
3483	37702	33608	33608	33608	33608	33608	33608
3482	37690	33596	33596	33596	33596	33596	33596
3481	37678	33584	33584	33584	33584	33584	33584
3480	37666	33572	33572	33572	33572	33572	33572
3479	37654	33560	33560	33560	33560	33560	33560
3478	37642	33548	33548	33548	33548	33548	33548
3477	37630	33536	33536	33536	33536	33536	33536
3476	37618	33524	33524	33524	33524	33524	33524
3475	37606	33512	33512	33512	33512	33512	33512
3474	37594	33500	33500	33500	33500	33500	33500
3473	37582	33488	33488	33488	33488	33488	33488
3472	37570	33476	33476	33476	33476	33476	33476
3471	37558	33464	33464	33464	33464	33464	33464
3470	37546	33452	33452	33452	33452	33452	33452
3469	37534	33440	33440	33440	33440	33440	33440
3468	37522	33428	33428	33428	33428	33428	33428

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3467	37510	33416	33416	33416	33416	33416	33416
3466	37498	33404	33404	33404	33404	33404	33404
3465	37486	33392	33392	33392	33392	33392	33392
3464	37474	33380	33380	33380	33380	33380	33380
3463	37462	33368	33368	33368	33368	33368	33368
3462	37450	33356	33356	33356	33356	33356	33356
3461	37438	33344	33344	33344	33344	33344	33344
3460	37426	33332	33332	33332	33332	33332	33332
3459	37414	33320	33320	33320	33320	33320	33320
3458	37402	33308	33308	33308	33308	33308	33308
3457	37390	33296	33296	33296	33296	33296	33296
3456	37378	33284	33284	33284	33284	33284	33284
3455	37366	33272	33272	33272	33272	33272	33272
3454	37354	33260	33260	33260	33260	33260	33260
3453	37342	33248	33248	33248	33248	33248	33248
3452	37330	33236	33236	33236	33236	33236	33236
3451	37318	33224	33224	33224	33224	33224	33224
3450	37306	33212	33212	33212	33212	33212	33212
3449	37294	33200	33200	33200	33200	33200	33200
3448	37282	33188	33188	33188	33188	33188	33188
3447	37270	33176	33176	33176	33176	33176	33176
3446	37258	33164	33164	33164	33164	33164	33164
3445	37246	33152	33152	33152	33152	33152	33152
3444	37234	33140	33140	33140	33140	33140	33140
3443	37222	33128	33128	33128	33128	33128	33128
3442	37210	33116	33116	33116	33116	33116	33116
3441	37198	33104	33104	33104	33104	33104	33104
3440	37186	33092	33092	33092	33092	33092	33092
3439	37174	33080	33080	33080	33080	33080	33080
3438	37162	33068	33068	33068	33068	33068	33068
3437	37150	33056	33056	33056	33056	33056	33056
3436	37138	33044	33044	33044	33044	33044	33044
3435	37126	33032	33032	33032	33032	33032	33032
3434	37114	33020	33020	33020	33020	33020	33020
3433	37102	33008	33008	33008	33008	33008	33008
3432	37090	32996	32996	32996	32996	32996	32996
3431	37078	32984	32984	32984	32984	32984	32984
3430	37066	32972	32972	32972	32972	32972	32972
3429	37054	32960	32960	32960	32960	32960	32960
3428	37042	32948	32948	32948	32948	32948	32948
3427	37030	32936	32936	32936	32936	32936	32936
3426	37018	32924	32924	32924	32924	32924	32924
3425	37006	32912	32912	32912	32912	32912	32912
3424	36994	32900	32900	32900	32900	32900	32900
3423	36982	32888	32888	32888	32888	32888	32888
3422	36970	32876	32876	32876	32876	32876	32876
3421	36958	32864	32864	32864	32864	32864	32864
3420	36946	32852	32852	32852	32852	32852	32852
3419	36934	32840	32840	32840	32840	32840	32840
3418	36922	32828	32828	32828	32828	32828	32828
3417	36910	32816	32816	32816	32816	32816	32816

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3416	36898	32804	32804	32804	32804	32804	32804
3415	36886	32792	32792	32792	32792	32792	32792
3414	36874	32780	32780	32780	32780	32780	32780
3413	36862	32768	32768	32768	32768	32768	32768
3412	36850	32756	32756	32756	32756	32756	32756
3411	36838	32744	32744	32744	32744	32744	32744
3410	36826	32732	32732	32732	32732	32732	32732
3409	36814	32720	32720	32720	32720	32720	32720
3408	36802	32708	32708	32708	32708	32708	32708
3407	36790	32696	32696	32696	32696	32696	32696
3406	36778	32684	32684	32684	32684	32684	32684
3405	36766	32672	32672	32672	32672	32672	32672
3404	36754	32660	32660	32660	32660	32660	32660
3403	36742	32648	32648	32648	32648	32648	32648
3402	36730	32636	32636	32636	32636	32636	32636
3401	36718	32624	32624	32624	32624	32624	32624
3400	36706	32612	32612	32612	32612	32612	32612
3399	36694	32600	32600	32600	32600	32600	32600
3398	36682	32588	32588	32588	32588	32588	32588
3397	36670	32576	32576	32576	32576	32576	32576
3396	36658	32564	32564	32564	32564	32564	32564
3395	36646	32552	32552	32552	32552	32552	32552
3394	36634	32540	32540	32540	32540	32540	32540
3393	36622	32528	32528	32528	32528	32528	32528
3392	36610	32516	32516	32516	32516	32516	32516
3391	36598	32504	32504	32504	32504	32504	32504
3390	36586	32492	32492	32492	32492	32492	32492
3389	36574	32480	32480	32480	32480	32480	32480
3388	36562	32468	32468	32468	32468	32468	32468
3387	36550	32456	32456	32456	32456	32456	32456
3386	36538	32444	32444	32444	32444	32444	32444
3385	36526	32432	32432	32432	32432	32432	32432
3384	36514	32420	32420	32420	32420	32420	32420
3383	36502	32408	32408	32408	32408	32408	32408
3382	36490	32396	32396	32396	32396	32396	32396
3381	36478	32384	32384	32384	32384	32384	32384
3380	36466	32372	32372	32372	32372	32372	32372
3379	36454	32360	32360	32360	32360	32360	32360
3378	36442	32348	32348	32348	32348	32348	32348
3377	36430	32336	32336	32336	32336	32336	32336
3376	36418	32324	32324	32324	32324	32324	32324
3375	36406	32312	32312	32312	32312	32312	32312
3374	36394	32300	32300	32300	32300	32300	32300
3373	36382	32288	32288	32288	32288	32288	32288
3372	36370	32276	32276	32276	32276	32276	32276
3371	36358	32264	32264	32264	32264	32264	32264
3370	36346	32252	32252	32252	32252	32252	32252
3369	36334	32240	32240	32240	32240	32240	32240
3368	36322	32228	32228	32228	32228	32228	32228
3367	36310	32216	32216	32216	32216	32216	32216
3366	36298	32204	32204	32204	32204	32204	32204

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3365	36286	32192	32192	32192	32192	32192	32192
3364	36274	32180	32180	32180	32180	32180	32180
3363	36262	32168	32168	32168	32168	32168	32168
3362	36250	32156	32156	32156	32156	32156	32156
3361	36238	32144	32144	32144	32144	32144	32144
3360	36226	32132	32132	32132	32132	32132	32132
3359	36214	32120	32120	32120	32120	32120	32120
3358	36202	32108	32108	32108	32108	32108	32108
3357	36190	32096	32096	32096	32096	32096	32096
3356	36178	32084	32084	32084	32084	32084	32084
3355	36166	32072	32072	32072	32072	32072	32072
3354	36154	32060	32060	32060	32060	32060	32060
3353	36142	32048	32048	32048	32048	32048	32048
3352	36130	32036	32036	32036	32036	32036	32036
3351	36118	32024	32024	32024	32024	32024	32024
3350	36106	32012	32012	32012	32012	32012	32012
3349	36094	32000	32000	32000	32000	32000	32000
3348	36082	31988	31988	31988	31988	31988	31988
3347	36070	31976	31976	31976	31976	31976	31976
3346	36058	31964	31964	31964	31964	31964	31964
3345	36046	31952	31952	31952	31952	31952	31952
3344	36034	31940	31940	31940	31940	31940	31940
3343	36022	31928	31928	31928	31928	31928	31928
3342	36010	31916	31916	31916	31916	31916	31916
3341	35998	31904	31904	31904	31904	31904	31904
3340	35986	31892	31892	31892	31892	31892	31892
3339	35974	31880	31880	31880	31880	31880	31880
3338	35962	31868	31868	31868	31868	31868	31868
3337	35950	31856	31856	31856	31856	31856	31856
3336	35938	31844	31844	31844	31844	31844	31844
3335	35926	31832	31832	31832	31832	31832	31832
3334	35914	31820	31820	31820	31820	31820	31820
3333	35902	31808	31808	31808	31808	31808	31808
3332	35890	31796	31796	31796	31796	31796	31796
3331	35878	31784	31784	31784	31784	31784	31784
3330	35866	31772	31772	31772	31772	31772	31772
3329	35854	31760	31760	31760	31760	31760	31760
3328	35842	31748	31748	31748	31748	31748	31748
3327	35830	31736	31736	31736	31736	31736	31736
3326	35818	31724	31724	31724	31724	31724	31724
3325	35806	31712	31712	31712	31712	31712	31712
3324	35794	31700	31700	31700	31700	31700	31700
3323	35782	31688	31688	31688	31688	31688	31688
3322	35770	31676	31676	31676	31676	31676	31676
3321	35758	31664	31664	31664	31664	31664	31664
3320	35746	31652	31652	31652	31652	31652	31652
3319	35734	31640	31640	31640	31640	31640	31640
3318	35722	31628	31628	31628	31628	31628	31628
3317	35710	31616	31616	31616	31616	31616	31616
3316	35698	31604	31604	31604	31604	31604	31604
3315	35686	31592	31592	31592	31592	31592	31592

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3314	35674	31580	31580	31580	31580	31580	31580
3313	35662	31568	31568	31568	31568	31568	31568
3312	35650	31556	31556	31556	31556	31556	31556
3311	35638	31544	31544	31544	31544	31544	31544
3310	35626	31532	31532	31532	31532	31532	31532
3309	35614	31520	31520	31520	31520	31520	31520
3308	35602	31508	31508	31508	31508	31508	31508
3307	35590	31496	31496	31496	31496	31496	31496
3306	35578	31484	31484	31484	31484	31484	31484
3305	35566	31472	31472	31472	31472	31472	31472
3304	35554	31460	31460	31460	31460	31460	31460
3303	35542	31448	31448	31448	31448	31448	31448
3302	35530	31436	31436	31436	31436	31436	31436
3301	35518	31424	31424	31424	31424	31424	31424
3300	35506	31412	31412	31412	31412	31412	31412
3299	35494	31400	31400	31400	31400	31400	31400
3298	35482	31388	31388	31388	31388	31388	31388
3297	35470	31376	31376	31376	31376	31376	31376
3296	35458	31364	31364	31364	31364	31364	31364
3295	35446	31352	31352	31352	31352	31352	31352
3294	35434	31340	31340	31340	31340	31340	31340
3293	35422	31328	31328	31328	31328	31328	31328
3292	35410	31316	31316	31316	31316	31316	31316
3291	35398	31304	31304	31304	31304	31304	31304
3290	35386	31292	31292	31292	31292	31292	31292
3289	35374	31280	31280	31280	31280	31280	31280
3288	35362	31268	31268	31268	31268	31268	31268
3287	35350	31256	31256	31256	31256	31256	31256
3286	35338	31244	31244	31244	31244	31244	31244
3285	35326	31232	31232	31232	31232	31232	31232
3284	35314	31220	31220	31220	31220	31220	31220
3283	35302	31208	31208	31208	31208	31208	31208
3282	35290	31196	31196	31196	31196	31196	31196
3281	35278	31184	31184	31184	31184	31184	31184
3280	35266	31172	31172	31172	31172	31172	31172
3279	35254	31160	31160	31160	31160	31160	31160
3278	35242	31148	31148	31148	31148	31148	31148
3277	35230	31136	31136	31136	31136	31136	31136
3276	35218	31124	31124	31124	31124	31124	31124
3275	35206	31112	31112	31112	31112	31112	31112
3274	35194	31100	31100	31100	31100	31100	31100
3273	35182	31088	31088	31088	31088	31088	31088
3272	35170	31076	31076	31076	31076	31076	31076
3271	35158	31064	31064	31064	31064	31064	31064
3270	35146	31052	31052	31052	31052	31052	31052
3269	35134	31040	31040	31040	31040	31040	31040
3268	35122	31028	31028	31028	31028	31028	31028
3267	35110	31016	31016	31016	31016	31016	31016
3266	35098	31004	31004	31004	31004	31004	31004
3265	35086	30992	30992	30992	30992	30992	30992
3264	35074	30980	30980	30980	30980	30980	30980

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3263	35062	30968	30968	30968	30968	30968	30968
3262	35050	30956	30956	30956	30956	30956	30956
3261	35038	30944	30944	30944	30944	30944	30944
3260	35026	30932	30932	30932	30932	30932	30932
3259	35014	30920	30920	30920	30920	30920	30920
3258	35002	30908	30908	30908	30908	30908	30908
3257	34990	30896	30896	30896	30896	30896	30896
3256	34978	30884	30884	30884	30884	30884	30884
3255	34966	30872	30872	30872	30872	30872	30872
3254	34954	30860	30860	30860	30860	30860	30860
3253	34942	30848	30848	30848	30848	30848	30848
3252	34930	30836	30836	30836	30836	30836	30836
3251	34918	30824	30824	30824	30824	30824	30824
3250	34906	30812	30812	30812	30812	30812	30812
3249	34894	30800	30800	30800	30800	30800	30800
3248	34882	30788	30788	30788	30788	30788	30788
3247	34870	30776	30776	30776	30776	30776	30776
3246	34858	30764	30764	30764	30764	30764	30764
3245	34846	30752	30752	30752	30752	30752	30752
3244	34834	30740	30740	30740	30740	30740	30740
3243	34822	30728	30728	30728	30728	30728	30728
3242	34810	30716	30716	30716	30716	30716	30716
3241	34798	30704	30704	30704	30704	30704	30704
3240	34786	30692	30692	30692	30692	30692	30692
3239	34774	30680	30680	30680	30680	30680	30680
3238	34762	30668	30668	30668	30668	30668	30668
3237	34750	30656	30656	30656	30656	30656	30656
3236	34738	30644	30644	30644	30644	30644	30644
3235	34726	30632	30632	30632	30632	30632	30632
3234	34714	30620	30620	30620	30620	30620	30620
3233	34702	30608	30608	30608	30608	30608	30608
3232	34690	30596	30596	30596	30596	30596	30596
3231	34678	30584	30584	30584	30584	30584	30584
3230	34666	30572	30572	30572	30572	30572	30572
3229	34654	30560	30560	30560	30560	30560	30560
3228	34642	30548	30548	30548	30548	30548	30548
3227	34630	30536	30536	30536	30536	30536	30536
3226	34618	30524	30524	30524	30524	30524	30524
3225	34606	30512	30512	30512	30512	30512	30512
3224	34594	30500	30500	30500	30500	30500	30500
3223	34582	30488	30488	30488	30488	30488	30488
3222	34570	30476	30476	30476	30476	30476	30476
3221	34558	30464	30464	30464	30464	30464	30464
3220	34546	30452	30452	30452	30452	30452	30452
3219	34534	30440	30440	30440	30440	30440	30440
3218	34522	30428	30428	30428	30428	30428	30428
3217	34510	30416	30416	30416	30416	30416	30416
3216	34498	30404	30404	30404	30404	30404	30404
3215	34486	30392	30392	30392	30392	30392	30392
3214	34474	30380	30380	30380	30380	30380	30380
3213	34462	30368	30368	30368	30368	30368	30368

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3212	34450	30356	30356	30356	30356	30356	30356
3211	34438	30344	30344	30344	30344	30344	30344
3210	34426	30332	30332	30332	30332	30332	30332
3209	34414	30320	30320	30320	30320	30320	30320
3208	34402	30308	30308	30308	30308	30308	30308
3207	34390	30296	30296	30296	30296	30296	30296
3206	34378	30284	30284	30284	30284	30284	30284
3205	34366	30272	30272	30272	30272	30272	30272
3204	34354	30260	30260	30260	30260	30260	30260
3203	34342	30248	30248	30248	30248	30248	30248
3202	34330	30236	30236	30236	30236	30236	30236
3201	34318	30224	30224	30224	30224	30224	30224
3200	34306	30212	30212	30212	30212	30212	30212
3199	34294	30200	30200	30200	30200	30200	30200
3198	34282	30188	30188	30188	30188	30188	30188
3197	34270	30176	30176	30176	30176	30176	30176
3196	34258	30164	30164	30164	30164	30164	30164
3195	34246	30152	30152	30152	30152	30152	30152
3194	34234	30140	30140	30140	30140	30140	30140
3193	34222	30128	30128	30128	30128	30128	30128
3192	34210	30116	30116	30116	30116	30116	30116
3191	34198	30104	30104	30104	30104	30104	30104
3190	34186	30092	30092	30092	30092	30092	30092
3189	34174	30080	30080	30080	30080	30080	30080
3188	34162	30068	30068	30068	30068	30068	30068
3187	34150	30056	30056	30056	30056	30056	30056
3186	34138	30044	30044	30044	30044	30044	30044
3185	34126	30032	30032	30032	30032	30032	30032
3184	34114	30020	30020	30020	30020	30020	30020
3183	34102	30008	30008	30008	30008	30008	30008
3182	34090	29996	29996	29996	29996	29996	29996
3181	34078	29984	29984	29984	29984	29984	29984
3180	34066	29972	29972	29972	29972	29972	29972
3179	34054	29960	29960	29960	29960	29960	29960
3178	34042	29948	29948	29948	29948	29948	29948
3177	34030	29936	29936	29936	29936	29936	29936
3176	34018	29924	29924	29924	29924	29924	29924
3175	34006	29912	29912	29912	29912	29912	29912
3174	33994	29900	29900	29900	29900	29900	29900
3173	33982	29888	29888	29888	29888	29888	29888
3172	33970	29876	29876	29876	29876	29876	29876
3171	33958	29864	29864	29864	29864	29864	29864
3170	33946	29852	29852	29852	29852	29852	29852
3169	33934	29840	29840	29840	29840	29840	29840
3168	33922	29828	29828	29828	29828	29828	29828
3167	33910	29816	29816	29816	29816	29816	29816
3166	33898	29804	29804	29804	29804	29804	29804
3165	33886	29792	29792	29792	29792	29792	29792
3164	33874	29780	29780	29780	29780	29780	29780
3163	33862	29768	29768	29768	29768	29768	29768
3162	33850	29756	29756	29756	29756	29756	29756

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3161	33838	29744	29744	29744	29744	29744	29744
3160	33826	29732	29732	29732	29732	29732	29732
3159	33814	29720	29720	29720	29720	29720	29720
3158	33802	29708	29708	29708	29708	29708	29708
3157	33790	29696	29696	29696	29696	29696	29696
3156	33778	29684	29684	29684	29684	29684	29684
3155	33766	29672	29672	29672	29672	29672	29672
3154	33754	29660	29660	29660	29660	29660	29660
3153	33742	29648	29648	29648	29648	29648	29648
3152	33730	29636	29636	29636	29636	29636	29636
3151	33718	29624	29624	29624	29624	29624	29624
3150	33706	29612	29612	29612	29612	29612	29612
3149	33694	29600	29600	29600	29600	29600	29600
3148	33682	29588	29588	29588	29588	29588	29588
3147	33670	29576	29576	29576	29576	29576	29576
3146	33658	29564	29564	29564	29564	29564	29564
3145	33646	29552	29552	29552	29552	29552	29552
3144	33634	29540	29540	29540	29540	29540	29540
3143	33622	29528	29528	29528	29528	29528	29528
3142	33610	29516	29516	29516	29516	29516	29516
3141	33598	29504	29504	29504	29504	29504	29504
3140	33586	29492	29492	29492	29492	29492	29492
3139	33574	29480	29480	29480	29480	29480	29480
3138	33562	29468	29468	29468	29468	29468	29468
3137	33550	29456	29456	29456	29456	29456	29456
3136	33538	29444	29444	29444	29444	29444	29444
3135	33526	29432	29432	29432	29432	29432	29432
3134	33514	29420	29420	29420	29420	29420	29420
3133	33502	29408	29408	29408	29408	29408	29408
3132	33490	29396	29396	29396	29396	29396	29396
3131	33478	29384	29384	29384	29384	29384	29384
3130	33466	29372	29372	29372	29372	29372	29372
3129	33454	29360	29360	29360	29360	29360	29360
3128	33442	29348	29348	29348	29348	29348	29348
3127	33430	29336	29336	29336	29336	29336	29336
3126	33418	29324	29324	29324	29324	29324	29324
3125	33406	29312	29312	29312	29312	29312	29312
3124	33394	29300	29300	29300	29300	29300	29300
3123	33382	29288	29288	29288	29288	29288	29288
3122	33370	29276	29276	29276	29276	29276	29276
3121	33358	29264	29264	29264	29264	29264	29264
3120	33346	29252	29252	29252	29252	29252	29252
3119	33334	29240	29240	29240	29240	29240	29240
3118	33322	29228	29228	29228	29228	29228	29228
3117	33310	29216	29216	29216	29216	29216	29216
3116	33298	29204	29204	29204	29204	29204	29204
3115	33286	29192	29192	29192	29192	29192	29192
3114	33274	29180	29180	29180	29180	29180	29180
3113	33262	29168	29168	29168	29168	29168	29168
3112	33250	29156	29156	29156	29156	29156	29156
3111	33238	29144	29144	29144	29144	29144	29144
							continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3110	33226	29132	29132	29132	29132	29132	29132
3109	33214	29120	29120	29120	29120	29120	29120
3108	33202	29108	29108	29108	29108	29108	29108
3107	33190	29096	29096	29096	29096	29096	29096
3106	33178	29084	29084	29084	29084	29084	29084
3105	33166	29072	29072	29072	29072	29072	29072
3104	33154	29060	29060	29060	29060	29060	29060
3103	33142	29048	29048	29048	29048	29048	29048
3102	33130	29036	29036	29036	29036	29036	29036
3101	33118	29024	29024	29024	29024	29024	29024
3100	33106	29012	29012	29012	29012	29012	29012
3099	33094	29000	29000	29000	29000	29000	29000
3098	33082	28988	28988	28988	28988	28988	28988
3097	33070	28976	28976	28976	28976	28976	28976
3096	33058	28964	28964	28964	28964	28964	28964
3095	33046	28952	28952	28952	28952	28952	28952
3094	33034	28940	28940	28940	28940	28940	28940
3093	33022	28928	28928	28928	28928	28928	28928
3092	33010	28916	28916	28916	28916	28916	28916
3091	32998	28904	28904	28904	28904	28904	28904
3090	32986	28892	28892	28892	28892	28892	28892
3089	32974	28880	28880	28880	28880	28880	28880
3088	32962	28868	28868	28868	28868	28868	28868
3087	32950	28856	28856	28856	28856	28856	28856
3086	32938	28844	28844	28844	28844	28844	28844
3085	32926	28832	28832	28832	28832	28832	28832
3084	32914	28820	28820	28820	28820	28820	28820
3083	32902	28808	28808	28808	28808	28808	28808
3082	32890	28796	28796	28796	28796	28796	28796
3081	32878	28784	28784	28784	28784	28784	28784
3080	32866	28772	28772	28772	28772	28772	28772
3079	32854	28760	28760	28760	28760	28760	28760
3078	32842	28748	28748	28748	28748	28748	28748
3077	32830	28736	28736	28736	28736	28736	28736
3076	32818	28724	28724	28724	28724	28724	28724
3075	32806	28712	28712	28712	28712	28712	28712
3074	32794	28700	28700	28700	28700	28700	28700
3073	32782	28688	28688	28688	28688	28688	28688
3072	32770	28676	28676	28676	28676	28676	28676
3071	32758	28664	28664	28664	28664	28664	28664
3070	32746	28664	28664	28664	28664	28664	28664
3069	32734	28652	28652	28652	28652	28652	28652
3068	32722	28640	28640	28640	28640	28640	28640
3067	32710	28628	28628	28628	28628	28628	28628
3066	32698	28616	28616	28616	28616	28616	28616
3065	32686	28604	28604	28604	28604	28604	28604
3064	32674	28592	28592	28592	28592	28592	28592
3063	32662	28580	28580	28580	28580	28580	28580
3062	32650	28568	28568	28568	28568	28568	28568
3061	32638	28556	28556	28556	28556	28556	28556
3060	32626	28544	28544	28544	28544	28544	28544

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3059	32614	28532	28532	28532	28532	28532	28532
3058	32602	28520	28520	28520	28520	28520	28520
3057	32590	28508	28508	28508	28508	28508	28508
3056	32578	28496	28496	28496	28496	28496	28496
3055	32566	28484	28484	28484	28484	28484	28484
3054	32554	28472	28478⋆	28472	28478⋆	28478⋆	28478 ⋆
3053	32542	28460	28466⋆	28460	28466⋆	28466⋆	28466 ⋆
3052	32530	28448	28454⋆	28448	28454⋆	28454⋆	28454 ⋆
3051	32518	28436	28442⋆	28436	28442⋆	28442⋆	28442 ⋆
3050	32506	28424	28430⋆	28424	28430⋆	28430⋆	28430 ⋆
3049	32494	28412	28418⋆	28412	28418⋆	28418⋆	28418 ⋆
3048	32482	28400	28406⋆	28400	28406⋆	28406⋆	28406 ⋆
3047	32470	28388	28394⋆	28388	28394⋆	28394⋆	28394 ⋆
3046	32458	28376	28382⋆	28376	28382⋆	28382⋆	28382 ⋆
3045	32446	28364	28370⋆	28364	28370⋆	28370⋆	28370 ⋆
3044	32434	28352	28358⋆	28352	28358⋆	28358⋆	28358 ⋆
3043	32422	28340	28346⋆	28340	28346⋆	28346⋆	28346 ⋆
3042	32410	28328	28334⋆	28328	28334⋆	28334⋆	28334 ⋆
3041	32398	28316	28322⋆	28316	28322⋆	28322⋆	28322 ⋆
3040	32386	28304	28310⋆	28304	28310⋆	28310⋆	28310 ⋆
3039	32374	28292	28298⋆	28292	28298⋆	28298⋆	28298 ⋆
3038	32362	28280	28286⋆	28280	28286⋆	28286⋆	28286 ⋆
3037	32350	28268	28274⋆	28268	28274⋆	28274⋆	28274 ⋆
3036	32338	28256	28262⋆	28256	28262⋆	28262⋆	28262 ⋆
3035	32326	28244	28250⋆	28244	28250⋆	28250⋆	28250 ⋆
3034	32314	28232	28238⋆	28232	28238⋆	28238⋆	28238 ⋆
3033	32302	28220	28226⋆	28220	28226⋆	28226⋆	28226 ⋆
3032	32290	28208	28214⋆	28208	28214⋆	28214⋆	28214 ⋆
3031	32278	28196	28202⋆	28196	28202⋆	28202⋆	28202 ⋆
3030	32266	28184	28190⋆	28184	28190⋆	28190⋆	28190 ⋆
3029	32254	28172	28178⋆	28172	28178⋆	28178⋆	28178 ⋆
3028	32242	28160	28166⋆	28160	28166⋆	28166⋆	28166 ⋆
3027	32230	28148	28154⋆	28148	28154⋆	28154⋆	28154 ⋆
3026	32218	28136	28142⋆	28136	28142⋆	28142⋆	28142 ⋆
3025	32206	28124	28130⋆	28124	28130⋆	28130⋆	28130 ⋆
3024	32194	28112	28118⋆	28112	28118⋆	28118⋆	28118 ⋆
3023	32182	28100	28106⋆	28100	28106⋆	28106⋆	28106 ⋆
3022	32170	28088	28094⋆	28088	28094⋆	28094⋆	28094 ⋆
3021	32158	28076	28082⋆	28076	28082⋆	28082⋆	28082 ⋆
3020	32146	28064	28070⋆	28064	28070⋆	28070⋆	28070 ⋆
3019	32134	28052	28058⋆	28052	28058⋆	28058⋆	28058 ⋆
3018	32122	28040	28046⋆	28040	28046⋆	28046⋆	28046 ⋆
3017	32110	28028	28034⋆	28028	28034⋆	28034⋆	28034 ⋆
3016	32098	28016	28022⋆	28016	28022⋆	28022⋆	28022 ⋆
3015	32086	28004	28010⋆	28004	28010⋆	28010⋆	28010 ⋆
3014	32074	27992	27998⋆	27992	27998⋆	27998⋆	27998 ⋆
3013	32062	27980	27986⋆	27980	27986⋆	27986⋆	27986 ⋆
3012	32050	27968	27974⋆	27968	27974⋆	27974⋆	27974 ⋆
3011	32038	27956	27962⋆	27956	27962⋆	27962⋆	27962 ⋆
3010	32026	27944	27950⋆	27944	27950⋆	27950⋆	27950 ⋆
3009	32014	27932	27938⋆	27932	27938⋆	27938⋆	27938 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
3008	32002	27920	27926⋆	27920	27926⋆	27926⋆	27926 ⋆
3007	31990	27908	27914⋆	27908	27914⋆	27914⋆	27914 ⋆
3006	31978	27896	27902†	27908†	27902†	27902†	27914 ⋆
3005	31966	27884	27890†	27896†	27890†	27890†	27902 ⋆
3004	31954	27872	27878†	27884†	27878†	27878†	27890 ⋆
3003	31942	27860	27866†	27872†	27866†	27866†	27878 ⋆
3002	31930	27848	27854†	27864†	27854†	27854†	27870 ⋆
3001	31918	27836	27842†	27852†	27842†	27842†	27858 ⋆
3000	31906	27824	27830†	27840†	27830†	27830†	27846 ⋆
2999	31894	27812	27818†	27828†	27818†	27818†	27834 ⋆
2998	31882	27800	27806†	27816†	27806†	27806†	27822 ⋆
2997	31870	27788	27794†	27804†	27794†	27794†	27810 ⋆
2996	31858	27776	27782†	27792†	27782†	27782†	27798 ⋆
2995	31846	27764	27770†	27780†	27770†	27770†	27786 ⋆
2994	31834	27752	27758†	27768†	27758†	27758†	27774 ⋆
2993	31822	27740	27746†	27756†	27746†	27746†	27762 ⋆
2992	31810	27728	27734†	27744†	27734†	27734†	27750 ⋆
2991	31798	27716	27722†	27732†	27722†	27722†	27738 ⋆
2990	31786	27704	27710†	27720†	27710†	27710†	27726 ⋆
2989	31774	27692	27698†	27708†	27698†	27698†	27714 ⋆
2988	31762	27680	27686†	27696†	27686†	27686†	27702 ⋆
2987	31750	27668	27674†	27684†	27674†	27674†	27690 ⋆
2986	31738	27656	27662†	27672†	27662†	27662†	27678 ⋆
2985	31726	27644	27650†	27660†	27650†	27650†	27666 ⋆
2984	31714	27632	27638†	27648†	27638†	27638†	27654 ⋆
2983	31702	27620	27626†	27636†	27626†	27626†	27642 ⋆
2982	31690	27608	27614†	27624†	27614†	27614†	27630 ⋆
2981	31678	27596	27602†	27612†	27602†	27602†	27618 ⋆
2980	31666	27584	27590†	27600†	27590†	27590†	27606 ⋆
2979	31654	27572	27578†	27588†	27578†	27578†	27594 ⋆
2978	31642	27560	27566†	27576†	27566†	27566†	27582 ⋆
2977	31630	27548	27554†	27564†	27554†	27554†	27570 ⋆
2976	31618	27536	27542†	27552†	27542†	27542†	27558 ⋆
2975	31606	27524	27530†	27540†	27530†	27530†	27546 ⋆
2974	31594	27512	27518†	27528†	27518†	27518†	27534 ⋆
2973	31582	27500	27506†	27516†	27506†	27506†	27522 ⋆
2972	31570	27488	27494†	27504†	27494†	27494†	27510 ⋆
2971	31558	27476	27482†	27492†	27482†	27482†	27498 ⋆
2970	31546	27464	27470†	27480†	27470†	27470†	27486 ⋆
2969	31534	27452	27458†	27468†	27458†	27458†	27474 ⋆
2968	31522	27440	27446†	27456†	27446†	27446†	27462 ⋆
2967	31510	27428	27434†	27444†	27434†	27434†	27450 ⋆
2966	31498	27416	27422†	27432†	27422†	27422†	27438 ⋆
2965	31486	27404	27410†	27420†	27410†	27410†	27426 ⋆
2964	31474	27392	27398†	27408†	27398†	27398†	27414 ⋆
2963	31462	27380	27386†	27396†	27386†	27386†	27402 ⋆
2962	31450	27368	27374†	27384†	27374†	27374†	27390 ⋆
2961	31438	27356	27362†	27372†	27362†	27362†	27378 ⋆
2960	31426	27344	27350†	27360†	27350†	27350†	27366 ⋆
2959	31414	27332	27338†	27348†	27338†	27338†	27354 ⋆
2958	31402	27320	27326†	27336†	27326†	27326†	27342 ⋆
							continued

$m=12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2957	31390	27308	27314†	27324†	27314†	27314†	27330 ⋆
2956	31378	27296	27302†	27312†	27302†	27302†	27318 ⋆
2955	31366	27284	27290†	27300†	27290†	27290†	27306 ⋆
2954	31354	27272	27278†	27288†	27278†	27278†	27294 ⋆
2953	31342	27260	27266†	27276†	27266†	27266†	27282 ⋆
2952	31330	27248	27254†	27264†	27254†	27254†	27270 ⋆
2951	31318	27236	27242†	27252†	27242†	27242†	27258 ⋆
2950	31306	27224	27230†	27240†	27230†	27230†	27246 ⋆
2949	31294	27212	27218†	27228†	27218†	27218†	27234 ⋆
2948	31282	27200	27206†	27216†	27206†	27206†	27222 ⋆
2947	31270	27188	27194†	27204†	27194†	27194†	27210 ⋆
2946	31258	27176	27182†	27192†	27182†	27182†	27198 ⋆
2945	31246	27164	27170†	27180†	27170†	27170†	27186 ⋆
2944	31234	27152	27158†	27168†	27158†	27158†	27174 ⋆
2943	31222	27140	27146†	27156†	27146†	27146†	27162 ⋆
2942	31210	27128	27134†	27144†	27134†	27146†	27150 ⋆
2941	31198	27116	27122†	27132†	27122†	27134†	27138 ⋆
2940	31186	27104	27110†	27120†	27110†	27122†	27126 ⋆
2939	31174	27092	27098†	27108†	27098†	27110†	27114 ⋆
2938	31162	27080	27086†	27096†	27086†	27098†	27102 ⋆
2937	31150	27068	27074†	27084†	27074†	27086†	27090 ⋆
2936	31138	27056	27062†	27072†	27062†	27074†	27078 ⋆
2935	31126	27044	27050†	27060†	27050†	27062†	27066 ⋆
2934	31114	27032	27038†	27048†	27038†	27050†	27054 ⋆
2933	31102	27020	27026†	27036†	27026†	27038†	27042 ⋆
2932	31090	27008	27014†	27024†	27014†	27026†	27030 ⋆
2931	31078	26996	27002†	27012†	27002†	27014†	27018 ⋆
2930	31066	26984	26990†	27000†	26990†	27002†	27006 ⋆
2929	31054	26972	26978†	26988†	26978†	26990†	26994 ⋆
2928	31042	26960	26966†	26976†	26966†	26978†	26982 ⋆
2927	31030	26948	26954†	26964†	26954†	26966†	26970 ⋆
2926	31018	26936	26942†	26952†	26942†	26966⋆	26958 †
2925	31006	26924	26930†	26940†	26930†	26954⋆	26946 †
2924	30994	26912	26918†	26928†	26918†	26945⋆	26934 †
2923	30982	26900	26906†	26916†	26906†	26933⋆	26922 †
2922	30970	26888	26894†	26904†	26894†	26921⋆	26910 †
2921	30958	26876	26882†	26892†	26882†	26909⋆	26898 †
2920	30946	26864	26870†	26880†	26870†	26897⋆	26886 †
2919	30934	26852	26858†	26868†	26858†	26885⋆	26874 †
2918	30922	26840	26846†	26856†	26846†	26873⋆	26862 †
2917	30910	26828	26834†	26844†	26834†	26861⋆	26850 †
2916	30898	26816	26822†	26832†	26822†	26849⋆	26838 †
2915	30886	26804	26810†	26820†	26810†	26837⋆	26826 †
2914	30874	26792	26798†	26808†	26798†	26825⋆	26814 †
2913	30862	26780	26786†	26796†	26786†	26813⋆	26802 †
2912	30850	26768	26774†	26784†	26774†	26801⋆	26790 †
2911	30838	26756	26762†	26772†	26762†	26789⋆	26778 †
2910	30826	26744	26750†	26760†	26750†	26777⋆	26766 †
2909	30814	26732	26738†	26748†	26738†	26765⋆	26754 †
2908	30802	26720	26726†	26736†	26726†	26753⋆	26742 †
2907	30790	26708	26714†	26724†	26714†	26741⋆	26730 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2906	30778	26696	26702†	26712†	26702†	26729⋆	26718 †
2905	30766	26684	26690†	26700†	26690†	26717⋆	26706 †
2904	30754	26672	26678†	26688†	26678†	26705⋆	26694 †
2903	30742	26660	26666†	26676†	26666†	26693⋆	26682 †
2902	30730	26648	26654†	26664†	26654†	26681⋆	26670 †
2901	30718	26636	26642†	26652†	26642†	26669⋆	26658 †
2900	30706	26624	26630†	26640†	26630†	26657⋆	26646 †
2899	30694	26612	26618†	26628†	26618†	26645⋆	26634 †
2898	30682	26600	26606†	26616†	26606†	26633⋆	26622 †
2897	30670	26588	26594†	26604†	26594†	26621⋆	26610 †
2896	30658	26576	26582†	26592†	26582†	26609⋆	26598 †
2895	30646	26564	26570†	26580†	26570†	26597⋆	26586 †
2894	30634	26552	26558†	26568†	26558†	26585⋆	26574 †
2893	30622	26540	26546†	26556†	26546†	26573⋆	26562 †
2892	30610	26528	26534†	26544†	26534†	26561⋆	26550 †
2891	30598	26516	26522†	26532†	26522†	26549⋆	26538 †
2890	30586	26504	26510†	26520†	26510†	26537⋆	26526 †
2889	30574	26492	26498†	26508†	26498†	26525⋆	26514 †
2888	30562	26480	26486†	26496†	26486†	26513⋆	26502 †
2887	30550	26468	26474†	26484†	26474†	26501⋆	26490 †
2886	30538	26456	26462†	26472†	26462†	26489⋆	26478 †
2885	30526	26444	26450†	26460†	26450†	26477⋆	26466 †
2884	30514	26432	26438†	26448†	26438†	26465⋆	26454 †
2883	30502	26420	26426†	26436†	26426†	26453⋆	26442 †
2882	30490	26408	26414†	26424†	26414†	26441⋆	26430 †
2881	30478	26396	26402†	26412†	26402†	26429⋆	26418 †
2880	30466	26384	26390†	26400†	26390†	26417⋆	26406 †
2879	30454	26372	26378†	26388†	26378†	26405⋆	26394 †
2878	30442	26360	26366†	26376†	26366†	26393⋆	26382 †
2877	30430	26348	26354†	26364†	26354†	26381⋆	26370 †
2876	30418	26336	26342†	26352†	26342†	26369⋆	26358 †
2875	30406	26324	26330†	26340†	26330†	26357⋆	26346 †
2874	30394	26312	26318†	26328†	26318†	26345⋆	26334 †
2873	30382	26300	26306†	26316†	26306†	26333⋆	26322 †
2872	30370	26288	26294†	26304†	26294†	26321⋆	26310 †
2871	30358	26276	26282†	26292†	26282†	26309⋆	26298 †
2870	30346	26264	26270†	26280†	26270†	26297⋆	26286 †
2869	30334	26252	26258†	26268†	26258†	26285⋆	26274 †
2868	30322	26240	26246†	26256†	26246†	26273⋆	26262 †
2867	30310	26228	26234†	26244†	26234†	26261⋆	26250 †
2866	30298	26216	26222†	26232†	26222†	26249⋆	26238 †
2865	30286	26204	26210†	26220†	26210†	26237⋆	26226 †
2864	30274	26192	26198†	26208†	26198†	26225⋆	26214 †
2863	30262	26180	26186†	26196†	26186†	26213⋆	26202 †
2862	30250	26168	26174†	26184†	26174†	26201⋆	26190 †
2861	30238	26156	26162†	26172†	26162†	26189⋆	26178 †
2860	30226	26144	26150†	26160†	26150†	26177⋆	26166 †
2859	30214	26132	26138†	26148†	26138†	26165⋆	26154 †
2858	30202	26120	26126†	26136†	26126†	26153⋆	26142 †
2857	30190	26108	26114†	26124†	26114†	26141⋆	26130 †
2856	30178	26096	26102†	26112†	26102†	26129⋆	26118 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2855	30166	26084	26090†	26100†	26090†	26117⋆	26106 †
2854	30154	26072	26078†	26088†	26078†	26105⋆	26094 †
2853	30142	26060	26066†	26076†	26066†	26093⋆	26082 †
2852	30130	26048	26054†	26064†	26054†	26081⋆	26070 †
2851	30118	26036	26042†	26052†	26042†	26069⋆	26058 †
2850	30106	26024	26030†	26040†	26030†	26057⋆	26046 †
2849	30094	26012	26018†	26028†	26018†	26045⋆	26034 †
2848	30082	26000	26006†	26016†	26006†	26033⋆	26022 †
2847	30070	25988	25994†	26004†	25994†	26021⋆	26010 †
2846	30058	25976	25982†	25992†	25982†	26009⋆	25998 †
2845	30046	25964	25970†	25980†	25970†	25997⋆	25986 †
2844	30034	25952	25958†	25968†	25958†	25985⋆	25974 †
2843	30022	25940	25946†	25956†	25946†	25973⋆	25962 †
2842	30010	25928	25934†	25944†	25934†	25961⋆	25950 †
2841	29998	25916	25922†	25932†	25922†	25949⋆	25938 †
2840	29986	25904	25910†	25920†	25910†	25937⋆	25926 †
2839	29974	25892	25898†	25908†	25898†	25925⋆	25914 †
2838	29962	25880	25886†	25896†	25886†	25913⋆	25902 †
2837	29950	25868	25874†	25884†	25874†	25901⋆	25890 †
2836	29938	25856	25862†	25872†	25862†	25889⋆	25878 †
2835	29926	25844	25850†	25860†	25850†	25877⋆	25866 †
2834	29914	25832	25838†	25848†	25838†	25865⋆	25854 †
2833	29902	25820	25826†	25836†	25826†	25853⋆	25842 †
2832	29890	25808	25814†	25824†	25814†	25841⋆	25830 †
2831	29878	25796	25802†	25812†	25802†	25829⋆	25818 †
2830	29866	25784	25790†	25800†	25790†	25817⋆	25806 †
2829	29854	25772	25778†	25788†	25778†	25805⋆	25794 †
2828	29842	25760	25766†	25776†	25766†	25793⋆	25782 †
2827	29830	25748	25754†	25764†	25754†	25781⋆	25770 †
2826	29818	25736	25742†	25752†	25742†	25769⋆	25758 †
2825	29806	25724	25730†	25740†	25730†	25757⋆	25746 †
2824	29794	25712	25718†	25728†	25718†	25745⋆	25734 †
2823	29782	25700	25706†	25716†	25706†	25733⋆	25722 †
2822	29770	25688	25694†	25704†	25694†	25721⋆	25710 †
2821	29758	25676	25682†	25692†	25682†	25709⋆	25698 †
2820	29746	25664	25670†	25680†	25670†	25697⋆	25686 †
2819	29734	25652	25658†	25668†	25658†	25685⋆	25674 †
2818	29722	25640	25646†	25656†	25646†	25673⋆	25662 †
2817	29710	25628	25634†	25644†	25634†	25661⋆	25650 †
2816	29698	25616	25622†	25632†	25622†	25649⋆	25638 †
2815	29686	25604	25610†	25620†	25610†	25637⋆	25626 †
2814	29674	25592	25598†	25608†	25598†	25625†	25626 ⋆
2813	29662	25580	25586†	25596†	25586†	25613†	25614 ⋆
2812	29650	25568	25574†	25584†	25574†	25601†	25602 ⋆
2811	29638	25556	25562†	25572†	25562†	25589†	25590 ⋆
2810	29626	25544	25550†	25560†	25550†	25577†	25590 ⋆
2809	29614	25532	25538†	25548†	25538†	25565†	25578 ⋆
2808	29602	25520	25526†	25536†	25526†	25553†	25566 ⋆
2807	29590	25508	25514†	25524†	25514†	25541†	25554 ⋆
2806	29578	25496	25502†	25512†	25502†	25529†	25542 ⋆
2805	29566	25484	25490†	25500†	25490†	25517†	25530 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2804	29554	25472	25478†	25488†	25478†	25505†	25518 ⋆
2803	29542	25460	25466†	25476†	25466†	25493†	25506 ⋆
2802	29530	25448	25454†	25464†	25454†	25481†	25494 ⋆
2801	29518	25436	25442†	25452†	25442†	25469†	25482 ⋆
2800	29506	25424	25430†	25440†	25430†	25457†	25470 ⋆
2799	29494	25412	25418†	25428†	25418†	25445†	25458 ⋆
2798	29482	25400	25406†	25416†	25406†	25433†	25458 ⋆
2797	29470	25388	25394†	25404†	25394†	25421†	25446 ⋆
2796	29458	25376	25382†	25392†	25382†	25409†	25434 ⋆
2795	29446	25364	25370†	25380†	25370†	25397†	25422 ⋆
2794	29434	25352	25358†	25368†	25358†	25385†	25416 ⋆
2793	29422	25340	25346†	25356†	25346†	25373†	25404 ⋆
2792	29410	25328	25334†	25344†	25334†	25361†	25392 ⋆
2791	29398	25316	25322†	25332†	25322†	25349†	25380 ⋆
2790	29386	25304	25310†	25320†	25310†	25337†	25368 ⋆
2789	29374	25292	25298†	25308†	25298†	25325†	25356 ⋆
2788	29362	25280	25286†	25296†	25286†	25313†	25344 ⋆
2787	29350	25268	25274†	25284†	25274†	25301†	25332 ⋆
2786	29338	25256	25262†	25272†	25262†	25289†	25320 ⋆
2785	29326	25244	25250†	25260†	25250†	25277†	25308 ⋆
2784	29314	25232	25238†	25248†	25238†	25265†	25296 ⋆
2783	29302	25220	25226†	25236†	25226†	25253†	25284 ⋆
2782	29290	25208	25214†	25224†	25214†	25241†	25272 ⋆
2781	29278	25196	25202†	25212†	25202†	25229†	25260 ⋆
2780	29266	25184	25190†	25200†	25190†	25217†	25248 ⋆
2779	29254	25172	25178†	25188†	25178†	25205†	25236 ⋆
2778	29242	25160	25166†	25176†	25166†	25193†	25224 ⋆
2777	29230	25148	25154†	25164†	25154†	25181†	25212 ⋆
2776	29218	25136	25142†	25152†	25142†	25169†	25200 ⋆
2775	29206	25124	25130†	25140†	25130†	25157†	25188 ⋆
2774	29194	25112	25118†	25128†	25118†	25145†	25176 ⋆
2773	29182	25100	25106†	25116†	25106†	25133†	25164 ⋆
2772	29170	25088	25094†	25104†	25094†	25121†	25152 ⋆
2771	29158	25076	25082†	25092†	25082†	25109†	25140 ⋆
2770	29146	25064	25070†	25080†	25070†	25097†	25128 ⋆
2769	29134	25052	25058†	25068†	25058†	25085†	25116 ⋆
2768	29122	25040	25046†	25056†	25046†	25073†	25104 ⋆
2767	29110	25028	25034†	25044†	25034†	25061†	25092 ⋆
2766	29098	25016	25022†	25032†	25022†	25049†	25080 ⋆
2765	29086	25004	25010†	25020†	25010†	25037†	25068 ⋆
2764	29074	24992	24998†	25008†	24998†	25025†	25056 ⋆
2763	29062	24980	24986†	24996†	24986†	25013†	25044 ⋆
2762	29050	24968	24974†	24984†	24974†	25001†	25032 ⋆
2761	29038	24956	24962†	24972†	24962†	24989†	25020 ⋆
2760	29026	24944	24950†	24960†	24950†	24977†	25008 ⋆
2759	29014	24932	24938†	24948†	24938†	24965†	24996 ⋆
2758	29002	24920	24926†	24936†	24926†	24953†	24984 ⋆
2757	28990	24908	24914†	24924†	24914†	24941†	24972 ⋆
2756	28978	24896	24902†	24912†	24902†	24929†	24960 ⋆
2755	28966	24884	24890†	24900†	24890†	24917†	24948 ⋆
2754	28954	24872	24878†	24888†	24878†	24905†	24936 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2753	28942	24860	24866†	24876†	24866†	24893†	24924 ⋆
2752	28930	24848	24854†	24864†	24854†	24881†	24912 ⋆
2751	28918	24836	24842†	24852†	24842†	24869†	24900 ⋆
2750	28906	24824	24830†	24840†	24830†	24857†	24900 ⋆
2749	28894	24812	24818†	24828†	24818†	24845†	24888 ⋆
2748	28882	24800	24806†	24816†	24806†	24833†	24876 ⋆
2747	28870	24788	24794†	24804†	24794†	24821†	24864 ⋆
2746	28858	24776	24782†	24792†	24782†	24809†	24864 ⋆
2745	28846	24764	24770†	24780†	24770†	24797†	24852 ⋆
2744	28834	24752	24758†	24768†	24758†	24785†	24840 ⋆
2743	28822	24740	24746†	24756†	24746†	24773†	24828 ⋆
2742	28810	24728	24734†	24744†	24734†	24761†	24816 ⋆
2741	28798	24716	24722†	24732†	24722†	24749†	24804 ⋆
2740	28786	24704	24710†	24720†	24710†	24737†	24792 ⋆
2739	28774	24692	24698†	24708†	24698†	24725†	24780 ⋆
2738	28762	24680	24686†	24696†	24686†	24713†	24768 ⋆
2737	28750	24668	24674†	24684†	24674†	24701†	24756 ⋆
2736	28738	24656	24662†	24672†	24662†	24689†	24744 ⋆
2735	28726	24644	24650†	24660†	24650†	24677†	24732 ⋆
2734	28714	24632	24638†	24648†	24638†	24665†	24732 ⋆
2733	28702	24620	24626†	24636†	24626†	24653†	24720 ⋆
2732	28690	24608	24614†	24624†	24614†	24641†	24708 ⋆
2731	28678	24596	24602†	24612†	24602†	24629†	24696 ⋆
2730	28666	24584	24590†	24600†	24590†	24617†	24696 ⋆
2729	28654	24572	24578†	24588†	24578†	24605†	24686 ⋆
2728	28642	24560	24566†	24576†	24566†	24593†	24674 ⋆
2727	28630	24548	24554†	24564†	24554†	24581†	24662 ⋆
2726	28618	24536	24542†	24552†	24542†	24569†	24650 ⋆
2725	28606	24524	24530†	24540†	24530†	24557†	24638 ⋆
2724	28594	24512	24518†	24528†	24518†	24545†	24626 ⋆
2723	28582	24500	24506†	24516†	24506†	24533†	24614 ⋆
2722	28570	24488	24494†	24504†	24494†	24521†	24602 ⋆
2721	28558	24476	24482†	24492†	24482†	24509†	24590 ⋆
2720	28546	24464	24470†	24480†	24470†	24497†	24578 ⋆
2719	28534	24452	24458†	24468†	24458†	24485†	24566 ⋆
2718	28522	24440	24446†	24456†	24446†	24473†	24554 ⋆
2717	28510	24428	24434†	24444†	24434†	24461†	24542 ⋆
2716	28498	24416	24422†	24432†	24422†	24449†	24530 ⋆
2715	28486	24404	24410†	24420†	24410†	24437†	24518 ⋆
2714	28474	24392	24398†	24408†	24398†	24425†	24506 ⋆
2713	28462	24380	24386†	24396†	24386†	24413†	24494 ⋆
2712	28450	24368	24374†	24384†	24374†	24401†	24482 ⋆
2711	28438	24356	24362†	24372†	24362†	24389†	24470 ⋆
2710	28426	24344	24350†	24360†	24350†	24377†	24458 ⋆
2709	28414	24332	24338†	24348†	24338†	24365†	24446 ⋆
2708	28402	24320	24326†	24336†	24326†	24353†	24434 ⋆
2707	28390	24308	24314†	24324†	24314†	24341†	24422 ⋆
2706	28378	24296	24302†	24312†	24302†	24329†	24410 ⋆
2705	28366	24284	24290†	24300†	24290†	24317†	24398 ⋆
2704	28354	24272	24278†	24288†	24278†	24305†	24386 ⋆
2703	28342	24260	24266†	24276†	24266†	24293†	24374 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2702	28330	24248	24254†	24264†	24254†	24281†	24362 ⋆
2701	28318	24236	24242†	24252†	24242†	24269†	24350 ⋆
2700	28306	24224	24230†	24240†	24230†	24257†	24338 ⋆
2699	28294	24212	24218†	24228†	24218†	24245†	24326 ⋆
2698	28282	24200	24206†	24216†	24206†	24233†	24314 ⋆
2697	28270	24188	24194†	24204†	24194†	24221†	24302 ⋆
2696	28258	24176	24182†	24192†	24182†	24209†	24290 ⋆
2695	28246	24164	24170†	24180†	24170†	24197†	24278 ⋆
2694	28234	24152	24158†	24168†	24158†	24185†	24266 ⋆
2693	28222	24140	24146†	24156†	24146†	24173†	24254 ⋆
2692	28210	24128	24134†	24144†	24134†	24161†	24242 ⋆
2691	28198	24116	24122†	24132†	24122†	24149†	24230 ⋆
2690	28186	24104	24110†	24120†	24110†	24137†	24218 ⋆
2689	28174	24092	24098†	24108†	24098†	24125†	24206 ⋆
2688	28162	24080	24086†	24096†	24086†	24113†	24194 ⋆
2687	28150	24068	24074†	24084†	24074†	24101†	24182 ⋆
2686	28138	24056	24062†	24072†	24062†	24089†	24170 ⋆
2685	28126	24044	24050†	24060†	24050†	24077†	24158 ⋆
2684	28114	24032	24038†	24048†	24038†	24065†	24146 ⋆
2683	28102	24020	24026†	24036†	24026†	24053†	24134 ⋆
2682	28090	24008	24014†	24024†	24014†	24041†	24122 ⋆
2681	28078	23996	24002†	24012†	24002†	24029†	24110 ⋆
2680	28066	23984	23990†	24000†	23990†	24017†	24098 ⋆
2679	28054	23972	23978†	23988†	23978†	24005†	24086 ⋆
2678	28042	23960	23966†	23976†	23966†	23993†	24074 ⋆
2677	28030	23948	23954†	23964†	23954†	23981†	24062 ⋆
2676	28018	23936	23942†	23952†	23942†	23969†	24050 ⋆
2675	28006	23924	23930†	23940†	23930†	23957†	24038 ⋆
2674	27994	23912	23918†	23928†	23918†	23945†	24026 ⋆
2673	27982	23900	23906†	23916†	23906†	23933†	24014 ⋆
2672	27970	23888	23894†	23904†	23894†	23921†	24002 ⋆
2671	27958	23876	23882†	23892†	23882†	23909†	23990 ⋆
2670	27946	23864	23870†	23880†	23870†	23897†	23978 ⋆
2669	27934	23852	23858†	23868†	23858†	23885†	23966 ⋆
2668	27922	23840	23846†	23856†	23846†	23873†	23954 ⋆
2667	27910	23828	23834†	23844†	23834†	23861†	23942 ⋆
2666	27898	23816	23822†	23832†	23822†	23849†	23930 ⋆
2665	27886	23804	23810†	23820†	23810†	23837†	23918 ⋆
2664	27874	23792	23798†	23808†	23798†	23825†	23906 ⋆
2663	27862	23780	23786†	23796†	23786†	23813†	23894 ⋆
2662	27850	23768	23774†	23784†	23774†	23801†	23882 ⋆
2661	27838	23756	23762†	23772†	23762†	23789†	23870 ⋆
2660	27826	23744	23750†	23760†	23750†	23777†	23858 ⋆
2659	27814	23732	23738†	23748†	23738†	23765†	23846 ⋆
2658	27802	23720	23726†	23736†	23726†	23753†	23834 ⋆
2657	27790	23708	23714†	23724†	23714†	23741†	23822 ⋆
2656	27778	23696	23702†	23712†	23702†	23729†	23810 ⋆
2655	27766	23684	23690†	23700†	23690†	23717†	23798 ⋆
2654	27754	23672	23678†	23688†	23678†	23705†	23786 ⋆
2653	27742	23660	23666†	23676†	23666†	23693†	23774 ⋆
2652	27730	23648	23654†	23664†	23654†	23681†	23762 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2651	27718	23636	23642†	23652†	23642†	23669†	23750 ⋆
2650	27706	23624	23630†	23640†	23630†	23657†	23738 ⋆
2649	27694	23612	23618†	23628†	23618†	23645†	23726 ⋆
2648	27682	23600	23606†	23616†	23606†	23633†	23714 ⋆
2647	27670	23588	23594†	23604†	23594†	23621†	23702 ⋆
2646	27658	23576	23582†	23592†	23582†	23609†	23690 ⋆
2645	27646	23564	23570†	23580†	23570†	23597†	23678 ⋆
2644	27634	23552	23558†	23568†	23558†	23585†	23666 ⋆
2643	27622	23540	23546†	23556†	23546†	23573†	23654 ⋆
2642	27610	23528	23534†	23544†	23534†	23561†	23642 ⋆
2641	27598	23516	23522†	23532†	23522†	23549†	23630 ⋆
2640	27586	23504	23510†	23520†	23510†	23537†	23618 ⋆
2639	27574	23492	23498†	23508†	23498†	23525†	23606 ⋆
2638	27562	23480	23486†	23496†	23486†	23513†	23594 ⋆
2637	27550	23468	23474†	23484†	23474†	23501†	23582 ⋆
2636	27538	23456	23462†	23472†	23462†	23489†	23570 ⋆
2635	27526	23444	23450†	23460†	23450†	23477†	23558 ⋆
2634	27514	23432	23438†	23448†	23438†	23465†	23546 ⋆
2633	27502	23420	23426†	23436†	23426†	23453†	23534 ⋆
2632	27490	23408	23414†	23424†	23414†	23441†	23522 ⋆
2631	27478	23396	23402†	23412†	23402†	23429†	23510 ⋆
2630	27466	23384	23390†	23400†	23390†	23417†	23498 ⋆
2629	27454	23372	23378†	23388†	23378†	23405†	23486 ⋆
2628	27442	23360	23366†	23376†	23366†	23393†	23474 ⋆
2627	27430	23348	23354†	23364†	23354†	23381†	23462 ⋆
2626	27418	23336	23342†	23352†	23342†	23369†	23450 ⋆
2625	27406	23324	23330†	23340†	23330†	23357†	23438 ⋆
2624	27394	23312	23318†	23328†	23318†	23345†	23426 ⋆
2623	27382	23300	23306†	23316†	23306†	23333†	23414 ⋆
2622	27370	23288	23294†	23304†	23294†	23321†	23402 ⋆
2621	27358	23276	23282†	23292†	23282†	23309†	23390 ⋆
2620	27346	23264	23270†	23280†	23270†	23297†	23378 ⋆
2619	27334	23252	23258†	23268†	23258†	23285†	23366 ⋆
2618	27322	23240	23246†	23256†	23246†	23273†	23354 ⋆
2617	27310	23228	23234†	23244†	23234†	23261†	23342 ⋆
2616	27298	23216	23222†	23232†	23222†	23249†	23330 ⋆
2615	27286	23204	23210†	23220†	23210†	23237†	23318 ⋆
2614	27274	23192	23198†	23208†	23198†	23225†	23306 ⋆
2613	27262	23180	23186†	23196†	23186†	23213†	23294 ⋆
2612	27250	23168	23174†	23184†	23174†	23201†	23282 ⋆
2611	27238	23156	23162†	23172†	23162†	23189†	23270 ⋆
2610	27226	23144	23150†	23160†	23150†	23177†	23258 ⋆
2609	27214	23132	23138†	23148†	23138†	23165†	23246 ⋆
2608	27202	23120	23126†	23136†	23126†	23153†	23234 ⋆
2607	27190	23108	23114†	23124†	23114†	23141†	23222 ⋆
2606	27178	23096	23102†	23112†	23102†	23129†	23210 ⋆
2605	27166	23084	23090†	23100†	23090†	23117†	23198 ⋆
2604	27154	23072	23078†	23088†	23078†	23105†	23186 ⋆
2603	27142	23060	23066†	23076†	23066†	23093†	23174 ⋆
2602	27130	23048	23054†	23064†	23054†	23081†	23162 ⋆
2601	27118	23036	23042†	23052†	23042†	23069†	23150 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2600	27106	23024	23030†	23040†	23030†	23057†	23138 ⋆
2599	27094	23012	23018†	23028†	23018†	23045†	23126 ⋆
2598	27082	23000	23006†	23016†	23006†	23033†	23114 ⋆
2597	27070	22988	22994†	23004†	22994†	23021†	23102 ⋆
2596	27058	22976	22982†	22992†	22982†	23009†	23090 ⋆
2595	27046	22964	22970†	22980†	22970†	22997†	23078 ⋆
2594	27034	22952	22958†	22968†	22958†	22985†	23066 ⋆
2593	27022	22940	22946†	22956†	22946†	22973†	23054 ⋆
2592	27010	22928	22934†	22944†	22934†	22961†	23042 ⋆
2591	26998	22916	22922†	22932†	22922†	22949†	23030 ⋆
2590	26986	22904	22910†	22920†	22910†	22937†	23018 ⋆
2589	26974	22892	22898†	22908†	22898†	22925†	23006 ⋆
2588	26962	22880	22886†	22896†	22886†	22913†	22994 ⋆
2587	26950	22868	22874†	22884†	22874†	22901†	22982 ⋆
2586	26938	22856	22862†	22872†	22862†	22889†	22970 ⋆
2585	26926	22844	22850†	22860†	22850†	22877†	22958 ⋆
2584	26914	22832	22838†	22848†	22838†	22865†	22946 ⋆
2583	26902	22820	22826†	22836†	22826†	22853†	22934 ⋆
2582	26890	22808	22814†	22824†	22814†	22841†	22922 ⋆
2581	26878	22796	22802†	22812†	22802†	22829†	22910 ⋆
2580	26866	22784	22790†	22800†	22790†	22817†	22898 ⋆
2579	26854	22772	22778†	22788†	22778†	22805†	22886 ⋆
2578	26842	22760	22766†	22776†	22766†	22793†	22874 ⋆
2577	26830	22748	22754†	22764†	22754†	22781†	22862 ⋆
2576	26818	22736	22742†	22752†	22742†	22769†	22850 ⋆
2575	26806	22724	22730†	22740†	22730†	22757†	22838 ⋆
2574	26794	22712	22718†	22728†	22718†	22745†	22826 ⋆
2573	26782	22700	22706†	22716†	22706†	22733†	22814 ⋆
2572	26770	22688	22694†	22704†	22694†	22721†	22802 ⋆
2571	26758	22676	22682†	22692†	22682†	22709†	22790 ⋆
2570	26746	22664	22670†	22680†	22670†	22697†	22778 ⋆
2569	26734	22652	22658†	22668†	22658†	22685†	22766 ⋆
2568	26722	22640	22646†	22656†	22646†	22673†	22754 ⋆
2567	26710	22628	22634†	22644†	22634†	22661†	22742 ⋆
2566	26698	22616	22622†	22632†	22622†	22649†	22730 ⋆
2565	26686	22604	22610†	22620†	22610†	22637†	22718 ⋆
2564	26674	22592	22598†	22608†	22598†	22625†	22706 ⋆
2563	26662	22580	22586†	22596†	22586†	22613†	22694 ⋆
2562	26650	22568	22574†	22584†	22574†	22601†	22682 ⋆
2561	26638	22556	22562†	22572†	22562†	22589†	22670 ⋆
2560	26626	22544	22550†	22560†	22550†	22577†	22658 ⋆
2559	26614	22532	22538†	22548†	22538†	22565†	22646 ⋆
2558	26602	22520	22526†	22536†	22526†	22553†	22634 ⋆
2557	26590	22508	22514†	22524†	22514†	22541†	22622 ⋆
2556	26578	22496	22502†	22512†	22502†	22529†	22610 ⋆
2555	26566	22484	22490†	22500†	22490†	22517†	22598 ⋆
2554	26554	22472	22478†	22488†	22478†	22505†	22586 ⋆
2553	26542	22460	22466†	22476†	22466†	22493†	22574 ⋆
2552	26530	22448	22454†	22464†	22454†	22481†	22562 ⋆
2551	26518	22436	22442†	22452†	22442†	22469†	22550 ⋆
2550	26506	22424	22430†	22440†	22430†	22457†	22538 ⋆

continued

m = 12							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2549	26494	22412	22418†	22428†	22418†	22445†	22526 ⋆
2548	26482	22400	22406†	22416†	22406†	22433†	22514 ⋆
2547	26470	22388	22394†	22404†	22394†	22421†	22502 ⋆
2546	26458	22376	22382†	22392†	22382†	22409†	22490 ⋆
2545	26446	22364	22370†	22380†	22370†	22397†	22478 ⋆
2544	26434	22352	22358†	22368†	22358†	22385†	22466 ⋆
2543	26422	22340	22346†	22356†	22346†	22373†	22454 ⋆
2542	26410	22328	22334†	22344†	22334†	22361†	22442 ⋆
2541	26398	22316	22322†	22332†	22322†	22349†	22430 ⋆
2540	26386	22304	22310†	22320†	22310†	22337†	22418 ⋆
2539	26374	22292	22298†	22308†	22298†	22325†	22406 ⋆
2538	26362	22280	22286†	22296†	22286†	22313†	22394 ⋆
2537	26350	22268	22274†	22284†	22274†	22301†	22382 ⋆
2536	26338	22256	22262†	22272†	22262†	22289†	22370 ⋆
2535	26326	22244	22250†	22260†	22250†	22277†	22358 ⋆
2534	26314	22232	22238†	22248†	22238†	22265†	22346 ⋆
2533	26302	22220	22226†	22236†	22226†	22253†	22334 ⋆
2532	26290	22208	22214†	22224†	22214†	22241†	22322 ⋆
2531	26278	22196	22202†	22212†	22202†	22229†	22310 ⋆
2530	26266	22184	22190†	22200†	22190†	22217†	22298 ⋆
2529	26254	22172	22178†	22188†	22178†	22205†	22286 ⋆
2528	26242	22160	22166†	22176†	22166†	22193†	22274 ⋆
2527	26230	22148	22154†	22164†	22154†	22181†	22262 ⋆
2526	26218	22136	22142†	22152†	22142†	22169†	22250 ⋆
2525	26206	22124	22130†	22140†	22130†	22157†	22238 ⋆
2524	26194	22112	22118†	22128†	22118†	22145†	22226 ⋆
2523	26182	22100	22106†	22116†	22106†	22133†	22214 ⋆
2522	26170	22088	22094†	22104†	22094†	22121†	22202 ⋆
2521	26158	22076	22082†	22092†	22082†	22109†	22190 ⋆
2520	26146	22064	22070†	22080†	22070†	22097†	22178 ⋆
2519	26134	22052	22058†	22068†	22058†	22085†	22166 ⋆
2518	26122	22040	22046†	22056†	22046†	22073†	22154 ⋆
2517	26110	22028	22034†	22044†	22034†	22061†	22142 ⋆
2516	26098	22016	22022†	22032†	22022†	22049†	22130 ⋆
2515	26086	22004	22010†	22020†	22010†	22037†	22118 ⋆
2514	26074	21992	21998†	22008†	21998†	22025†	22106 ⋆
2513	26062	21980	21986†	21996†	21986†	22013†	22094 ⋆
2512	26050	21968	21974†	21984†	21974†	22001†	22082 ⋆
2511	26038	21956	21962†	21972†	21962†	21989†	22070 ⋆
2510	26026	21944	21950†	21960†	21950†	21977†	22058 ⋆
2509	26014	21932	21938†	21948†	21938†	21965†	22046 ⋆
2508	26002	21920	21926†	21936†	21926†	21953†	22034 ⋆
2507	25990	21908	21914†	21924†	21914†	21941†	22022 ⋆
2506	25978	21896	21902†	21912†	21902†	21929†	22010 ⋆
2505	25966	21884	21890†	21900†	21890†	21917†	21998 ⋆
2504	25954	21872	21878†	21888†	21878†	21905†	21986 ⋆
2503	25942	21860	21866†	21876†	21866†	21893†	21974 ⋆
2502	25930	21848	21854†	21864†	21854†	21881†	21962 ⋆
2501	25918	21836	21842†	21852†	21842†	21869†	21950 ⋆
2500	25906	21824	21830†	21840†	21830†	21857†	21938 ⋆
2499	25894	21812	21818†	21828†	21818†	21845†	21926 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2498	25882	21800	21806†	21816†	21806†	21833†	21914 ⋆
2497	25870	21788	21794†	21804†	21794†	21821†	21902 ⋆
2496	25858	21776	21782†	21792†	21782†	21809†	21890 ⋆
2495	25846	21764	21770†	21780†	21770†	21797†	21878 ⋆
2494	25834	21752	21758†	21768†	21758†	21785†	21866 ⋆
2493	25822	21740	21746†	21756†	21746†	21773†	21854 ⋆
2492	25810	21728	21734†	21744†	21734†	21761†	21842 ⋆
2491	25798	21716	21722†	21732†	21722†	21749†	21830 ⋆
2490	25786	21704	21710†	21720†	21710†	21737†	21818 ⋆
2489	25774	21692	21698†	21708†	21698†	21725†	21806 ⋆
2488	25762	21680	21686†	21696†	21686†	21713†	21794 ⋆
2487	25750	21668	21674†	21684†	21674†	21701†	21782 ⋆
2486	25738	21656	21662†	21672†	21662†	21689†	21770 ⋆
2485	25726	21644	21650†	21660†	21650†	21677†	21758 ⋆
2484	25714	21632	21638†	21648†	21638†	21665†	21746 ⋆
2483	25702	21620	21626†	21636†	21626†	21653†	21734 ⋆
2482	25690	21608	21614†	21624†	21614†	21641†	21722 ⋆
2481	25678	21596	21602†	21612†	21602†	21629†	21710 ⋆
2480	25666	21584	21590†	21600†	21590†	21617†	21698 ⋆
2479	25654	21572	21578†	21588†	21578†	21605†	21686 ⋆
2478	25642	21560	21566†	21576†	21566†	21593†	21674 ⋆
2477	25630	21548	21554†	21564†	21554†	21581†	21662 ⋆
2476	25618	21536	21542†	21552†	21542†	21569†	21650 ⋆
2475	25606	21524	21530†	21540†	21530†	21557†	21638 ⋆
2474	25594	21512	21518†	21528†	21518†	21545†	21626 ⋆
2473	25582	21500	21506†	21516†	21506†	21533†	21614 ⋆
2472	25570	21488	21494†	21504†	21494†	21521†	21602 ⋆
2471	25558	21476	21482†	21492†	21482†	21509†	21590 ⋆
2470	25546	21464	21470†	21480†	21470†	21497†	21578 ⋆
2469	25534	21452	21458†	21468†	21458†	21485†	21566 ⋆
2468	25522	21440	21446†	21456†	21446†	21473†	21554 ⋆
2467	25510	21428	21434†	21444†	21434†	21461†	21542 ⋆
2466	25498	21416	21422†	21432†	21422†	21449†	21530 ⋆
2465	25486	21404	21410†	21420†	21410†	21437†	21518 ⋆
2464	25474	21392	21398†	21408†	21398†	21425†	21506 ⋆
2463	25462	21380	21386†	21396†	21386†	21413†	21494 ⋆
2462	25450	21368	21374†	21384†	21374†	21401†	21482 ⋆
2461	25438	21356	21362†	21372†	21362†	21389†	21470 ⋆
2460	25426	21344	21350†	21360†	21350†	21377†	21458 ⋆
2459	25414	21332	21338†	21348†	21338†	21365†	21446 ⋆
2458	25402	21320	21326†	21336†	21326†	21353†	21434 ⋆
2457	25390	21308	21314†	21324†	21314†	21341†	21422 ⋆
2456	25378	21296	21302†	21312†	21302†	21329†	21410 ⋆
2455	25366	21284	21290†	21300†	21290†	21317†	21398 ⋆
2454	25354	21272	21278†	21288†	21278†	21305†	21386 ⋆
2453	25342	21260	21266†	21276†	21266†	21293†	21374 ⋆
2452	25330	21248	21254†	21264†	21254†	21281†	21362 ⋆
2451	25318	21236	21242†	21252†	21242†	21269†	21350 ⋆
2450	25306	21224	21230†	21240†	21230†	21257†	21338 ⋆
2449	25294	21212	21218†	21228†	21218†	21245†	21326 ⋆
2448	25282	21200	21206†	21216†	21206†	21233†	21314 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2447	25270	21188	21194†	21204†	21194†	21221†	21302 ⋆
2446	25258	21176	21182†	21192†	21182†	21209†	21290 ⋆
2445	25246	21164	21170†	21180†	21170†	21197†	21278 ⋆
2444	25234	21152	21158†	21168†	21158†	21185†	21266 ⋆
2443	25222	21140	21146†	21156†	21146†	21173†	21254 ⋆
2442	25210	21128	21134†	21144†	21134†	21161†	21242 ⋆
2441	25198	21116	21122†	21132†	21122†	21149†	21230 ⋆
2440	25186	21104	21110†	21120†	21110†	21137†	21218 ⋆
2439	25174	21092	21098†	21108†	21098†	21125†	21206 ⋆
2438	25162	21080	21086†	21096†	21086†	21113†	21194 ⋆
2437	25150	21068	21074†	21084†	21074†	21101†	21182 ⋆
2436	25138	21056	21062†	21072†	21062†	21089†	21170 ⋆
2435	25126	21044	21050†	21060†	21050†	21077†	21158 ⋆
2434	25114	21032	21038†	21048†	21038†	21065†	21146 ⋆
2433	25102	21020	21026†	21036†	21026†	21053†	21134 ⋆
2432	25090	21008	21014†	21024†	21014†	21041†	21122 ⋆
2431	25078	20996	21002†	21012†	21002†	21029†	21110 ⋆
2430	25066	20984	20990†	21000†	20990†	21017†	21098 ⋆
2429	25054	20972	20978†	20988†	20978†	21005†	21086 ⋆
2428	25042	20960	20966†	20976†	20966†	20993†	21074 ⋆
2427	25030	20948	20954†	20964†	20954†	20981†	21062 ⋆
2426	25018	20936	20942†	20952†	20942†	20969†	21050 ⋆
2425	25006	20924	20930†	20940†	20930†	20957†	21038 ⋆
2424	24994	20912	20918†	20928†	20918†	20945†	21026 ⋆
2423	24982	20900	20906†	20916†	20906†	20933†	21014 ⋆
2422	24970	20888	20894†	20904†	20894†	20921†	21002 ⋆
2421	24958	20876	20882†	20892†	20882†	20909†	20990 ⋆
2420	24946	20864	20870†	20880†	20870†	20897†	20978 ⋆
2419	24934	20852	20858†	20868†	20858†	20885†	20966 ⋆
2418	24922	20840	20846†	20856†	20846†	20873†	20954 ⋆
2417	24910	20828	20834†	20844†	20834†	20861†	20942 ⋆
2416	24898	20816	20822†	20832†	20822†	20849†	20930 ⋆
2415	24886	20804	20810†	20820†	20810†	20837†	20918 ⋆
2414	24874	20792	20798†	20808†	20798†	20825†	20906 ⋆
2413	24862	20780	20786†	20796†	20786†	20813†	20894 ⋆
2412	24850	20768	20774†	20784†	20774†	20801†	20882 ⋆
2411	24838	20756	20762†	20772†	20762†	20789†	20870 ⋆
2410	24826	20744	20750†	20760†	20750†	20777†	20858 ⋆
2409	24814	20732	20738†	20748†	20738†	20765†	20846 ⋆
2408	24802	20720	20726†	20736†	20726†	20753†	20834 ⋆
2407	24790	20708	20714†	20724†	20714†	20741†	20822 ⋆
2406	24778	20696	20702†	20712†	20702†	20729†	20810 ⋆
2405	24766	20684	20690†	20700†	20690†	20717†	20798 ⋆
2404	24754	20672	20678†	20688†	20678†	20705†	20786 ⋆
2403	24742	20660	20666†	20676†	20666†	20693†	20774 ⋆
2402	24730	20648	20654†	20664†	20654†	20681†	20762 ⋆
2401	24718	20636	20642†	20652†	20642†	20669†	20750 ⋆
2400	24706	20624	20630†	20640†	20630†	20657†	20738 ⋆
2399	24694	20612	20618†	20628†	20618†	20645†	20726 ⋆
2398	24682	20600	20606†	20616†	20606†	20633†	20714 ⋆
2397	24670	20588	20594†	20604†	20594†	20621†	20702 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2396	24658	20576	20582†	20592†	20582†	20609†	20690 $\star$
2395	24646	20564	20570†	20580†	20570†	20597†	20678 $\star$
2394	24634	20552	20558†	20568†	20558†	20585†	20666 $\star$
2393	24622	20540	20546†	20556†	20546†	20573†	20654 $\star$
2392	24610	20528	20534†	20544†	20534†	20561†	20642 $\star$
2391	24598	20516	20522†	20532†	20522†	20549†	20630 $\star$
2390	24586	20504	20510†	20520†	20510†	20537†	20618 $\star$
2389	24574	20492	20498†	20508†	20498†	20525†	20606 $\star$
2388	24562	20480	20486†	20496†	20486†	20513†	20594 $\star$
2387	24550	20468	20474†	20484†	20474†	20501†	20582 $\star$
2386	24538	20456	20462†	20472†	20462†	20489†	20570 $\star$
2385	24526	20444	20450†	20460†	20450†	20477†	20558 $\star$
2384	24514	20432	20438†	20448†	20438†	20465†	20546 $\star$
2383	24502	20420	20426†	20436†	20426†	20453†	20534 $\star$
2382	24490	20408	20414†	20424†	20414†	20441†	20522 $\star$
2381	24478	20396	20402†	20412†	20402†	20429†	20510 $\star$
2380	24466	20384	20390†	20400†	20390†	20417†	20498 $\star$
2379	24454	20372	20378†	20388†	20378†	20405†	20486 $\star$
2378	24442	20360	20366†	20376†	20366†	20393†	20474 $\star$
2377	24430	20348	20354†	20364†	20354†	20381†	20462 $\star$
2376	24418	20336	20342†	20352†	20342†	20369†	20450 $\star$
2375	24406	20324	20330†	20340†	20330†	20357†	20438 $\star$
2374	24394	20312	20318†	20328†	20318†	20345†	20426 $\star$
2373	24382	20300	20306†	20316†	20306†	20333†	20414 $\star$
2372	24370	20288	20294†	20304†	20294†	20321†	20402 $\star$
2371	24358	20276	20282†	20292†	20282†	20309†	20390 $\star$
2370	24346	20264	20270†	20280†	20270†	20297†	20378 $\star$
2369	24334	20252	20258†	20268†	20258†	20285†	20366 $\star$
2368	24322	20240	20246†	20256†	20246†	20273†	20354 $\star$
2367	24310	20228	20234†	20244†	20234†	20261†	20342 $\star$
2366	24298	20216	20222†	20232†	20222†	20249†	20330 $\star$
2365	24286	20204	20210†	20220†	20210†	20237†	20318 $\star$
2364	24274	20192	20198†	20208†	20198†	20225†	20306 $\star$
2363	24262	20180	20186†	20196†	20186†	20213†	20294 $\star$
2362	24250	20168	20174†	20184†	20174†	20201†	20282 $\star$
2361	24238	20156	20162†	20172†	20162†	20189†	20270 $\star$
2360	24226	20144	20150†	20160†	20150†	20177†	20258 $\star$
2359	24214	20132	20138†	20148†	20138†	20165†	20246 $\star$
2358	24202	20120	20126†	20136†	20126†	20153†	20234 $\star$
2357	24190	20108	20114†	20124†	20114†	20141†	20222 $\star$
2356	24178	20096	20102†	20112†	20102†	20129†	20210 $\star$
2355	24166	20084	20090†	20100†	20090†	20117†	20198 $\star$
2354	24154	20072	20078†	20088†	20078†	20105†	20186 $\star$
2353	24142	20060	20066†	20076†	20066†	20093†	20174 $\star$
2352	24130	20048	20054†	20064†	20054†	20081†	20162 $\star$
2351	24118	20036	20042†	20052†	20042†	20069†	20150 $\star$
2350	24106	20024	20030†	20040†	20030†	20057†	20138 $\star$
2349	24094	20012	20018†	20028†	20018†	20045†	20126 $\star$
2348	24082	20000	20006†	20016†	20006†	20033†	20114 $\star$
2347	24070	19988	19994†	20004†	19994†	20021†	20102 $\star$
2346	24058	19976	19982†	19992†	19982†	20009†	20090 $\star$

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2345	24046	19964	19970†	19980†	19970†	19997†	20078 ⋆
2344	24034	19952	19958†	19968†	19958†	19985†	20066 ⋆
2343	24022	19940	19946†	19956†	19946†	19973†	20054 ⋆
2342	24010	19928	19934†	19944†	19934†	19961†	20042 ⋆
2341	23998	19916	19922†	19932†	19922†	19949†	20030 ⋆
2340	23986	19904	19910†	19920†	19910†	19937†	20018 ⋆
2339	23974	19892	19898†	19908†	19898†	19925†	20006 ⋆
2338	23962	19880	19886†	19896†	19886†	19913†	19994 ⋆
2337	23950	19868	19874†	19884†	19874†	19901†	19982 ⋆
2336	23938	19856	19862†	19872†	19862†	19889†	19970 ⋆
2335	23926	19844	19850†	19860†	19850†	19877†	19958 ⋆
2334	23914	19832	19838†	19848†	19838†	19865†	19946 ⋆
2333	23902	19820	19826†	19836†	19826†	19853†	19934 ⋆
2332	23890	19808	19814†	19824†	19814†	19841†	19922 ⋆
2331	23878	19796	19802†	19812†	19802†	19829†	19910 ⋆
2330	23866	19784	19790†	19800†	19790†	19817†	19898 ⋆
2329	23854	19772	19778†	19788†	19778†	19805†	19886 ⋆
2328	23842	19760	19766†	19776†	19766†	19793†	19874 ⋆
2327	23830	19748	19754†	19764†	19754†	19781†	19862 ⋆
2326	23818	19736	19742†	19752†	19742†	19769†	19850 ⋆
2325	23806	19724	19730†	19740†	19730†	19757†	19838 ⋆
2324	23794	19712	19718†	19728†	19718†	19745†	19826 ⋆
2323	23782	19700	19706†	19716†	19706†	19733†	19814 ⋆
2322	23770	19688	19694†	19704†	19694†	19721†	19802 ⋆
2321	23758	19676	19682†	19692†	19682†	19709†	19790 ⋆
2320	23746	19664	19670†	19680†	19670†	19697†	19778 ⋆
2319	23734	19652	19658†	19668†	19658†	19685†	19766 ⋆
2318	23722	19640	19646†	19656†	19646†	19673†	19754 ⋆
2317	23710	19628	19634†	19644†	19634†	19661†	19742 ⋆
2316	23698	19616	19622†	19632†	19622†	19649†	19730 ⋆
2315	23686	19604	19610†	19620†	19610†	19637†	19718 ⋆
2314	23674	19592	19598†	19608†	19598†	19625†	19706 ⋆
2313	23662	19580	19586†	19596†	19586†	19613†	19694 ⋆
2312	23650	19568	19574†	19584†	19574†	19601†	19682 ⋆
2311	23638	19556	19562†	19572†	19562†	19589†	19670 ⋆
2310	23626	19544	19550†	19560†	19550†	19577†	19658 ⋆
2309	23614	19532	19538†	19548†	19538†	19565†	19646 ⋆
2308	23602	19520	19526†	19536†	19526†	19553†	19634 ⋆
2307	23590	19508	19514†	19524†	19514†	19541†	19622 ⋆
2306	23578	19496	19502†	19512†	19502†	19529†	19610 ⋆
2305	23566	19484	19490†	19500†	19490†	19517†	19598 ⋆
2304	23554	19472	19478†	19488†	19478†	19505†	19586 ⋆
2303	23542	19460	19466†	19476†	19466†	19493†	19574 ⋆
2302	23530	19448	19454†	19464†	19454†	19481†	19562 ⋆
2301	23518	19436	19442†	19452†	19442†	19469†	19550 ⋆
2300	23506	19424	19430†	19440†	19430†	19457†	19538 ⋆
2299	23494	19412	19418†	19428†	19418†	19445†	19526 ⋆
2298	23482	19400	19406†	19416†	19406†	19433†	19514 ⋆
2297	23470	19388	19394†	19404†	19394†	19421†	19502 ⋆
2296	23458	19376	19382†	19392†	19382†	19409†	19490 ⋆
2295	23446	19364	19370†	19380†	19370†	19397†	19478 ⋆

continued

$m = 12$							
ν	11	10					
$S^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2294	23434	19352	19358†	19368†	19358†	19385†	19466 ⋆
2293	23422	19340	19346†	19356†	19346†	19373†	19454 ⋆
2292	23410	19328	19334†	19344†	19334†	19361†	19442 ⋆
2291	23398	19316	19322†	19332†	19322†	19349†	19430 ⋆
2290	23386	19304	19310†	19320†	19310†	19337†	19418 ⋆
2289	23374	19292	19298†	19308†	19298†	19325†	19406 ⋆
2288	23362	19280	19286†	19296†	19286†	19313†	19394 ⋆
2287	23350	19268	19274†	19284†	19274†	19301†	19382 ⋆
2286	23338	19256	19262†	19272†	19262†	19289†	19370 ⋆
2285	23326	19244	19250†	19260†	19250†	19277†	19358 ⋆
2284	23314	19232	19238†	19248†	19238†	19265†	19346 ⋆
2283	23302	19220	19226†	19236†	19226†	19253†	19334 ⋆
2282	23290	19208	19214†	19224†	19214†	19241†	19322 ⋆
2281	23278	19196	19202†	19212†	19202†	19229†	19310 ⋆
2280	23266	19184	19190†	19200†	19190†	19217†	19298 ⋆
2279	23254	19172	19178†	19188†	19178†	19205†	19286 ⋆
2278	23242	19160	19166†	19176†	19166†	19193†	19274 ⋆
2277	23230	19148	19154†	19164†	19154†	19181†	19262 ⋆
2276	23218	19136	19142†	19152†	19142†	19169†	19250 ⋆
2275	23206	19124	19130†	19140†	19130†	19157†	19238 ⋆
2274	23194	19112	19118†	19128†	19118†	19145†	19226 ⋆
2273	23182	19100	19106†	19116†	19106†	19133†	19214 ⋆
2272	23170	19088	19094†	19104†	19094†	19121†	19202 ⋆
2271	23158	19076	19082†	19092†	19082†	19109†	19190 ⋆
2270	23146	19064	19070†	19080†	19070†	19097†	19178 ⋆
2269	23134	19052	19058†	19068†	19058†	19085†	19166 ⋆
2268	23122	19040	19046†	19056†	19046†	19073†	19154 ⋆
2267	23110	19028	19034†	19044†	19034†	19061†	19142 ⋆
2266	23098	19016	19022†	19032†	19022†	19049†	19130 ⋆
2265	23086	19004	19010†	19020†	19010†	19037†	19118 ⋆
2264	23074	18992	18998†	19008†	18998†	19025†	19106 ⋆
2263	23062	18980	18986†	18996†	18986†	19013†	19094 ⋆
2262	23050	18968	18974†	18984†	18974†	19001†	19082 ⋆
2261	23038	18956	18962†	18972†	18962†	18989†	19070 ⋆
2260	23026	18944	18950†	18960†	18950†	18977†	19058 ⋆
2259	23014	18932	18938†	18948†	18938†	18965†	19046 ⋆
2258	23002	18920	18926†	18936†	18926†	18953†	19034 ⋆
2257	22990	18908	18914†	18924†	18914†	18941†	19022 ⋆
2256	22978	18896	18902†	18912†	18902†	18929†	19010 ⋆
2255	22966	18884	18890†	18900†	18890†	18917†	18998 ⋆
2254	22954	18872	18878†	18888†	18878†	18905†	18986 ⋆
2253	22942	18860	18866†	18876†	18866†	18893†	18974 ⋆
2252	22930	18848	18854†	18864†	18854†	18881†	18962 ⋆
2251	22918	18836	18842†	18852†	18842†	18869†	18950 ⋆
2250	22906	18824	18830†	18840†	18830†	18857†	18938 ⋆
2249	22894	18812	18818†	18828†	18818†	18845†	18926 ⋆
2248	22882	18800	18806†	18816†	18806†	18833†	18914 ⋆
2247	22870	18788	18794†	18804†	18794†	18821†	18902 ⋆
2246	22858	18776	18782†	18792†	18782†	18809†	18890 ⋆
2245	22846	18764	18770†	18780†	18770†	18797†	18878 ⋆
2244	22834	18752	18758†	18768†	18758†	18785†	18866 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2243	22822	18740	18746†	18756†	18746†	18773†	18854 ⋆
2242	22810	18728	18734†	18744†	18734†	18761†	18842 ⋆
2241	22798	18716	18722†	18732†	18722†	18749†	18830 ⋆
2240	22786	18704	18710†	18720†	18710†	18737†	18818 ⋆
2239	22774	18692	18698†	18708†	18698†	18725†	18806 ⋆
2238	22762	18680	18686†	18696†	18686†	18713†	18794 ⋆
2237	22750	18668	18674†	18684†	18674†	18701†	18782 ⋆
2236	22738	18656	18662†	18672†	18662†	18689†	18770 ⋆
2235	22726	18644	18650†	18660†	18650†	18677†	18758 ⋆
2234	22714	18632	18638†	18648†	18638†	18665†	18746 ⋆
2233	22702	18620	18626†	18636†	18626†	18653†	18734 ⋆
2232	22690	18608	18614†	18624†	18614†	18641†	18722 ⋆
2231	22678	18596	18602†	18612†	18602†	18629†	18710 ⋆
2230	22666	18584	18590†	18600†	18590†	18617†	18698 ⋆
2229	22654	18572	18578†	18588†	18578†	18605†	18686 ⋆
2228	22642	18560	18566†	18576†	18566†	18593†	18674 ⋆
2227	22630	18548	18554†	18564†	18554†	18581†	18662 ⋆
2226	22618	18536	18542†	18552†	18542†	18569†	18650 ⋆
2225	22606	18524	18530†	18540†	18530†	18557†	18638 ⋆
2224	22594	18512	18518†	18528†	18518†	18545†	18626 ⋆
2223	22582	18500	18506†	18516†	18506†	18533†	18614 ⋆
2222	22570	18488	18494†	18504†	18494†	18521†	18602 ⋆
2221	22558	18476	18482†	18492†	18482†	18509†	18590 ⋆
2220	22546	18464	18470†	18480†	18470†	18497†	18578 ⋆
2219	22534	18452	18458†	18468†	18458†	18485†	18566 ⋆
2218	22522	18440	18446†	18456†	18446†	18473†	18554 ⋆
2217	22510	18428	18434†	18444†	18434†	18461†	18542 ⋆
2216	22498	18416	18422†	18432†	18422†	18449†	18530 ⋆
2215	22486	18404	18410†	18420†	18410†	18437†	18518 ⋆
2214	22474	18392	18398†	18408†	18398†	18425†	18506 ⋆
2213	22462	18380	18386†	18396†	18386†	18413†	18494 ⋆
2212	22450	18368	18374†	18384†	18374†	18401†	18482 ⋆
2211	22438	18356	18362†	18372†	18362†	18389†	18470 ⋆
2210	22426	18344	18350†	18360†	18350†	18377†	18458 ⋆
2209	22414	18332	18338†	18348†	18338†	18365†	18446 ⋆
2208	22402	18320	18326†	18336†	18326†	18353†	18434 ⋆
2207	22390	18308	18314†	18324†	18314†	18341†	18422 ⋆
2206	22378	18296	18302†	18312†	18302†	18329†	18410 ⋆
2205	22366	18284	18290†	18300†	18290†	18317†	18398 ⋆
2204	22354	18272	18278†	18288†	18278†	18305†	18386 ⋆
2203	22342	18260	18266†	18276†	18266†	18293†	18374 ⋆
2202	22330	18248	18254†	18264†	18254†	18281†	18362 ⋆
2201	22318	18236	18242†	18252†	18242†	18269†	18350 ⋆
2200	22306	18224	18230†	18240†	18230†	18257†	18338 ⋆
2199	22294	18212	18218†	18228†	18218†	18245†	18326 ⋆
2198	22282	18200	18206†	18216†	18206†	18233†	18314 ⋆
2197	22270	18188	18194†	18204†	18194†	18221†	18302 ⋆
2196	22258	18176	18182†	18192†	18182†	18209†	18290 ⋆
2195	22246	18164	18170†	18180†	18170†	18197†	18278 ⋆
2194	22234	18152	18158†	18168†	18158†	18185†	18266 ⋆
2193	22222	18140	18146†	18156†	18146†	18173†	18254 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2192	22210	18128	18134†	18144†	18134†	18161†	18242 ⋆
2191	22198	18116	18122†	18132†	18122†	18149†	18230 ⋆
2190	22186	18104	18110†	18120†	18110†	18137†	18218 ⋆
2189	22174	18092	18098†	18108†	18098†	18125†	18206 ⋆
2188	22162	18080	18086†	18096†	18086†	18113†	18194 ⋆
2187	22150	18068	18074†	18084†	18074†	18101†	18182 ⋆
2186	22138	18056	18062†	18072†	18062†	18089†	18170 ⋆
2185	22126	18044	18050†	18060†	18050†	18077†	18158 ⋆
2184	22114	18032	18038†	18048†	18038†	18065†	18146 ⋆
2183	22102	18020	18026†	18036†	18026†	18053†	18134 ⋆
2182	22090	18008	18014†	18024†	18014†	18041†	18122 ⋆
2181	22078	17996	18002†	18012†	18002†	18029†	18110 ⋆
2180	22066	17984	17990†	18000†	17990†	18017†	18098 ⋆
2179	22054	17972	17978†	17988†	17978†	18005†	18086 ⋆
2178	22042	17960	17966†	17976†	17966†	17993†	18074 ⋆
2177	22030	17948	17954†	17964†	17954†	17981†	18062 ⋆
2176	22018	17936	17942†	17952†	17942†	17969†	18050 ⋆
2175	22006	17924	17930†	17940†	17930†	17957†	18038 ⋆
2174	21994	17912	17918†	17928†	17918†	17945†	18026 ⋆
2173	21982	17900	17906†	17916†	17906†	17933†	18014 ⋆
2172	21970	17888	17894†	17904†	17894†	17921†	18002 ⋆
2171	21958	17876	17882†	17892†	17882†	17909†	17990 ⋆
2170	21946	17864	17870†	17880†	17870†	17897†	17978 ⋆
2169	21934	17852	17858†	17868†	17858†	17885†	17966 ⋆
2168	21922	17840	17846†	17856†	17846†	17873†	17954 ⋆
2167	21910	17828	17834†	17844†	17834†	17861†	17942 ⋆
2166	21898	17816	17822†	17832†	17822†	17849†	17930 ⋆
2165	21886	17804	17810†	17820†	17810†	17837†	17918 ⋆
2164	21874	17792	17798†	17808†	17798†	17825†	17906 ⋆
2163	21862	17780	17786†	17796†	17786†	17813†	17894 ⋆
2162	21850	17768	17774†	17784†	17774†	17801†	17882 ⋆
2161	21838	17756	17762†	17772†	17762†	17789†	17870 ⋆
2160	21826	17744	17750†	17760†	17750†	17777†	17858 ⋆
2159	21814	17732	17738†	17748†	17738†	17765†	17846 ⋆
2158	21802	17720	17726†	17736†	17726†	17753†	17834 ⋆
2157	21790	17708	17714†	17724†	17714†	17741†	17822 ⋆
2156	21778	17696	17702†	17712†	17702†	17729†	17810 ⋆
2155	21766	17684	17690†	17700†	17690†	17717†	17798 ⋆
2154	21754	17672	17678†	17688†	17678†	17705†	17786 ⋆
2153	21742	17660	17666†	17676†	17666†	17693†	17774 ⋆
2152	21730	17648	17654†	17664†	17654†	17681†	17762 ⋆
2151	21718	17636	17642†	17652†	17642†	17669†	17750 ⋆
2150	21706	17624	17630†	17640†	17630†	17657†	17738 ⋆
2149	21694	17612	17618†	17628†	17618†	17645†	17726 ⋆
2148	21682	17600	17606†	17616†	17606†	17633†	17714 ⋆
2147	21670	17588	17594†	17604†	17594†	17621†	17702 ⋆
2146	21658	17576	17582†	17592†	17582†	17609†	17690 ⋆
2145	21646	17564	17570†	17580†	17570†	17597†	17678 ⋆
2144	21634	17552	17558†	17568†	17558†	17585†	17666 ⋆
2143	21622	17540	17546†	17556†	17546†	17573†	17654 ⋆
2142	21610	17528	17534†	17544†	17534†	17561†	17642 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2141	21598	17516	17522†	17532†	17522†	17549†	17630 ⋆
2140	21586	17504	17510†	17520†	17510†	17537†	17618 ⋆
2139	21574	17492	17498†	17508†	17498†	17525†	17606 ⋆
2138	21562	17480	17486†	17496†	17486†	17513†	17594 ⋆
2137	21550	17468	17474†	17484†	17474†	17501†	17582 ⋆
2136	21538	17456	17462†	17472†	17462†	17489†	17570 ⋆
2135	21526	17444	17450†	17460†	17450†	17477†	17558 ⋆
2134	21514	17432	17438†	17448†	17438†	17465†	17546 ⋆
2133	21502	17420	17426†	17436†	17426†	17453†	17534 ⋆
2132	21490	17408	17414†	17424†	17414†	17441†	17522 ⋆
2131	21478	17396	17402†	17412†	17402†	17429†	17510 ⋆
2130	21466	17384	17390†	17400†	17390†	17417†	17498 ⋆
2129	21454	17372	17378†	17388†	17378†	17405†	17486 ⋆
2128	21442	17360	17366†	17376†	17366†	17393†	17474 ⋆
2127	21430	17348	17354†	17364†	17354†	17381†	17462 ⋆
2126	21418	17336	17342†	17352†	17342†	17369†	17450 ⋆
2125	21406	17324	17330†	17340†	17330†	17357†	17438 ⋆
2124	21394	17312	17318†	17328†	17318†	17345†	17426 ⋆
2123	21382	17300	17306†	17316†	17306†	17333†	17414 ⋆
2122	21370	17288	17294†	17304†	17294†	17321†	17402 ⋆
2121	21358	17276	17282†	17292†	17282†	17309†	17390 ⋆
2120	21346	17264	17270†	17280†	17270†	17297†	17378 ⋆
2119	21334	17252	17258†	17268†	17258†	17285†	17366 ⋆
2118	21322	17240	17246†	17256†	17246†	17273†	17354 ⋆
2117	21310	17228	17234†	17244†	17234†	17261†	17342 ⋆
2116	21298	17216	17222†	17232†	17222†	17249†	17330 ⋆
2115	21286	17204	17210†	17220†	17210†	17237†	17318 ⋆
2114	21274	17192	17198†	17208†	17198†	17225†	17306 ⋆
2113	21262	17180	17186†	17196†	17186†	17213†	17294 ⋆
2112	21250	17168	17174†	17184†	17174†	17201†	17282 ⋆
2111	21238	17156	17162†	17172†	17162†	17189†	17270 ⋆
2110	21226	17144	17150†	17160†	17150†	17177†	17258 ⋆
2109	21214	17132	17138†	17148†	17138†	17165†	17246 ⋆
2108	21202	17120	17126†	17136†	17126†	17153†	17234 ⋆
2107	21190	17108	17114†	17124†	17114†	17141†	17222 ⋆
2106	21178	17096	17102†	17112†	17102†	17129†	17210 ⋆
2105	21166	17084	17090†	17100†	17090†	17117†	17198 ⋆
2104	21154	17072	17078†	17088†	17078†	17105†	17186 ⋆
2103	21142	17060	17066†	17076†	17066†	17093†	17174 ⋆
2102	21130	17048	17054†	17064†	17054†	17081†	17162 ⋆
2101	21118	17036	17042†	17052†	17042†	17069†	17150 ⋆
2100	21106	17024	17030†	17040†	17030†	17057†	17138 ⋆
2099	21094	17012	17018†	17028†	17018†	17045†	17126 ⋆
2098	21082	17000	17006†	17016†	17006†	17033†	17114 ⋆
2097	21070	16988	16994†	17004†	16994†	17021†	17102 ⋆
2096	21058	16976	16982†	16992†	16982†	17009†	17090 ⋆
2095	21046	16964	16970†	16980†	16970†	16997†	17078 ⋆
2094	21034	16952	16958†	16968†	16958†	16985†	17066 ⋆
2093	21022	16940	16946†	16956†	16946†	16973†	17054 ⋆
2092	21010	16928	16934†	16944†	16934†	16961†	17042 ⋆
2091	20998	16916	16922†	16932†	16922†	16949†	17030 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2090	20986	16904	16910†	16920†	16910†	16937†	17018 ⋆
2089	20974	16892	16898†	16908†	16898†	16925†	17006 ⋆
2088	20962	16880	16886†	16896†	16886†	16913†	16994 ⋆
2087	20950	16868	16874†	16884†	16874†	16901†	16982 ⋆
2086	20938	16856	16862†	16872†	16862†	16889†	16970 ⋆
2085	20926	16844	16850†	16860†	16850†	16877†	16958 ⋆
2084	20914	16832	16838†	16848†	16838†	16865†	16946 ⋆
2083	20902	16820	16826†	16836†	16826†	16853†	16934 ⋆
2082	20890	16808	16814†	16824†	16814†	16841†	16922 ⋆
2081	20878	16796	16802†	16812†	16802†	16829†	16910 ⋆
2080	20866	16784	16790†	16800†	16790†	16817†	16898 ⋆
2079	20854	16772	16778†	16788†	16778†	16805†	16886 ⋆
2078	20842	16760	16766†	16776†	16766†	16793†	16874 ⋆
2077	20830	16748	16754†	16764†	16754†	16781†	16862 ⋆
2076	20818	16736	16742†	16752†	16742†	16769†	16850 ⋆
2075	20806	16724	16730†	16740†	16730†	16757†	16838 ⋆
2074	20794	16712	16718†	16728†	16718†	16745†	16826 ⋆
2073	20782	16700	16706†	16716†	16706†	16733†	16814 ⋆
2072	20770	16688	16694†	16704†	16694†	16721†	16802 ⋆
2071	20758	16676	16682†	16692†	16682†	16709†	16790 ⋆
2070	20746	16664	16670†	16680†	16670†	16697†	16778 ⋆
2069	20734	16652	16658†	16668†	16658†	16685†	16766 ⋆
2068	20722	16640	16646†	16656†	16646†	16673†	16754 ⋆
2067	20710	16628	16634†	16644†	16634†	16661†	16742 ⋆
2066	20698	16616	16622†	16632†	16622†	16649†	16730 ⋆
2065	20686	16604	16610†	16620†	16610†	16637†	16718 ⋆
2064	20674	16592	16598†	16608†	16598†	16625†	16706 ⋆
2063	20662	16580	16586†	16596†	16586†	16613†	16694 ⋆
2062	20650	16568	16574†	16584†	16574†	16601†	16682 ⋆
2061	20638	16556	16562†	16572†	16562†	16589†	16670 ⋆
2060	20626	16544	16550†	16560†	16550†	16577†	16658 ⋆
2059	20614	16532	16538†	16548†	16538†	16565†	16646 ⋆
2058	20602	16520	16526†	16536†	16526†	16553†	16634 ⋆
2057	20590	16508	16514†	16524†	16514†	16541†	16622 ⋆
2056	20578	16496	16502†	16512†	16502†	16529†	16610 ⋆
2055	20566	16484	16490†	16500†	16490†	16517†	16598 ⋆
2054	20554	16472	16478†	16488†	16478†	16505†	16586 ⋆
2053	20542	16460	16466†	16476†	16466†	16493†	16574 ⋆
2052	20530	16448	16454†	16464†	16454†	16481†	16562 ⋆
2051	20518	16436	16442†	16452†	16442†	16469†	16550 ⋆
2050	20506	16424	16430†	16440†	16430†	16457†	16538 ⋆
2049	20494	16412	16418†	16428†	16418†	16445†	16526 ⋆
2048	20482	16400	16406†	16416†	16406†	16433†	16514 ⋆
2047	20470	16388	16394†	16404†	16394†	16421†	16502 ⋆
2046	20470	16388	16394†	16404†	16394†	16421†	16502 ⋆
2045	20458	16388	16394†	16404†	16394†	16421†	16502 ⋆
2044	20446	16388	16394†	16404†	16394†	16421†	16490 ⋆
2043	20434	16376	16382†	16392†	16382†	16409†	16478 ⋆
2042	20422	16376	16382†	16392†	16382†	16397†	16478 ⋆
2041	20410	16364	16370†	16380†	16370†	16385†	16478 ⋆
2040	20398	16352	16358†	16368†	16358†	16373†	16466 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
2039	20386	16340	16346†	16356†	16346†	16361†	16454 ⋆
2038	20374	16340	16346†	16344†	16346†	16361†	16442 ⋆
2037	20362	16328	16334†	16332†	16334†	16361†	16430 ⋆
2036	20350	16316	16322†	16320†	16322†	16349†	16418 ⋆
2035	20338	16304	16310†	16308†	16310†	16337†	16406 ⋆
2034	20326	16292	16298†	16296†	16298†	16325†	16394 ⋆
2033	20314	16280	16286†	16284†	16286†	16313†	16382 ⋆
2032	20302	16268	16274†	16272†	16274†	16301†	16370 ⋆
2031	20290	16256	16262†	16260†	16262†	16289†	16358 ⋆
2030	20278	16256	16262†	16260†	16262†	16289†	16358 ⋆
2029	20266	16244	16250†	16260†	16250†	16277†	16358 ⋆
2028	20254	16232	16238†	16248†	16238†	16277†	16346 ⋆
2027	20242	16220	16226†	16236†	16226†	16265†	16334 ⋆
2026	20230	16208	16214†	16224†	16214†	16253†	16334 ⋆
2025	20218	16196	16202†	16212†	16202†	16241†	16334 ⋆
2024	20206	16184	16190†	16200†	16190†	16229†	16322 ⋆
2023	20194	16172	16178†	16188†	16178†	16217†	16310 ⋆
2022	20182	16160	16166†	16176†	16166†	16205†	16298 ⋆
2021	20170	16148	16154†	16164†	16154†	16193†	16286 ⋆
2020	20158	16136	16142†	16152†	16142†	16181†	16274 ⋆
2019	20146	16124	16130†	16140†	16130†	16169†	16262 ⋆
2018	20134	16112	16118†	16128†	16118†	16157†	16250 ⋆
2017	20122	16100	16106†	16116†	16106†	16145†	16238 ⋆
2016	20110	16088	16094†	16104†	16094†	16133†	16226 ⋆
2015	20098	16076	16082†	16092†	16082†	16121†	16214 ⋆
2014	20092	16076	16076	16092†	16076	16115†	16208 ⋆
2013	20080	16064	16064	16080†	16064	16103†	16196 ⋆
2012	20068	16052	16052	16080†	16052	16091†	16184 ⋆
2011	20056	16040	16040	16068†	16040	16079†	16172 ⋆
2010	20044	16028	16028	16056†	16028	16067†	16160 ⋆
2009	20032	16016	16016	16044†	16016	16055†	16148 ⋆
2008	20020	16004	16004	16032†	16004	16043†	16136 ⋆
2007	20008	15992	15992	16020†	15992	16031†	16124 ⋆
2006	19996	15980	15980	16008†	15980	16019†	16112 ⋆
2005	19984	15968	15968	15996†	15968	16007†	16100 ⋆
2004	19972	15956	15956	15984†	15956	15995†	16088 ⋆
2003	19960	15944	15944	15972†	15944	15983†	16076 ⋆
2002	19948	15932	15932	15960†	15932	15971†	16064 ⋆
2001	19936	15920	15920	15948†	15920	15959†	16052 ⋆
2000	19924	15908	15908	15936†	15908	15947†	16040 ⋆
1999	19912	15896	15896	15924†	15896	15935†	16028 ⋆
1998	19900	15884	15884	15912†	15884	15923†	16016 ⋆
1997	19888	15872	15872	15900†	15872	15911†	16004 ⋆
1996	19876	15860	15860	15888†	15860	15899†	15992 ⋆
1995	19864	15848	15848	15876†	15848	15887†	15980 ⋆
1994	19852	15836	15836	15864†	15836	15875†	15968 ⋆
1993	19840	15824	15824	15852†	15824	15863†	15956 ⋆
1992	19828	15812	15812	15840†	15812	15851†	15944 ⋆
1991	19816	15800	15800	15828†	15800	15839†	15932 ⋆
1990	19804	15788	15788	15816†	15788	15827†	15920 ⋆
1989	19792	15776	15776	15804†	15776	15815†	15908 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1988	19780	15764	15764	15792†	15764	15803†	15896 ⋆
1987	19768	15752	15752	15780†	15752	15791†	15884 ⋆
1986	19756	15740	15740	15768†	15740	15779†	15872 ⋆
1985	19744	15728	15728	15756†	15728	15767†	15860 ⋆
1984	19732	15716	15716	15744†	15716	15755†	15848 ⋆
1983	19720	15704	15704	15732†	15704	15743†	15836 ⋆
1982	19720	15704	15704	15732†	15704	15743†	15836 ⋆
1981	19708	15704	15704	15732†	15704	15743†	15836 ⋆
1980	19696	15692	15692	15720†	15692	15731†	15824 ⋆
1979	19684	15680	15680	15708†	15680	15719†	15812 ⋆
1978	19672	15668	15668	15708†	15668	15707†	15812 ⋆
1977	19660	15656	15656	15696†	15656	15695†	15812 ⋆
1976	19648	15644	15644	15684†	15644	15683†	15800 ⋆
1975	19636	15632	15632	15672†	15632	15671†	15788 ⋆
1974	19624	15620	15620	15660†	15620	15671†	15776 ⋆
1973	19612	15608	15608	15648†	15608	15671†	15764 ⋆
1972	19600	15596	15596	15636†	15596	15659†	15752 ⋆
1971	19588	15584	15584	15624†	15584	15647†	15740 ⋆
1970	19576	15572	15572	15612†	15572	15635†	15728 ⋆
1969	19564	15560	15560	15600†	15560	15623†	15716 ⋆
1968	19552	15548	15548	15588†	15548	15611†	15704 ⋆
1967	19540	15536	15536	15576†	15536	15599†	15692 ⋆
1966	19528	15536	15536	15576†	15536	15599†	15692 ⋆
1965	19516	15524	15524	15564†	15524	15587†	15692 ⋆
1964	19504	15512	15512	15552†	15512	15575†	15680 ⋆
1963	19492	15500	15500	15540†	15500	15563†	15668 ⋆
1962	19480	15488	15488	15528†	15488	15551†	15668 ⋆
1961	19468	15476	15476	15516†	15476	15539†	15668 ⋆
1960	19456	15464	15464	15504†	15464	15527†	15656 ⋆
1959	19444	15452	15452	15492†	15452	15515†	15644 ⋆
1958	19432	15440	15440	15480†	15440	15503†	15632 ⋆
1957	19420	15428	15428	15468†	15428	15491†	15620 ⋆
1956	19408	15416	15416	15456†	15416	15479†	15608 ⋆
1955	19396	15404	15404	15444†	15404	15467†	15596 ⋆
1954	19384	15392	15392	15432†	15392	15455†	15584 ⋆
1953	19372	15380	15380	15420†	15380	15443†	15572 ⋆
1952	19360	15368	15368	15408†	15368	15431†	15560 ⋆
1951	19348	15356	15356	15396†	15356	15419†	15548 ⋆
1950	19336	15356	15356	15396†	15356	15419†	15548 ⋆
1949	19324	15344	15350†	15384†	15350†	15413†	15542 ⋆
1948	19312	15332	15338†	15372†	15338†	15401†	15530 ⋆
1947	19300	15320	15326†	15360†	15326†	15389†	15518 ⋆
1946	19288	15308	15314†	15348†	15314†	15377†	15506 ⋆
1945	19276	15296	15302†	15336†	15302†	15365†	15494 ⋆
1944	19264	15284	15290†	15324†	15290†	15353†	15482 ⋆
1943	19252	15272	15278†	15312†	15278†	15341†	15470 ⋆
1942	19240	15260	15266†	15300†	15266†	15329†	15458 ⋆
1941	19228	15248	15254†	15288†	15254†	15317†	15446 ⋆
1940	19216	15236	15242†	15276†	15242†	15305†	15434 ⋆
1939	19204	15224	15230†	15264†	15230†	15293†	15422 ⋆
1938	19192	15212	15218†	15252†	15218†	15281†	15410 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1937	19180	15200	15206†	15240†	15206†	15269†	15398 ⋆
1936	19168	15188	15194†	15228†	15194†	15257†	15386 ⋆
1935	19156	15176	15182†	15216†	15182†	15245†	15374 ⋆
1934	19144	15164	15170†	15204†	15170†	15233†	15362 ⋆
1933	19132	15152	15158†	15192†	15158†	15221†	15350 ⋆
1932	19120	15140	15146†	15180†	15146†	15209†	15338 ⋆
1931	19108	15128	15134†	15168†	15134†	15197†	15326 ⋆
1930	19096	15116	15122†	15156†	15122†	15185†	15314 ⋆
1929	19084	15104	15110†	15144†	15110†	15173†	15302 ⋆
1928	19072	15092	15098†	15132†	15098†	15161†	15290 ⋆
1927	19060	15080	15086†	15120†	15086†	15149†	15278 ⋆
1926	19048	15068	15074†	15108†	15074†	15137†	15266 ⋆
1925	19036	15056	15062†	15096†	15062†	15125†	15254 ⋆
1924	19024	15044	15050†	15084†	15050†	15113†	15242 ⋆
1923	19012	15032	15038†	15072†	15038†	15101†	15230 ⋆
1922	19000	15020	15026†	15060†	15026†	15089†	15218 ⋆
1921	18988	15008	15014†	15048†	15014†	15077†	15206 ⋆
1920	18976	14996	15002†	15036†	15002†	15065†	15194 ⋆
1919	18964	14984	14990†	15024†	14990†	15053†	15182 ⋆
1918	18964	14984	14990†	15024†	14990†	15053†	15182 ⋆
1917	18952	14984	14990†	15024†	14990†	15053†	15182 ⋆
1916	18940	14984	14990†	15024†	14990†	15053†	15170 ⋆
1915	18928	14972	14978†	15012†	14978†	15041†	15158 ⋆
1914	18916	14972	14978†	15012†	14978†	15029†	15158 ⋆
1913	18904	14960	14966†	15000†	14966†	15017†	15158 ⋆
1912	18892	14948	14954†	14988†	14954†	15005†	15146 ⋆
1911	18880	14936	14942†	14976†	14942†	14993†	15134 ⋆
1910	18872	14932	14938†	14968†	14938†	14989†	15126 ⋆
1909	18860	14920	14926†	14956†	14926†	14977†	15114 ⋆
1908	18848	14908	14914†	14944†	14914†	14965†	15102 ⋆
1907	18836	14896	14902†	14932†	14902†	14953†	15090 ⋆
1906	18824	14884	14890†	14920†	14890†	14941†	15078 ⋆
1905	18812	14872	14878†	14908†	14878†	14929†	15066 ⋆
1904	18800	14860	14866†	14896†	14866†	14917†	15054 ⋆
1903	18788	14848	14854†	14884†	14854†	14905†	15042 ⋆
1902	18776	14848	14854†	14872†	14854†	14905†	15030 ⋆
1901	18764	14836	14842†	14860†	14842†	14893†	15018 ⋆
1900	18752	14824	14830†	14848†	14830†	14893†	15006 ⋆
1899	18740	14812	14818†	14836†	14818†	14881†	14994 ⋆
1898	18728	14800	14806†	14824†	14806†	14869†	14982 ⋆
1897	18716	14788	14794†	14812†	14794†	14857†	14970 ⋆
1896	18704	14776	14782†	14800†	14782†	14845†	14958 ⋆
1895	18692	14764	14770†	14788†	14770†	14833†	14946 ⋆
1894	18680	14752	14758†	14776†	14758†	14833†	14934 ⋆
1893	18668	14740	14746†	14764†	14746†	14821†	14922 ⋆
1892	18656	14728	14734†	14752†	14734†	14809†	14910 ⋆
1891	18644	14716	14722†	14740†	14722†	14797†	14898 ⋆
1890	18632	14704	14710†	14728†	14710†	14785†	14886 ⋆
1889	18620	14692	14698†	14716†	14698†	14773†	14874 ⋆
1888	18608	14680	14686†	14704†	14686†	14761†	14862 ⋆
1887	18596	14668	14674†	14692†	14674†	14749†	14850 ⋆

continued

m = 12							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1886	18584	14668	14674†	14680†	14674†	14749†	14838 ⋆
1885	18572	14656	14662†	14668†	14662†	14737†	14826 ⋆
1884	18560	14644	14656†	14656†	14656†	14731†	14814 ⋆
1883	18548	14632	14644†	14644†	14644†	14719†	14802 ⋆
1882	18536	14620	14632†	14632†	14632†	14707†	14790 ⋆
1881	18524	14608	14620†	14620†	14620†	14695†	14778 ⋆
1880	18512	14596	14608†	14608†	14608†	14683†	14766 ⋆
1879	18500	14584	14596†	14596†	14596†	14671†	14754 ⋆
1878	18488	14572	14584†	14584†	14584†	14659†	14742 ⋆
1877	18476	14560	14572†	14572†	14572†	14647†	14730 ⋆
1876	18464	14548	14560†	14560†	14560†	14635†	14718 ⋆
1875	18452	14536	14548†	14548†	14548†	14623†	14706 ⋆
1874	18440	14524	14536†	14536†	14536†	14611†	14694 ⋆
1873	18428	14512	14524†	14524†	14524†	14599†	14682 ⋆
1872	18416	14500	14512†	14512†	14512†	14587†	14670 ⋆
1871	18404	14488	14500†	14500†	14500†	14575†	14658 ⋆
1870	18392	14476	14488†	14488†	14488†	14563†	14646 ⋆
1869	18380	14464	14476†	14476†	14476†	14551†	14634 ⋆
1868	18368	14452	14464†	14464†	14464†	14539†	14622 ⋆
1867	18356	14440	14452†	14452†	14452†	14527†	14610 ⋆
1866	18344	14428	14440†	14440†	14440†	14515†	14598 ⋆
1865	18332	14416	14428†	14428†	14428†	14503†	14586 ⋆
1864	18320	14404	14416†	14416†	14416†	14491†	14574 ⋆
1863	18308	14392	14404†	14404†	14404†	14479†	14562 ⋆
1862	18296	14380	14392†	14392†	14392†	14467†	14550 ⋆
1861	18284	14368	14380†	14380†	14380†	14455†	14538 ⋆
1860	18272	14356	14368†	14368†	14368†	14443†	14526 ⋆
1859	18260	14344	14356†	14356†	14356†	14431†	14514 ⋆
1858	18248	14332	14344†	14344†	14344†	14419†	14502 ⋆
1857	18236	14320	14332†	14332†	14332†	14407†	14490 ⋆
1856	18224	14308	14320†	14320†	14320†	14395†	14478 ⋆
1855	18212	14296	14308†	14308†	14308†	14383†	14466 ⋆
1854	18200	14296	14308†	14296	14308†	14383†	14454 ⋆
1853	18188	14284	14296†	14284	14296†	14371†	14442 ⋆
1852	18176	14272	14296†	14272	14296†	14371†	14430 ⋆
1851	18164	14260	14284†	14260	14284†	14359†	14418 ⋆
1850	18152	14248	14272†	14248	14272†	14347†	14406 ⋆
1849	18140	14236	14260†	14236	14260†	14335†	14394 ⋆
1848	18128	14224	14248†	14224	14248†	14323†	14382 ⋆
1847	18116	14212	14236†	14212	14236†	14311†	14370 ⋆
1846	18104	14200	14224†	14200	14224†	14299†	14358 ⋆
1845	18092	14188	14212†	14188	14212†	14287†	14346 ⋆
1844	18080	14176	14200†	14176	14200†	14275†	14334 ⋆
1843	18068	14164	14188†	14164	14188†	14263†	14322 ⋆
1842	18056	14152	14176†	14152	14176†	14251†	14310 ⋆
1841	18044	14140	14164†	14140	14164†	14239†	14298 ⋆
1840	18032	14128	14152†	14128	14152†	14227†	14286 ⋆
1839	18020	14116	14140†	14116	14140†	14215†	14274 ⋆
1838	18008	14104	14128†	14104	14128†	14203†	14262 ⋆
1837	17996	14092	14116†	14092	14116†	14191†	14250 ⋆
1836	17984	14080	14104†	14080	14104†	14179†	14238 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1835	17972	14068	14092†	14068	14092†	14167†	14226 ⋆
1834	17960	14056	14080†	14056	14080†	14155†	14214 ⋆
1833	17948	14044	14068†	14044	14068†	14143†	14202 ⋆
1832	17936	14032	14056†	14032	14056†	14131†	14190 ⋆
1831	17924	14020	14044†	14020	14044†	14119†	14178 ⋆
1830	17912	14008	14032†	14008	14032†	14107†	14166 ⋆
1829	17900	13996	14020†	13996	14020†	14095†	14154 ⋆
1828	17888	13984	14008†	13984	14008†	14083†	14142 ⋆
1827	17876	13972	13996†	13972	13996†	14071†	14130 ⋆
1826	17864	13960	13984†	13960	13984†	14059†	14118 ⋆
1825	17852	13948	13972†	13948	13972†	14047†	14106 ⋆
1824	17840	13936	13960†	13936	13960†	14035†	14094 ⋆
1823	17828	13924	13948†	13924	13948†	14023†	14082 ⋆
1822	17816	13912	13936†	13912	13936†	14011†	14070 ⋆
1821	17804	13900	13924†	13900	13924†	13999†	14058 ⋆
1820	17792	13888	13912†	13888	13912†	13987†	14046 ⋆
1819	17780	13876	13900†	13876	13900†	13975†	14034 ⋆
1818	17768	13864	13888†	13864	13888†	13963†	14022 ⋆
1817	17756	13852	13876†	13852	13876†	13951†	14010 ⋆
1816	17744	13840	13864†	13840	13864†	13939†	13998 ⋆
1815	17732	13828	13852†	13828	13852†	13927†	13986 ⋆
1814	17720	13816	13840†	13816	13840†	13915†	13974 ⋆
1813	17708	13804	13828†	13804	13828†	13903†	13962 ⋆
1812	17696	13792	13816†	13792	13816†	13891†	13950 ⋆
1811	17684	13780	13804†	13780	13804†	13879†	13938 ⋆
1810	17672	13768	13792†	13768	13792†	13867†	13926 ⋆
1809	17660	13756	13780†	13756	13780†	13855†	13914 ⋆
1808	17648	13744	13768†	13744	13768†	13843†	13902 ⋆
1807	17636	13732	13756†	13732	13756†	13831†	13890 ⋆
1806	17624	13720	13744†	13720	13744†	13819†	13878 ⋆
1805	17612	13708	13732†	13708	13732†	13807†	13866 ⋆
1804	17600	13696	13720†	13696	13720†	13795†	13854 ⋆
1803	17588	13684	13708†	13684	13708†	13783†	13842 ⋆
1802	17576	13672	13696†	13672	13696†	13771†	13830 ⋆
1801	17564	13660	13684†	13660	13684†	13759†	13818 ⋆
1800	17552	13648	13672†	13648	13672†	13747†	13806 ⋆
1799	17540	13636	13660†	13636	13660†	13735†	13794 ⋆
1798	17528	13624	13648†	13624	13648†	13723†	13782 ⋆
1797	17516	13612	13636†	13612	13636†	13711†	13770 ⋆
1796	17504	13600	13624†	13600	13624†	13699†	13758 ⋆
1795	17492	13588	13612†	13588	13612†	13687†	13746 ⋆
1794	17480	13576	13600†	13576	13600†	13675†	13734 ⋆
1793	17468	13564	13588†	13564	13588†	13663†	13722 ⋆
1792	17456	13552	13576†	13552	13576†	13651†	13710 ⋆
1791	17444	13540	13564†	13540	13564†	13639†	13698 ⋆
1790	17444	13540	13564†	13540	13564†	13639†	13698 ⋆
1789	17432	13540	13564†	13540	13564†	13639†	13698 ⋆
1788	17420	13540	13564†	13540	13564†	13639†	13686 ⋆
1787	17408	13528	13552†	13528	13552†	13627†	13674 ⋆
1786	17396	13528	13552†	13528	13552†	13615†	13674 ⋆
1785	17384	13516	13540†	13516	13540†	13603†	13674 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1784	17372	13504	13528†	13504	13528†	13591†	13662 $\star$
1783	17360	13492	13516†	13492	13516†	13579†	13650 $\star$
1782	17360	13492	13516†	13492	13516†	13579†	13650 $\star$
1781	17348	13480	13504†	13480	13504†	13579†	13638 $\star$
1780	17336	13468	13492†	13468	13492†	13567†	13626 $\star$
1779	17324	13456	13480†	13456	13480†	13555†	13614 $\star$
1778	17312	13444	13468†	13444	13468†	13543†	13602 $\star$
1777	17300	13432	13456†	13432	13456†	13531†	13590 $\star$
1776	17288	13420	13444†	13420	13444†	13519†	13578 $\star$
1775	17276	13408	13432†	13408	13432†	13507†	13566 $\star$
1774	17276	13408	13432†	13408	13432†	13507†	13566 $\star$
1773	17264	13408	13432†	13408	13432†	13507†	13566 $\star$
1772	17252	13396	13420†	13396	13420†	13507†	13554 $\star$
1771	17240	13384	13408†	13384	13408†	13495†	13542 $\star$
1770	17228	13372	13396†	13372	13396†	13483†	13542 $\star$
1769	17216	13360	13384†	13360	13384†	13471†	13542 $\star$
1768	17204	13348	13372†	13348	13372†	13459†	13530 $\star$
1767	17192	13336	13360†	13336	13360†	13447†	13518 $\star$
1766	17180	13336	13360†	13336	13360†	13447†	13518 $\star$
1765	17168	13324	13348†	13324	13348†	13435†	13506 $\star$
1764	17156	13312	13336†	13312	13336†	13423†	13494 $\star$
1763	17144	13300	13324†	13300	13324†	13411†	13482 $\star$
1762	17132	13288	13312†	13288	13312†	13399†	13470 $\star$
1761	17120	13276	13300†	13276	13300†	13387†	13458 $\star$
1760	17108	13264	13288†	13264	13288†	13375†	13446 $\star$
1759	17096	13252	13276†	13252	13276†	13363†	13434 $\star$
1758	17096	13252	13276†	13252	13276†	13363†	13434 $\star$
1757	17084	13252	13276†	13252	13276†	13363†	13434 $\star$
1756	17072	13252	13276†	13252	13276†	13363†	13422 $\star$
1755	17060	13240	13264†	13240	13264†	13351†	13410 $\star$
1754	17051	13234	13258†	13234	13258†	13342†	13404 $\star$
1753	17039	13222	13246†	13222	13246†	13330†	13392 $\star$
1752	17027	13210	13234†	13210	13234†	13318†	13380 $\star$
1751	17015	13198	13222†	13198	13222†	13306†	13368 $\star$
1750	17003	13186	13210†	13186	13210†	13294†	13356 $\star$
1749	16991	13174	13198†	13174	13198†	13282†	13344 $\star$
1748	16979	13162	13186†	13162	13186†	13270†	13332 $\star$
1747	16967	13150	13174†	13150	13174†	13258†	13320 $\star$
1746	16955	13138	13162†	13138	13162†	13246†	13308 $\star$
1745	16943	13126	13150†	13126	13150†	13234†	13296 $\star$
1744	16931	13114	13138†	13114	13138†	13222†	13284 $\star$
1743	16919	13102	13126†	13102	13126†	13210†	13272 $\star$
1742	16907	13090	13114†	13090	13114†	13198†	13260 $\star$
1741	16895	13078	13102†	13078	13102†	13186†	13248 $\star$
1740	16883	13066	13090†	13066	13090†	13174†	13236 $\star$
1739	16871	13054	13078†	13054	13078†	13162†	13224 $\star$
1738	16859	13042	13066†	13042	13066†	13150†	13212 $\star$
1737	16847	13030	13054†	13030	13054†	13138†	13200 $\star$
1736	16835	13018	13042†	13018	13042†	13126†	13188 $\star$
1735	16823	13006	13030†	13006	13030†	13114†	13176 $\star$
1734	16811	12994	13018†	12994	13018†	13102†	13164 $\star$

continued

$m=12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1733	16799	12982	13006†	12982	13006†	13090†	13152 ⋆
1732	16787	12970	12994†	12970	12994†	13078†	13140 ⋆
1731	16775	12958	12982†	12958	12982†	13066†	13128 ⋆
1730	16763	12946	12970†	12946	12970†	13054†	13116 ⋆
1729	16751	12934	12958†	12934	12958†	13042†	13104 ⋆
1728	16739	12922	12946†	12922	12946†	13030†	13092 ⋆
1727	16727	12910	12934†	12910	12934†	13018†	13080 ⋆
1726	16715	12910	12934†	12910	12934†	13006†	13080 ⋆
1725	16703	12898	12922†	12910†	12922†	12994†	13080 ⋆
1724	16691	12886	12910†	12898†	12910†	12982†	13068 ⋆
1723	16679	12874	12898†	12886†	12898†	12970†	13056 ⋆
1722	16667	12874	12898†	12886†	12898†	12958†	13056 ⋆
1721	16655	12862	12886†	12874†	12886†	12946†	13056 ⋆
1720	16643	12850	12874†	12862†	12874†	12934†	13044 ⋆
1719	16631	12838	12862†	12850†	12862†	12922†	13032 ⋆
1718	16619	12838	12862†	12850†	12862†	12910†	13032 ⋆
1717	16607	12826	12850†	12838†	12850†	12898†	13020 ⋆
1716	16595	12814	12838†	12826†	12838†	12886†	13008 ⋆
1715	16583	12802	12826†	12814†	12826†	12874†	12996 ⋆
1714	16571	12790	12814†	12802†	12814†	12862†	12984 ⋆
1713	16559	12778	12802†	12790†	12802†	12850†	12972 ⋆
1712	16547	12766	12790†	12778†	12790†	12838†	12960 ⋆
1711	16535	12754	12778†	12766†	12778†	12826†	12948 ⋆
1710	16523	12742	12766†	12754†	12766†	12814†	12948 ⋆
1709	16511	12730	12754†	12742†	12754†	12802†	12948 ⋆
1708	16499	12718	12742†	12730†	12742†	12790†	12936 ⋆
1707	16487	12706	12730†	12718†	12730†	12778†	12924 ⋆
1706	16475	12694	12718†	12706†	12718†	12766†	12924 ⋆
1705	16463	12682	12706†	12694†	12706†	12754†	12924 ⋆
1704	16451	12670	12694†	12682†	12694†	12742†	12912 ⋆
1703	16439	12658	12682†	12670†	12682†	12730†	12900 ⋆
1702	16427	12646	12670†	12658†	12670†	12718†	12900 ⋆
1701	16415	12634	12658†	12646†	12658†	12706†	12888 ⋆
1700	16403	12622	12646†	12634†	12646†	12694†	12876 ⋆
1699	16391	12610	12634†	12622†	12634†	12682†	12864 ⋆
1698	16379	12598	12622†	12610†	12622†	12670†	12852 ⋆
1697	16367	12586	12610†	12598†	12610†	12658†	12840 ⋆
1696	16355	12574	12598†	12586†	12598†	12646†	12828 ⋆
1695	16343	12562	12586†	12574†	12586†	12634†	12816 ⋆
1694	16331	12550	12574†	12562†	12574†	12622†	12816 ⋆
1693	16319	12538	12562†	12550†	12562†	12610†	12816 ⋆
1692	16307	12526	12550†	12538†	12550†	12598†	12804 ⋆
1691	16295	12514	12538†	12526†	12538†	12586†	12792 ⋆
1690	16283	12502	12526†	12514†	12526†	12574†	12792 ⋆
1689	16271	12490	12514†	12502†	12514†	12562†	12786 ⋆
1688	16259	12478	12502†	12490†	12502†	12550†	12774 ⋆
1687	16247	12466	12490†	12478†	12490†	12538†	12762 ⋆
1686	16235	12454	12478†	12466†	12478†	12526†	12750 ⋆
1685	16223	12442	12466†	12454†	12466†	12514†	12738 ⋆
1684	16211	12430	12454†	12442†	12454†	12502†	12726 ⋆
1683	16199	12418	12442†	12430†	12442†	12490†	12714 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1682	16187	12406	12430†	12418†	12430†	12478†	12702 ⋆
1681	16175	12394	12418†	12406†	12418†	12466†	12690 ⋆
1680	16163	12382	12406†	12394†	12406†	12454†	12678 ⋆
1679	16151	12370	12394†	12382†	12394†	12442†	12666 ⋆
1678	16139	12358	12382†	12370†	12382†	12430†	12654 ⋆
1677	16127	12346	12370†	12358†	12370†	12418†	12642 ⋆
1676	16115	12334	12358†	12346†	12358†	12406†	12630 ⋆
1675	16103	12322	12346†	12334†	12346†	12394†	12618 ⋆
1674	16091	12310	12334†	12322†	12334†	12382†	12606 ⋆
1673	16079	12298	12322†	12310†	12322†	12370†	12594 ⋆
1672	16067	12286	12310†	12298†	12310†	12358†	12582 ⋆
1671	16055	12274	12298†	12286†	12298†	12346†	12570 ⋆
1670	16043	12262	12286†	12274†	12286†	12334†	12558 ⋆
1669	16031	12250	12274†	12262†	12274†	12322†	12546 ⋆
1668	16019	12238	12262†	12250†	12262†	12310†	12534 ⋆
1667	16007	12226	12250†	12238†	12250†	12298†	12522 ⋆
1666	15995	12214	12238†	12226†	12238†	12286†	12510 ⋆
1665	15983	12202	12226†	12214†	12226†	12274†	12498 ⋆
1664	15971	12190	12214†	12202†	12214†	12262†	12486 ⋆
1663	15959	12178	12202†	12190†	12202†	12250†	12474 ⋆
1662	15947	12178	12202†	12190†	12202†	12238†	12474 ⋆
1661	15935	12166	12190†	12190†	12190†	12226†	12474 ⋆
1660	15923	12154	12178†	12178†	12178†	12214†	12462 ⋆
1659	15911	12142	12166†	12166†	12166†	12202†	12450 ⋆
1658	15899	12142	12166†	12166†	12166†	12190†	12450 ⋆
1657	15887	12130	12154†	12154†	12154†	12178†	12450 ⋆
1656	15875	12118	12142†	12142†	12142†	12166†	12438 ⋆
1655	15863	12106	12130†	12130†	12130†	12154†	12426 ⋆
1654	15851	12106	12130†	12130†	12130†	12142†	12426 ⋆
1653	15839	12094	12118†	12118†	12118†	12130†	12414 ⋆
1652	15827	12082	12106†	12106†	12106†	12118†	12402 ⋆
1651	15815	12070	12094†	12094†	12094†	12106†	12390 ⋆
1650	15803	12058	12082†	12082†	12082†	12094†	12378 ⋆
1649	15791	12046	12070†	12070†	12070†	12082†	12366 ⋆
1648	15779	12034	12058†	12058†	12058†	12070†	12354 ⋆
1647	15767	12022	12046†	12046†	12046†	12058†	12342 ⋆
1646	15755	12022	12046†	12046†	12046†	12046†	12342 ⋆
1645	15743	12010	12034†	12046†	12034†	12034†	12342 ⋆
1644	15731	11998	12022†	12034†	12022†	12022†	12330 ⋆
1643	15719	11986	12010†	12022†	12010†	12010†	12318 ⋆
1642	15707	11974	11998†	12022†	11998†	11998†	12318 ⋆
1641	15695	11962	11986†	12010†	11986†	11986†	12318 ⋆
1640	15683	11950	11974†	11998†	11974†	11974†	12306 ⋆
1639	15671	11938	11962†	11986†	11962†	11962†	12294 ⋆
1638	15659	11926	11950†	11986†	11950†	11950†	12294 ⋆
1637	15647	11914	11938†	11978†	11938†	11938†	12286 ⋆
1636	15635	11902	11926†	11966†	11926†	11926†	12274 ⋆
1635	15623	11890	11914†	11954†	11914†	11914†	12262 ⋆
1634	15611	11878	11902†	11942†	11902†	11902†	12250 ⋆
1633	15599	11866	11890†	11930†	11890†	11890†	12238 ⋆
1632	15587	11854	11878†	11918†	11878†	11878†	12226 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1631	15575	11842	11866†	11906†	11866†	11866†	12214 ⋆
1630	15563	11830	11854†	11894†	11854†	11854†	12202 ⋆
1629	15551	11818	11842†	11882†	11842†	11842†	12190 ⋆
1628	15539	11806	11830†	11870†	11830†	11830†	12178 ⋆
1627	15527	11794	11818†	11858†	11818†	11818†	12166 ⋆
1626	15515	11782	11806†	11846†	11806†	11806†	12154 ⋆
1625	15503	11770	11794†	11834†	11794†	11794†	12142 ⋆
1624	15491	11758	11782†	11822†	11782†	11782†	12130 ⋆
1623	15479	11746	11770†	11810†	11770†	11770†	12118 ⋆
1622	15467	11734	11758†	11798†	11758†	11758†	12106 ⋆
1621	15455	11722	11746†	11786†	11746†	11746†	12094 ⋆
1620	15443	11710	11734†	11774†	11734†	11734†	12082 ⋆
1619	15431	11698	11722†	11762†	11722†	11722†	12070 ⋆
1618	15419	11686	11710†	11750†	11710†	11710†	12058 ⋆
1617	15407	11674	11698†	11738†	11698†	11698†	12046 ⋆
1616	15395	11662	11686†	11726†	11686†	11686†	12034 ⋆
1615	15383	11650	11674†	11714†	11674†	11674†	12022 ⋆
1614	15371	11638	11662†	11702†	11662†	11662†	12010 ⋆
1613	15359	11626	11650†	11690†	11650†	11650†	11998 ⋆
1612	15347	11614	11638†	11678†	11638†	11638†	11986 ⋆
1611	15335	11602	11626†	11666†	11626†	11626†	11974 ⋆
1610	15323	11590	11614†	11654†	11614†	11614†	11962 ⋆
1609	15311	11578	11602†	11642†	11602†	11602†	11950 ⋆
1608	15299	11566	11590†	11630†	11590†	11590†	11938 ⋆
1607	15287	11554	11578†	11618†	11578†	11578†	11926 ⋆
1606	15275	11542	11566†	11606†	11566†	11566†	11914 ⋆
1605	15263	11530	11554†	11594†	11554†	11554†	11902 ⋆
1604	15251	11518	11542†	11582†	11542†	11542†	11890 ⋆
1603	15239	11506	11530†	11570†	11530†	11530†	11878 ⋆
1602	15227	11494	11518†	11558†	11518†	11518†	11866 ⋆
1601	15215	11482	11506†	11546†	11506†	11506†	11854 ⋆
1600	15203	11470	11494†	11534†	11494†	11494†	11842 ⋆
1599	15191	11458	11482†	11522†	11482†	11482†	11830 ⋆
1598	15179	11446	11470†	11510†	11470†	11470†	11818 ⋆
1597	15167	11434	11458†	11498†	11458†	11458†	11806 ⋆
1596	15155	11422	11446†	11486†	11446†	11446†	11794 ⋆
1595	15143	11410	11434†	11474†	11434†	11434†	11782 ⋆
1594	15131	11398	11422†	11462†	11422†	11422†	11770 ⋆
1593	15119	11386	11410†	11450†	11410†	11410†	11758 ⋆
1592	15107	11374	11398†	11438†	11398†	11398†	11746 ⋆
1591	15095	11362	11386†	11426†	11386†	11386†	11734 ⋆
1590	15083	11350	11374†	11414†	11374†	11374†	11722 ⋆
1589	15071	11338	11362†	11402†	11362†	11362†	11710 ⋆
1588	15059	11326	11350†	11390†	11350†	11350†	11698 ⋆
1587	15047	11314	11338†	11378†	11338†	11338†	11686 ⋆
1586	15035	11302	11326†	11366†	11326†	11326†	11674 ⋆
1585	15023	11290	11314†	11354†	11314†	11314†	11662 ⋆
1584	15011	11278	11302†	11342†	11302†	11302†	11650 ⋆
1583	14999	11266	11290†	11330†	11290†	11290†	11638 ⋆
1582	14987	11254	11278†	11318†	11278†	11278†	11626 ⋆
1581	14975	11242	11266†	11306†	11266†	11266†	11614 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1580	14963	11230	11254†	11294†	11254†	11254†	11602 ⋆
1579	14951	11218	11242†	11282†	11242†	11242†	11590 ⋆
1578	14939	11206	11230†	11270†	11230†	11230†	11578 ⋆
1577	14927	11194	11218†	11258†	11218†	11218†	11566 ⋆
1576	14915	11182	11206†	11246†	11206†	11206†	11554 ⋆
1575	14903	11170	11194†	11234†	11194†	11194†	11542 ⋆
1574	14891	11158	11182†	11222†	11182†	11182†	11530 ⋆
1573	14879	11146	11170†	11210†	11170†	11170†	11518 ⋆
1572	14867	11134	11158†	11198†	11158†	11158†	11506 ⋆
1571	14855	11122	11146†	11186†	11146†	11146†	11494 ⋆
1570	14843	11110	11134†	11174†	11134†	11134†	11482 ⋆
1569	14831	11098	11122†	11162†	11122†	11122†	11470 ⋆
1568	14819	11086	11110†	11150†	11110†	11110†	11458 ⋆
1567	14807	11074	11098†	11138†	11098†	11098†	11446 ⋆
1566	14795	11062	11086†	11126†	11086†	11086†	11434 ⋆
1565	14783	11050	11074†	11114†	11074†	11074†	11422 ⋆
1564	14771	11038	11062†	11102†	11062†	11062†	11410 ⋆
1563	14759	11026	11050†	11090†	11050†	11050†	11398 ⋆
1562	14747	11014	11038†	11078†	11038†	11038†	11386 ⋆
1561	14735	11002	11026†	11066†	11026†	11026†	11374 ⋆
1560	14723	10990	11014†	11054†	11014†	11014†	11362 ⋆
1559	14711	10978	11002†	11042†	11002†	11002†	11350 ⋆
1558	14699	10966	10990†	11030†	10990†	10990†	11338 ⋆
1557	14687	10954	10978†	11018†	10978†	10978†	11326 ⋆
1556	14675	10942	10966†	11006†	10966†	10966†	11314 ⋆
1555	14663	10930	10954†	10994†	10954†	10954†	11302 ⋆
1554	14651	10918	10942†	10982†	10942†	10942†	11290 ⋆
1553	14639	10906	10930†	10970†	10930†	10930†	11278 ⋆
1552	14627	10894	10918†	10958†	10918†	10918†	11266 ⋆
1551	14615	10882	10906†	10946†	10906†	10906†	11254 ⋆
1550	14603	10870	10894†	10934†	10894†	10894†	11242 ⋆
1549	14591	10858	10882†	10922†	10882†	10882†	11230 ⋆
1548	14579	10846	10870†	10910†	10870†	10870†	11218 ⋆
1547	14567	10834	10858†	10898†	10858†	10858†	11206 ⋆
1546	14555	10822	10846†	10886†	10846†	10846†	11194 ⋆
1545	14543	10810	10834†	10874†	10834†	10834†	11182 ⋆
1544	14531	10798	10822†	10862†	10822†	10822†	11170 ⋆
1543	14519	10786	10810†	10850†	10810†	10810†	11158 ⋆
1542	14507	10774	10798†	10838†	10798†	10798†	11146 ⋆
1541	14495	10762	10786†	10826†	10786†	10786†	11134 ⋆
1540	14483	10750	10774†	10814†	10774†	10774†	11122 ⋆
1539	14471	10738	10762†	10802†	10762†	10762†	11110 ⋆
1538	14459	10726	10750†	10790†	10750†	10750†	11098 ⋆
1537	14447	10714	10738†	10778†	10738†	10738†	11086 ⋆
1536	14435	10702	10726†	10766†	10726†	10726†	11074 ⋆
1535	14423	10690	10714†	10754†	10714†	10714†	11062 ⋆
1534	14423	10690	10714†	10754†	10714†	10714†	11062 ⋆
1533	14411	10690	10714†	10754†	10714†	10714†	11062 ⋆
1532	14399	10690	10714†	10754†	10714†	10714†	11050 ⋆
1531	14387	10678	10702†	10742†	10702†	10702†	11038 ⋆
1530	14387	10678	10702†	10742†	10702†	10702†	11038 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1529	14375	10666	10690†	10730†	10690†	10690†	11038 ⋆
1528	14363	10654	10678†	10718†	10678†	10678†	11026 ⋆
1527	14351	10642	10666†	10706†	10666†	10666†	11014 ⋆
1526	14351	10642	10666†	10706†	10666†	10666†	11014 ⋆
1525	14339	10642	10666†	10706†	10666†	10666†	11014 ⋆
1524	14327	10630	10654†	10694†	10654†	10654†	11002 ⋆
1523	14315	10618	10642†	10682†	10642†	10642†	10990 ⋆
1522	14303	10618	10642†	10670†	10642†	10642†	10978 ⋆
1521	14291	10606	10630†	10658†	10630†	10630†	10966 ⋆
1520	14279	10594	10618†	10646†	10618†	10618†	10954 ⋆
1519	14267	10582	10606†	10634†	10606†	10606†	10942 ⋆
1518	14267	10582	10606†	10634†	10606†	10606†	10942 ⋆
1517	14255	10582	10606†	10634†	10606†	10606†	10942 ⋆
1516	14243	10582	10606†	10634†	10606†	10606†	10930 ⋆
1515	14231	10570	10594†	10622†	10594†	10594†	10918 ⋆
1514	14219	10570	10594†	10622†	10594†	10594†	10918 ⋆
1513	14207	10558	10582†	10610†	10582†	10582†	10918 ⋆
1512	14195	10546	10570†	10598†	10570†	10570†	10906 ⋆
1511	14183	10534	10558†	10586†	10558†	10558†	10894 ⋆
1510	14171	10534	10558†	10586†	10558†	10558†	10894 ⋆
1509	14159	10522	10546†	10586†	10546†	10546†	10894 ⋆
1508	14147	10510	10534†	10574†	10534†	10534†	10882 ⋆
1507	14135	10498	10522†	10562†	10522†	10522†	10870 ⋆
1506	14123	10486	10510†	10550†	10510†	10510†	10858 ⋆
1505	14111	10474	10498†	10538†	10498†	10498†	10846 ⋆
1504	14099	10462	10486†	10526†	10486†	10486†	10834 ⋆
1503	14087	10450	10474†	10514†	10474†	10474†	10822 ⋆
1502	14087	10450	10474†	10514†	10474†	10474†	10822 ⋆
1501	14075	10450	10474†	10514†	10474†	10474†	10822 ⋆
1500	14063	10450	10474†	10514†	10474†	10474†	10810 ⋆
1499	14051	10438	10462†	10502†	10462†	10462†	10798 ⋆
1498	14051	10438	10462†	10502†	10462†	10462†	10798 ⋆
1497	14039	10426	10450†	10490†	10450†	10450†	10798 ⋆
1496	14027	10414	10438†	10478†	10438†	10438†	10786 ⋆
1495	14015	10402	10426†	10466†	10426†	10426†	10774 ⋆
1494	14009	10402	10420†	10466†	10420†	10420†	10768 ⋆
1493	13997	10390	10408†	10454†	10408†	10408†	10756 ⋆
1492	13985	10378	10396†	10442†	10396†	10396†	10744 ⋆
1491	13973	10366	10384†	10430†	10384†	10384†	10732 ⋆
1490	13961	10354	10372†	10418†	10372†	10372†	10720 ⋆
1489	13949	10342	10360†	10406†	10360†	10360†	10708 ⋆
1488	13937	10330	10348†	10394†	10348†	10348†	10696 ⋆
1487	13925	10318	10336†	10382†	10336†	10336†	10684 ⋆
1486	13913	10318	10324†	10382†	10324†	10324†	10672 ⋆
1485	13901	10306	10312†	10370†	10312†	10312†	10660 ⋆
1484	13889	10294	10300†	10370†	10300†	10300†	10648 ⋆
1483	13877	10282	10288†	10358†	10288†	10288†	10636 ⋆
1482	13865	10270	10276†	10346†	10276†	10276†	10624 ⋆
1481	13853	10258	10264†	10334†	10264†	10264†	10612 ⋆
1480	13841	10246	10252†	10322†	10252†	10252†	10600 ⋆
1479	13829	10234	10240†	10310†	10240†	10240†	10588 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1478	13817	10222	10228†	10298†	10228†	10228†	10576 ⋆
1477	13805	10210	10216†	10286†	10216†	10216†	10564 ⋆
1476	13793	10198	10204†	10274†	10204†	10204†	10552 ⋆
1475	13781	10186	10192†	10262†	10192†	10192†	10540 ⋆
1474	13769	10174	10180†	10250†	10180†	10180†	10528 ⋆
1473	13757	10162	10168†	10238†	10168†	10168†	10516 ⋆
1472	13745	10150	10156†	10226†	10156†	10156†	10504 ⋆
1471	13733	10138	10144†	10214†	10144†	10144†	10492 ⋆
1470	13733	10138	10144†	10214†	10144†	10144†	10492 ⋆
1469	13721	10138	10144†	10214†	10144†	10144†	10492 ⋆
1468	13709	10138	10144†	10214†	10144†	10144†	10480 ⋆
1467	13697	10126	10132†	10202†	10132†	10132†	10468 ⋆
1466	13697	10126	10132†	10202†	10132†	10132†	10468 ⋆
1465	13685	10114	10120†	10190†	10120†	10120†	10468 ⋆
1464	13673	10102	10108†	10178†	10108†	10108†	10456 ⋆
1463	13661	10090	10096†	10166†	10096†	10096†	10444 ⋆
1462	13661	10090	10096†	10166†	10096†	10096†	10444 ⋆
1461	13649	10090	10096†	10166†	10096†	10096†	10444 ⋆
1460	13637	10078	10084†	10154†	10084†	10084†	10432 ⋆
1459	13625	10066	10072†	10142†	10072†	10072†	10420 ⋆
1458	13613	10066	10072†	10130†	10072†	10072†	10408 ⋆
1457	13601	10054	10060†	10118†	10060†	10060†	10396 ⋆
1456	13589	10042	10048†	10106†	10048†	10048†	10384 ⋆
1455	13577	10030	10036†	10094†	10036†	10036†	10372 ⋆
1454	13577	10030	10036†	10094†	10036†	10036†	10372 ⋆
1453	13565	10030	10036†	10094†	10036†	10036†	10372 ⋆
1452	13553	10018	10024†	10082†	10024†	10024†	10360 ⋆
1451	13541	10006	10012†	10070†	10012†	10012†	10348 ⋆
1450	13529	10006	10012†	10070†	10012†	10012†	10348 ⋆
1449	13517	9994	10000†	10058†	10000†	10000†	10348 ⋆
1448	13505	9982	9988†	10046†	9988†	9988†	10336 ⋆
1447	13493	9970	9976†	10034†	9976†	9976†	10324 ⋆
1446	13481	9958	9964†	10022†	9964†	9964†	10324 ⋆
1445	13469	9946	9952†	10010†	9952†	9952†	10324 ⋆
1444	13457	9934	9940†	9998†	9940†	9940†	10312 ⋆
1443	13445	9922	9928†	9986†	9928†	9928†	10300 ⋆
1442	13433	9910	9916†	9974†	9916†	9916†	10288 ⋆
1441	13421	9898	9904†	9962†	9904†	9904†	10276 ⋆
1440	13409	9886	9892†	9950†	9892†	9892†	10264 ⋆
1439	13397	9874	9880†	9938†	9880†	9880†	10252 ⋆
1438	13385	9874	9880†	9938†	9880†	9880†	10252 ⋆
1437	13373	9862	9880†	9926†	9880†	9880†	10252 ⋆
1436	13361	9850	9868†	9914†	9868†	9868†	10240 ⋆
1435	13349	9838	9856†	9902†	9856†	9856†	10228 ⋆
1434	13337	9838	9856†	9902†	9856†	9856†	10228 ⋆
1433	13325	9826	9844†	9890†	9844†	9844†	10228 ⋆
1432	13313	9814	9832†	9878†	9832†	9832†	10216 ⋆
1431	13301	9802	9820†	9866†	9820†	9820†	10204 ⋆
1430	13289	9802	9820†	9866†	9820†	9820†	10204 ⋆
1429	13277	9790	9814†	9854†	9814†	9814†	10198 ⋆
1428	13265	9778	9802†	9842†	9802†	9802†	10186 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1427	13253	9766	9790†	9830†	9790†	9790†	10174 ⋆
1426	13241	9754	9778†	9818†	9778†	9778†	10162 ⋆
1425	13229	9742	9766†	9806†	9766†	9766†	10150 ⋆
1424	13217	9730	9754†	9794†	9754†	9754†	10138 ⋆
1423	13205	9718	9742†	9782†	9742†	9742†	10126 ⋆
1422	13193	9706	9730†	9770†	9730†	9730†	10114 ⋆
1421	13181	9694	9718†	9758†	9718†	9718†	10102 ⋆
1420	13169	9682	9706†	9746†	9706†	9706†	10090 ⋆
1419	13157	9670	9694†	9734†	9694†	9694†	10078 ⋆
1418	13145	9658	9682†	9722†	9682†	9682†	10066 ⋆
1417	13133	9646	9670†	9710†	9670†	9670†	10054 ⋆
1416	13121	9634	9658†	9698†	9658†	9658†	10042 ⋆
1415	13109	9622	9646†	9686†	9646†	9646†	10030 ⋆
1414	13097	9610	9634†	9674†	9634†	9634†	10018 ⋆
1413	13085	9598	9622†	9662†	9622†	9622†	10006 ⋆
1412	13073	9586	9610†	9650†	9610†	9610†	9994 ⋆
1411	13061	9574	9598†	9638†	9598†	9598†	9982 ⋆
1410	13049	9562	9586†	9626†	9586†	9586†	9970 ⋆
1409	13037	9550	9574†	9614†	9574†	9574†	9958 ⋆
1408	13025	9538	9562†	9602†	9562†	9562†	9946 ⋆
1407	13013	9526	9550†	9590†	9550†	9550†	9934 ⋆
1406	13013	9526	9550†	9590†	9550†	9550†	9934 ⋆
1405	13001	9526	9550†	9590†	9550†	9550†	9934 ⋆
1404	12989	9526	9550†	9590†	9550†	9550†	9922 ⋆
1403	12977	9514	9538†	9578†	9538†	9538†	9910 ⋆
1402	12977	9514	9538†	9578†	9538†	9538†	9910 ⋆
1401	12965	9502	9526†	9566†	9526†	9526†	9910 ⋆
1400	12953	9490	9514†	9554†	9514†	9514†	9898 ⋆
1399	12941	9478	9502†	9542†	9502†	9502†	9886 ⋆
1398	12941	9478	9502†	9542†	9502†	9502†	9886 ⋆
1397	12929	9478	9502†	9542†	9502†	9502†	9886 ⋆
1396	12917	9466	9490†	9530†	9490†	9490†	9874 ⋆
1395	12905	9454	9478†	9518†	9478†	9478†	9862 ⋆
1394	12893	9454	9478†	9506†	9478†	9478†	9850 ⋆
1393	12881	9442	9466†	9494†	9466†	9466†	9838 ⋆
1392	12869	9430	9454†	9482†	9454†	9454†	9826 ⋆
1391	12857	9418	9442†	9470†	9442†	9442†	9814 ⋆
1390	12857	9418	9442†	9470†	9442†	9442†	9814 ⋆
1389	12845	9418	9442†	9470†	9442†	9442†	9814 ⋆
1388	12833	9418	9442†	9470†	9442†	9442†	9802 ⋆
1387	12821	9406	9430†	9458†	9430†	9430†	9790 ⋆
1386	12821	9406	9430†	9458†	9430†	9430†	9790 ⋆
1385	12809	9394	9418†	9446†	9418†	9418†	9790 ⋆
1384	12797	9382	9406†	9434†	9406†	9406†	9778 ⋆
1383	12785	9370	9394†	9422†	9394†	9394†	9766 ⋆
1382	12773	9370	9394†	9422†	9394†	9394†	9766 ⋆
1381	12761	9358	9382†	9422†	9382†	9382†	9766 ⋆
1380	12749	9346	9370†	9410†	9370†	9370†	9754 ⋆
1379	12737	9334	9358†	9398†	9358†	9358†	9742 ⋆
1378	12725	9322	9346†	9386†	9346†	9346†	9730 ⋆
1377	12713	9310	9334†	9374†	9334†	9334†	9718 ⋆

continued

$m=12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1376	12701	9298	9322†	9362†	9322†	9322†	9706 ⋆
1375	12689	9286	9310†	9350†	9310†	9310†	9694 ⋆
1374	12689	9286	9310†	9350†	9310†	9310†	9694 ⋆
1373	12677	9286	9310†	9350†	9310†	9310†	9694 ⋆
1372	12665	9286	9310†	9350†	9310†	9310†	9682 ⋆
1371	12653	9274	9298†	9338†	9298†	9298†	9670 ⋆
1370	12653	9274	9298†	9338†	9298†	9298†	9670 ⋆
1369	12641	9262	9286†	9326†	9286†	9286†	9670 ⋆
1368	12629	9250	9274†	9314†	9274†	9274†	9658 ⋆
1367	12617	9238	9262†	9302†	9262†	9262†	9646 ⋆
1366	12617	9238	9262†	9302†	9262†	9262†	9646 ⋆
1365	12605	9238	9262†	9302†	9262†	9262†	9646 ⋆
1364	12595	9230	9254†	9294†	9254†	9254†	9636 ⋆
1363	12583	9218	9242†	9282†	9242†	9242†	9624 ⋆
1362	12571	9206	9230†	9270†	9230†	9230†	9612 ⋆
1361	12559	9194	9218†	9258†	9218†	9218†	9600 ⋆
1360	12547	9182	9206†	9246†	9206†	9206†	9588 ⋆
1359	12535	9170	9194†	9234†	9194†	9194†	9576 ⋆
1358	12523	9158	9182†	9222†	9182†	9182†	9564 ⋆
1357	12511	9146	9170†	9210†	9170†	9170†	9552 ⋆
1356	12499	9134	9158†	9198†	9158†	9158†	9540 ⋆
1355	12487	9122	9146†	9186†	9146†	9146†	9528 ⋆
1354	12475	9110	9134†	9174†	9134†	9134†	9516 ⋆
1353	12463	9098	9122†	9162†	9122†	9122†	9504 ⋆
1352	12451	9086	9110†	9150†	9110†	9110†	9492 ⋆
1351	12439	9074	9098†	9138†	9098†	9098†	9480 ⋆
1350	12427	9062	9086†	9126†	9086†	9086†	9468 ⋆
1349	12415	9050	9074†	9114†	9074†	9074†	9456 ⋆
1348	12403	9038	9062†	9102†	9062†	9062†	9444 ⋆
1347	12391	9026	9050†	9090†	9050†	9050†	9432 ⋆
1346	12379	9014	9038†	9078†	9038†	9038†	9420 ⋆
1345	12367	9002	9026†	9066†	9026†	9026†	9408 ⋆
1344	12355	8990	9014†	9054†	9014†	9014†	9396 ⋆
1343	12343	8978	9002†	9042†	9002†	9002†	9384 ⋆
1342	12331	8966	8990†	9030†	8990†	8990†	9372 ⋆
1341	12319	8954	8978†	9018†	8978†	8978†	9360 ⋆
1340	12307	8942	8966†	9006†	8966†	8966†	9348 ⋆
1339	12295	8930	8954†	8994†	8954†	8954†	9336 ⋆
1338	12283	8918	8942†	8982†	8942†	8942†	9324 ⋆
1337	12271	8906	8930†	8970†	8930†	8930†	9312 ⋆
1336	12259	8894	8918†	8958†	8918†	8918†	9300 ⋆
1335	12247	8882	8906†	8946†	8906†	8906†	9288 ⋆
1334	12235	8870	8894†	8934†	8894†	8894†	9276 ⋆
1333	12223	8858	8882†	8922†	8882†	8882†	9264 ⋆
1332	12211	8846	8870†	8910†	8870†	8870†	9252 ⋆
1331	12199	8834	8858†	8898†	8858†	8858†	9240 ⋆
1330	12187	8822	8846†	8886†	8846†	8846†	9228 ⋆
1329	12175	8810	8834†	8874†	8834†	8834†	9216 ⋆
1328	12163	8798	8822†	8862†	8822†	8822†	9204 ⋆
1327	12151	8786	8810†	8850†	8810†	8810†	9192 ⋆
1326	12139	8774	8798†	8838†	8798†	8798†	9180 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1325	12127	8762	8786†	8826†	8786†	8786†	9168 ⋆
1324	12115	8750	8774†	8814†	8774†	8774†	9156 ⋆
1323	12103	8738	8762†	8802†	8762†	8762†	9144 ⋆
1322	12091	8726	8750†	8790†	8750†	8750†	9132 ⋆
1321	12079	8714	8738†	8778†	8738†	8738†	9120 ⋆
1320	12067	8702	8726†	8766†	8726†	8726†	9108 ⋆
1319	12055	8690	8714†	8754†	8714†	8714†	9096 ⋆
1318	12043	8678	8702†	8742†	8702†	8702†	9084 ⋆
1317	12031	8666	8690†	8730†	8690†	8690†	9072 ⋆
1316	12019	8654	8678†	8718†	8678†	8678†	9060 ⋆
1315	12007	8642	8666†	8706†	8666†	8666†	9048 ⋆
1314	11995	8630	8654†	8694†	8654†	8654†	9036 ⋆
1313	11983	8618	8642†	8682†	8642†	8642†	9024 ⋆
1312	11971	8606	8630†	8670†	8630†	8630†	9012 ⋆
1311	11959	8594	8618†	8658†	8618†	8618†	9000 ⋆
1310	11947	8582	8606†	8646†	8606†	8606†	8988 ⋆
1309	11935	8570	8594†	8634†	8594†	8594†	8976 ⋆
1308	11923	8558	8582†	8622†	8582†	8582†	8964 ⋆
1307	11911	8546	8570†	8610†	8570†	8570†	8952 ⋆
1306	11899	8534	8558†	8598†	8558†	8558†	8940 ⋆
1305	11887	8522	8546†	8586†	8546†	8546†	8928 ⋆
1304	11875	8510	8534†	8574†	8534†	8534†	8916 ⋆
1303	11863	8498	8522†	8562†	8522†	8522†	8904 ⋆
1302	11851	8486	8510†	8550†	8510†	8510†	8892 ⋆
1301	11839	8474	8498†	8538†	8498†	8498†	8880 ⋆
1300	11827	8462	8486†	8526†	8486†	8486†	8868 ⋆
1299	11815	8450	8474†	8514†	8474†	8474†	8856 ⋆
1298	11803	8438	8462†	8502†	8462†	8462†	8844 ⋆
1297	11791	8426	8450†	8490†	8450†	8450†	8832 ⋆
1296	11779	8414	8438†	8478†	8438†	8438†	8820 ⋆
1295	11767	8402	8426†	8466†	8426†	8426†	8808 ⋆
1294	11755	8390	8414†	8454†	8414†	8414†	8796 ⋆
1293	11743	8378	8402†	8442†	8402†	8402†	8784 ⋆
1292	11731	8366	8390†	8430†	8390†	8390†	8772 ⋆
1291	11719	8354	8378†	8418†	8378†	8378†	8760 ⋆
1290	11707	8342	8366†	8406†	8366†	8366†	8748 ⋆
1289	11695	8330	8354†	8394†	8354†	8354†	8736 ⋆
1288	11683	8318	8342†	8382†	8342†	8342†	8724 ⋆
1287	11671	8306	8330†	8370†	8330†	8330†	8712 ⋆
1286	11659	8294	8318†	8358†	8318†	8318†	8700 ⋆
1285	11647	8282	8306†	8346†	8306†	8306†	8688 ⋆
1284	11635	8270	8294†	8334†	8294†	8294†	8676 ⋆
1283	11623	8258	8282†	8322†	8282†	8282†	8664 ⋆
1282	11611	8246	8270†	8310†	8270†	8270†	8652 ⋆
1281	11599	8234	8258†	8298†	8258†	8258†	8640 ⋆
1280	11587	8222	8246†	8286†	8246†	8246†	8628 ⋆
1279	11575	8210	8234†	8274†	8234†	8234†	8616 ⋆
1278	11563	8210	8234†	8274†	8234†	8234†	8604 ⋆
1277	11551	8198	8222†	8262†	8222†	8234†	8592 ⋆
1276	11539	8198	8222†	8262†	8222†	8234†	8580 ⋆
1275	11527	8186	8210†	8250†	8210†	8222†	8568 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1274	11515	8186	8210†	8250†	8210†	8222†	8556 ⋆
1273	11503	8174	8198†	8238†	8198†	8210†	8544 ⋆
1272	11491	8162	8186†	8226†	8186†	8198†	8532 ⋆
1271	11479	8150	8174†	8214†	8174†	8186†	8520 ⋆
1270	11467	8150	8174†	8214†	8174†	8186†	8508 ⋆
1269	11455	8138	8162†	8202†	8162†	8186†	8496 ⋆
1268	11443	8138	8162†	8202†	8162†	8186†	8484 ⋆
1267	11431	8126	8150†	8190†	8150†	8174†	8472 ⋆
1266	11419	8114	8150†	8178†	8150†	8174†	8460 ⋆
1265	11407	8102	8138†	8166†	8138†	8162†	8448 ⋆
1264	11395	8090	8126†	8154†	8126†	8150†	8436 ⋆
1263	11383	8078	8114†	8142†	8114†	8138†	8424 ⋆
1262	11371	8078	8114†	8142†	8114†	8138†	8412 ⋆
1261	11359	8066	8102†	8130†	8102†	8138†	8400 ⋆
1260	11347	8066	8102†	8130†	8102†	8138†	8388 ⋆
1259	11335	8054	8090†	8118†	8090†	8126†	8376 ⋆
1258	11323	8054	8090†	8118†	8090†	8126†	8364 ⋆
1257	11311	8042	8078†	8106†	8078†	8114†	8352 ⋆
1256	11299	8030	8066†	8094†	8066†	8102†	8340 ⋆
1255	11287	8018	8054†	8082†	8054†	8090†	8328 ⋆
1254	11275	8006	8042†	8070†	8042†	8078†	8316 ⋆
1253	11263	7994	8030†	8058†	8030†	8066†	8304 ⋆
1252	11251	7982	8018†	8046†	8018†	8054†	8292 ⋆
1251	11239	7970	8006†	8034†	8006†	8042†	8280 ⋆
1250	11227	7958	7994†	8022†	7994†	8030†	8268 ⋆
1249	11215	7946	7982†	8010†	7982†	8018†	8256 ⋆
1248	11203	7934	7970†	7998†	7970†	8006†	8244 ⋆
1247	11191	7922	7958†	7986†	7958†	7994†	8232 ⋆
1246	11179	7922	7958†	7986†	7958†	7994†	8220 ⋆
1245	11167	7910	7946†	7974†	7946†	7994†	8208 ⋆
1244	11155	7910	7946†	7974†	7946†	7994†	8196 ⋆
1243	11143	7898	7934†	7962†	7934†	7982†	8184 ⋆
1242	11131	7898	7934†	7962†	7934†	7982†	8172 ⋆
1241	11119	7886	7922†	7950†	7922†	7970†	8160 ⋆
1240	11107	7874	7910†	7938†	7910†	7958†	8148 ⋆
1239	11095	7862	7898†	7926†	7898†	7946†	8136 ⋆
1238	11083	7862	7898†	7926†	7898†	7946†	8124 ⋆
1237	11071	7850	7886†	7914†	7886†	7946†	8112 ⋆
1236	11059	7850	7886†	7914†	7886†	7946†	8100 ⋆
1235	11047	7838	7874†	7902†	7874†	7934†	8088 ⋆
1234	11035	7826	7868†	7890†	7868†	7928†	8076 ⋆
1233	11023	7814	7856†	7878†	7856†	7916†	8064 ⋆
1232	11011	7802	7844†	7866†	7844†	7904†	8052 ⋆
1231	10999	7790	7832†	7854†	7832†	7892†	8040 ⋆
1230	10987	7778	7820†	7854†	7820†	7880†	8028 ⋆
1229	10975	7766	7808†	7842†	7808†	7868†	8016 ⋆
1228	10963	7754	7796†	7842†	7796†	7856†	8004 ⋆
1227	10951	7742	7784†	7830†	7784†	7844†	7992 ⋆
1226	10939	7730	7772†	7830†	7772†	7832†	7980 ⋆
1225	10927	7718	7760†	7818†	7760†	7820†	7968 ⋆
1224	10915	7706	7748†	7806†	7748†	7808†	7956 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1223	10903	7694	7736†	7794†	7736†	7796†	7944 ⋆
1222	10891	7682	7724†	7782†	7724†	7784†	7932 ⋆
1221	10879	7670	7712†	7770†	7712†	7772†	7920 ⋆
1220	10867	7658	7700†	7758†	7700†	7760†	7908 ⋆
1219	10855	7646	7688†	7746†	7688†	7748†	7896 ⋆
1218	10843	7634	7676†	7734†	7676†	7736†	7884 ⋆
1217	10831	7622	7664†	7722†	7664†	7724†	7872 ⋆
1216	10819	7610	7652†	7710†	7652†	7712†	7860 ⋆
1215	10807	7598	7640†	7698†	7640†	7700†	7848 ⋆
1214	10795	7598	7640†	7698†	7640†	7700†	7836 ⋆
1213	10783	7586	7628†	7686†	7628†	7700†	7824 ⋆
1212	10771	7586	7628†	7686†	7628†	7700†	7812 ⋆
1211	10759	7574	7616†	7674†	7616†	7688†	7800 ⋆
1210	10747	7574	7616†	7674†	7616†	7688†	7788 ⋆
1209	10735	7562	7604†	7662†	7604†	7676†	7776 ⋆
1208	10723	7550	7592†	7650†	7592†	7664†	7764 ⋆
1207	10711	7538	7580†	7638†	7580†	7652†	7752 ⋆
1206	10699	7538	7580†	7638†	7580†	7652†	7740 ⋆
1205	10687	7526	7568†	7626†	7568†	7652†	7728 ⋆
1204	10675	7526	7568†	7626†	7568†	7652†	7716 ⋆
1203	10663	7514	7556†	7614†	7556†	7640†	7704 ⋆
1202	10651	7502	7556†	7602†	7556†	7640†	7692 ⋆
1201	10639	7490	7544†	7590†	7544†	7628†	7680 ⋆
1200	10627	7478	7532†	7578†	7532†	7616†	7668 ⋆
1199	10615	7466	7520†	7566†	7520†	7604†	7656 ⋆
1198	10603	7466	7520†	7566†	7520†	7604†	7644 ⋆
1197	10591	7454	7508†	7554†	7508†	7604†	7632 ⋆
1196	10579	7454	7508†	7554†	7508†	7604†	7620 ⋆
1195	10567	7442	7496†	7542†	7496†	7592†	7608 ⋆
1194	10555	7442	7496†	7542†	7496†	7592†	7596 ⋆
1193	10543	7430	7484†	7530†	7484†	7580†	7584 ⋆
1192	10531	7418	7472†	7518†	7472†	7568†	7572 ⋆
1191	10519	7406	7460†	7506†	7460†	7556†	7560 ⋆
1190	10507	7394	7448†	7494†	7448†	7544†	7548 ⋆
1189	10495	7382	7436†	7482†	7436†	7532†	7536 ⋆
1188	10483	7370	7424†	7470†	7424†	7520†	7524 ⋆
1187	10471	7358	7412†	7458†	7412†	7508†	7512 ⋆
1186	10459	7346	7400†	7446†	7400†	7496†	7500 ⋆
1185	10447	7334	7388†	7434†	7388†	7484†	7488 ⋆
1184	10435	7322	7376†	7422†	7376†	7472†	7476 ⋆
1183	10423	7310	7364†	7410†	7364†	7460†	7464 ⋆
1182	10411	7298	7352†	7398†	7352†	7460⋆	7452 †
1181	10399	7286	7340†	7386†	7340†	7460⋆	7440 †
1180	10387	7274	7328†	7374†	7328†	7460⋆	7428 †
1179	10375	7262	7316†	7362†	7316†	7448⋆	7416 †
1178	10363	7250	7304†	7350†	7304†	7448⋆	7404 †
1177	10351	7238	7292†	7338†	7292†	7436⋆	7392 †
1176	10339	7226	7280†	7326†	7280†	7424⋆	7380 †
1175	10327	7214	7268†	7314†	7268†	7412⋆	7368 †
1174	10315	7202	7256†	7302†	7256†	7412⋆	7356 †
1173	10303	7190	7244†	7290†	7244†	7412⋆	7344 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1172	10291	7178	7232†	7278†	7232†	7412⋆	7332 †
1171	10279	7166	7220†	7266†	7220†	7400⋆	7320 †
1170	10267	7154	7208†	7254†	7208†	7400⋆	7308 †
1169	10255	7142	7196†	7242†	7196†	7391⋆	7296 †
1168	10243	7130	7184†	7230†	7184†	7379⋆	7284 †
1167	10231	7118	7172†	7218†	7172†	7367⋆	7272 †
1166	10219	7106	7160†	7206†	7160†	7355⋆	7260 †
1165	10207	7094	7148†	7194†	7148†	7343⋆	7248 †
1164	10195	7082	7136†	7182†	7136†	7331⋆	7236 †
1163	10183	7070	7124†	7170†	7124†	7319⋆	7224 †
1162	10171	7058	7112†	7158†	7112†	7307⋆	7212 †
1161	10159	7046	7100†	7146†	7100†	7295⋆	7200 †
1160	10147	7034	7088†	7134†	7088†	7283⋆	7188 †
1159	10135	7022	7076†	7122†	7076†	7271⋆	7176 †
1158	10123	7010	7064†	7110†	7064†	7259⋆	7164 †
1157	10111	6998	7052†	7098†	7052†	7247⋆	7152 †
1156	10099	6986	7040†	7086†	7040†	7235⋆	7140 †
1155	10087	6974	7028†	7074†	7028†	7223⋆	7128 †
1154	10075	6962	7016†	7062†	7016†	7211⋆	7116 †
1153	10063	6950	7004†	7050†	7004†	7199⋆	7104 †
1152	10051	6938	6992†	7038†	6992†	7187⋆	7092 †
1151	10039	6926	6980†	7026†	6980†	7175⋆	7080 †
1150	10027	6914	6968†	7014†	6968†	7163⋆	7068 †
1149	10015	6902	6956†	7002†	6956†	7151⋆	7056 †
1148	10003	6890	6944†	6990†	6944†	7139⋆	7044 †
1147	9991	6878	6932†	6978†	6932†	7127⋆	7032 †
1146	9979	6866	6920†	6966†	6920†	7115⋆	7020 †
1145	9967	6854	6908†	6954†	6908†	7103⋆	7008 †
1144	9955	6842	6896†	6942†	6896†	7091⋆	6996 †
1143	9943	6830	6884†	6930†	6884†	7079⋆	6984 †
1142	9931	6818	6872†	6918†	6872†	7067⋆	6972 †
1141	9919	6806	6860†	6906†	6860†	7055⋆	6960 †
1140	9907	6794	6848†	6894†	6848†	7043⋆	6948 †
1139	9895	6782	6836†	6882†	6836†	7031⋆	6936 †
1138	9883	6770	6824†	6870†	6824†	7019⋆	6924 †
1137	9871	6758	6812†	6858†	6812†	7007⋆	6912 †
1136	9859	6746	6800†	6846†	6800†	6995⋆	6900 †
1135	9847	6734	6788†	6834†	6788†	6983⋆	6888 †
1134	9835	6722	6776†	6822†	6776†	6971⋆	6876 †
1133	9823	6710	6764†	6810†	6764†	6959⋆	6864 †
1132	9811	6698	6752†	6798†	6752†	6947⋆	6852 †
1131	9799	6686	6740†	6786†	6740†	6935⋆	6840 †
1130	9787	6674	6728†	6774†	6728†	6923⋆	6828 †
1129	9775	6662	6716†	6762†	6716†	6911⋆	6816 †
1128	9763	6650	6704†	6750†	6704†	6899⋆	6804 †
1127	9751	6638	6692†	6738†	6692†	6887⋆	6792 †
1126	9739	6626	6680†	6726†	6680†	6875⋆	6780 †
1125	9727	6614	6668†	6714†	6668†	6863⋆	6768 †
1124	9715	6602	6656†	6702†	6656†	6851⋆	6756 †
1123	9703	6590	6644†	6690†	6644†	6839⋆	6744 †
1122	9691	6578	6632†	6678†	6632†	6827⋆	6732 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1121	9679	6566	6620†	6666†	6620†	6815⋆	6720 †
1120	9667	6554	6608†	6654†	6608†	6803⋆	6708 †
1119	9655	6542	6596†	6642†	6596†	6791⋆	6696 †
1118	9643	6530	6584†	6630†	6584†	6779⋆	6684 †
1117	9631	6518	6572†	6618†	6572†	6767⋆	6672 †
1116	9619	6506	6560†	6606†	6560†	6755⋆	6660 †
1115	9607	6494	6548†	6594†	6548†	6743⋆	6648 †
1114	9595	6482	6536†	6582†	6536†	6731⋆	6636 †
1113	9583	6470	6524†	6570†	6524†	6719⋆	6624 †
1112	9571	6458	6512†	6558†	6512†	6707⋆	6612 †
1111	9559	6446	6500†	6546†	6500†	6695⋆	6600 †
1110	9547	6434	6488†	6534†	6488†	6683⋆	6588 †
1109	9535	6422	6476†	6522†	6476†	6671⋆	6576 †
1108	9523	6410	6464†	6510†	6464†	6659⋆	6564 †
1107	9511	6398	6452†	6498†	6452†	6647⋆	6552 †
1106	9499	6386	6440†	6486†	6440†	6635⋆	6540 †
1105	9487	6374	6428†	6474†	6428†	6623⋆	6528 †
1104	9475	6362	6416†	6462†	6416†	6611⋆	6516 †
1103	9463	6350	6404†	6450†	6404†	6599⋆	6504 †
1102	9451	6338	6392†	6438†	6392†	6587⋆	6492 †
1101	9439	6326	6380†	6426†	6380†	6575⋆	6480 †
1100	9427	6314	6368†	6414†	6368†	6563⋆	6468 †
1099	9415	6302	6356†	6402†	6356†	6551⋆	6456 †
1098	9403	6290	6344†	6390†	6344†	6539⋆	6444 †
1097	9391	6278	6332†	6378†	6332†	6527⋆	6432 †
1096	9379	6266	6320†	6366†	6320†	6515⋆	6420 †
1095	9367	6254	6308†	6354†	6308†	6503⋆	6408 †
1094	9355	6242	6296†	6342†	6296†	6491⋆	6396 †
1093	9343	6230	6284†	6330†	6284†	6479⋆	6384 †
1092	9331	6218	6272†	6318†	6272†	6467⋆	6372 †
1091	9319	6206	6260†	6306†	6260†	6455⋆	6360 †
1090	9307	6194	6248†	6294†	6248†	6443⋆	6348 †
1089	9295	6182	6236†	6282†	6236†	6431⋆	6336 †
1088	9283	6170	6224†	6270†	6224†	6419⋆	6324 †
1087	9271	6158	6212†	6258†	6212†	6407⋆	6312 †
1086	9259	6146	6200†	6246†	6200†	6395⋆	6300 †
1085	9247	6134	6188†	6234†	6188†	6383⋆	6288 †
1084	9235	6122	6176†	6222†	6176†	6371⋆	6276 †
1083	9223	6110	6164†	6210†	6164†	6359⋆	6264 †
1082	9211	6098	6152†	6198†	6152†	6347⋆	6252 †
1081	9199	6086	6140†	6186†	6140†	6335⋆	6240 †
1080	9187	6074	6128†	6174†	6128†	6323⋆	6228 †
1079	9175	6062	6116†	6162†	6116†	6311⋆	6216 †
1078	9163	6050	6104†	6150†	6104†	6299⋆	6204 †
1077	9151	6038	6092†	6138†	6092†	6287⋆	6192 †
1076	9139	6026	6080†	6126†	6080†	6275⋆	6180 †
1075	9127	6014	6068†	6114†	6068†	6263⋆	6168 †
1074	9115	6002	6056†	6102†	6056†	6251⋆	6156 †
1073	9103	5990	6044†	6090†	6044†	6239⋆	6144 †
1072	9091	5978	6032†	6078†	6032†	6227⋆	6132 †
1071	9079	5966	6020†	6066†	6020†	6215⋆	6120 †

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1070	9067	5954	6008†	6054†	6008†	6203⋆	6108 †
1069	9055	5942	5996†	6042†	5996†	6191⋆	6096 †
1068	9043	5930	5984†	6030†	5984†	6179⋆	6084 †
1067	9031	5918	5972†	6018†	5972†	6167⋆	6072 †
1066	9019	5906	5960†	6006†	5960†	6155⋆	6060 †
1065	9007	5894	5948†	5994†	5948†	6143⋆	6048 †
1064	8995	5882	5936†	5982†	5936†	6131⋆	6036 †
1063	8983	5870	5924†	5970†	5924†	6119⋆	6024 †
1062	8971	5858	5912†	5958†	5912†	6107⋆	6012 †
1061	8959	5846	5900†	5946†	5900†	6095⋆	6000 †
1060	8947	5834	5888†	5934†	5888†	6083⋆	5988 †
1059	8935	5822	5876†	5922†	5876†	6071⋆	5976 †
1058	8923	5810	5864†	5910†	5864†	6059⋆	5964 †
1057	8911	5798	5852†	5898†	5852†	6047⋆	5952 †
1056	8899	5786	5840†	5886†	5840†	6035⋆	5940 †
1055	8887	5774	5828†	5874†	5828†	6023⋆	5928 †
1054	8875	5762	5816†	5862†	5816†	6011⋆	5916 †
1053	8863	5750	5804†	5850†	5804†	5999⋆	5904 †
1052	8851	5738	5792†	5838†	5792†	5987⋆	5892 †
1051	8839	5726	5780†	5826†	5780†	5975⋆	5880 †
1050	8827	5714	5768†	5814†	5768†	5963⋆	5868 †
1049	8815	5702	5756†	5802†	5756†	5951⋆	5856 †
1048	8803	5690	5744†	5790†	5744†	5939⋆	5844 †
1047	8791	5678	5732†	5778†	5732†	5927⋆	5832 †
1046	8779	5666	5720†	5766†	5720†	5915⋆	5820 †
1045	8767	5654	5708†	5754†	5708†	5903⋆	5808 †
1044	8755	5642	5696†	5742†	5696†	5891⋆	5796 †
1043	8743	5630	5684†	5730†	5684†	5879⋆	5784 †
1042	8731	5618	5672†	5718†	5672†	5867⋆	5772 †
1041	8719	5606	5660†	5706†	5660†	5855⋆	5760 †
1040	8707	5594	5648†	5694†	5648†	5843⋆	5748 †
1039	8695	5582	5636†	5682†	5636†	5831⋆	5736 †
1038	8683	5570	5624†	5670†	5624†	5819⋆	5724 †
1037	8671	5558	5612†	5658†	5612†	5807⋆	5712 †
1036	8659	5546	5600†	5646†	5600†	5795⋆	5700 †
1035	8647	5534	5588†	5634†	5588†	5783⋆	5688 †
1034	8635	5522	5576†	5622†	5576†	5771⋆	5676 †
1033	8623	5510	5564†	5610†	5564†	5759⋆	5664 †
1032	8611	5498	5552†	5598†	5552†	5747⋆	5652 †
1031	8599	5486	5540†	5586†	5540†	5735⋆	5640 †
1030	8587	5474	5528†	5574†	5528†	5723⋆	5628 †
1029	8575	5462	5516†	5562†	5516†	5711⋆	5616 †
1028	8563	5450	5504†	5550†	5504†	5699⋆	5604 †
1027	8551	5438	5492†	5538†	5492†	5687⋆	5592 †
1026	8539	5426	5480†	5526†	5480†	5675⋆	5580 †
1025	8527	5414	5468†	5514†	5468†	5663⋆	5568 †
1024	8515	5402	5456†	5502†	5456†	5651⋆	5556 †
1023	8503	5390	5444†	5490†	5444†	5639⋆	5544 †
1022	8503	5390	5444†	5490†	5444†	5639⋆	5544 †
1021	8491	5390	5444†	5490†	5444†	5639⋆	5544 †
1020	8491	5390	5444†	5490†	5444†	5639⋆	5544 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
1019	8479	5378	5432†	5478†	5432†	5627⋆	5532 †
1018	8479	5378	5432†	5478†	5432†	5627⋆	5532 †
1017	8467	5378	5432†	5478†	5432†	5627⋆	5532 †
1016	8455	5378	5432†	5478†	5432†	5615⋆	5532 †
1015	8443	5366	5420†	5466†	5420†	5603⋆	5520 †
1014	8443	5366	5420†	5466†	5420†	5603⋆	5520 †
1013	8431	5366	5420†	5466†	5420†	5603⋆	5520 †
1012	8431	5366	5420†	5466†	5420†	5603⋆	5520 †
1011	8419	5354	5408†	5454†	5408†	5591⋆	5508 †
1010	8407	5354	5408†	5442†	5408†	5591⋆	5496 †
1009	8395	5342	5396†	5430†	5396†	5591⋆	5484 †
1008	8383	5330	5384†	5418†	5384†	5579⋆	5472 †
1007	8371	5318	5372†	5406†	5372†	5567⋆	5460 †
1006	8371	5318	5372†	5406†	5372†	5567⋆	5460 †
1005	8359	5318	5372†	5406†	5372†	5567⋆	5460 †
1004	8359	5318	5372†	5406†	5372†	5567⋆	5460 †
1003	8347	5306	5360†	5394†	5360†	5555⋆	5448 †
1002	8347	5306	5360†	5394†	5360†	5555⋆	5448 †
1001	8335	5306	5360†	5394†	5360†	5555⋆	5448 †
1000	8323	5306	5360†	5394†	5360†	5543⋆	5448 †
999	8311	5294	5348†	5382†	5348†	5531⋆	5436 †
998	8299	5294	5348†	5382†	5348†	5531⋆	5436 †
997	8287	5282	5336†	5382†	5336†	5519⋆	5436 †
996	8275	5282	5336†	5382†	5336†	5519⋆	5436 †
995	8263	5270	5324†	5370†	5324†	5507⋆	5424 †
994	8251	5258	5312†	5358†	5312†	5495⋆	5412 †
993	8239	5246	5300†	5346†	5300†	5483⋆	5400 †
992	8227	5234	5288†	5334†	5288†	5471⋆	5388 †
991	8215	5222	5276†	5322†	5276†	5459⋆	5376 †
990	8215	5222	5276†	5322†	5276†	5459⋆	5376 †
989	8203	5222	5276†	5322†	5276†	5459⋆	5376 †
988	8203	5222	5276†	5322†	5276†	5459⋆	5376 †
987	8191	5210	5264†	5310†	5264†	5447⋆	5364 †
986	8191	5210	5264†	5310†	5264†	5447⋆	5364 †
985	8179	5210	5264†	5310†	5264†	5447⋆	5364 †
984	8167	5210	5264†	5310†	5264†	5435⋆	5364 †
983	8155	5198	5252†	5298†	5252†	5423⋆	5352 †
982	8155	5198	5252†	5298†	5252†	5423⋆	5352 †
981	8143	5198	5252†	5298†	5252†	5423⋆	5352 †
980	8143	5198	5252†	5298†	5252†	5423⋆	5352 †
979	8131	5186	5240†	5286†	5240†	5411⋆	5340 †
978	8119	5186	5240†	5274†	5240†	5411⋆	5328 †
977	8107	5174	5228†	5262†	5228†	5411⋆	5316 †
976	8095	5162	5216†	5250†	5216†	5399⋆	5304 †
975	8083	5150	5204†	5238†	5204†	5387⋆	5292 †
974	8077	5150	5198†	5238†	5198†	5381⋆	5286 †
973	8065	5138	5186†	5226†	5186†	5369⋆	5274 †
972	8053	5138	5174†	5226†	5174†	5357⋆	5262 †
971	8041	5126	5162†	5214†	5162†	5345⋆	5250 †
970	8029	5126	5150†	5214†	5150†	5333⋆	5238 †
969	8017	5114	5138†	5202†	5138†	5321⋆	5226 †

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
968	8005	5102	5126†	5190†	5126†	5309⋆	5214 †
967	7993	5090	5114†	5178†	5114†	5297⋆	5202 †
966	7981	5078	5102†	5166†	5102†	5285⋆	5190 †
965	7969	5066	5090†	5154†	5090†	5273⋆	5178 †
964	7957	5054	5078†	5142†	5078†	5261⋆	5166 †
963	7945	5042	5066†	5130†	5066†	5249⋆	5154 †
962	7933	5030	5054†	5118†	5054†	5237⋆	5142 †
961	7921	5018	5042†	5106†	5042†	5225⋆	5130 †
960	7909	5006	5030†	5094†	5030†	5213⋆	5118 †
959	7897	4994	5018†	5082†	5018†	5201⋆	5106 †
958	7897	4994	5018†	5082†	5018†	5201⋆	5106 †
957	7885	4994	5018†	5082†	5018†	5201⋆	5106 †
956	7885	4994	5018†	5082†	5018†	5201⋆	5106 †
955	7873	4982	5006†	5070†	5006†	5189⋆	5094 †
954	7873	4982	5006†	5070†	5006†	5189⋆	5094 †
953	7861	4982	5006†	5070†	5006†	5189⋆	5094 †
952	7849	4982	5006†	5070†	5006†	5177⋆	5094 †
951	7837	4970	4994†	5058†	4994†	5165⋆	5082 †
950	7837	4970	4994†	5058†	4994†	5165⋆	5082 †
949	7825	4970	4994†	5058†	4994†	5165⋆	5082 †
948	7825	4970	4994†	5058†	4994†	5165⋆	5082 †
947	7813	4958	4982†	5046†	4982†	5153⋆	5070 †
946	7801	4958	4982†	5034†	4982†	5153⋆	5058 †
945	7789	4946	4970†	5022†	4970†	5153⋆	5046 †
944	7777	4934	4958†	5010†	4958†	5141⋆	5034 †
943	7765	4922	4946†	4998†	4946†	5129⋆	5022 †
942	7765	4922	4946†	4998†	4946†	5129⋆	5022 †
941	7753	4922	4946†	4998†	4946†	5129⋆	5022 †
940	7753	4922	4946†	4998†	4946†	5129⋆	5022 †
939	7741	4910	4934†	4986†	4934†	5117⋆	5010 †
938	7741	4910	4934†	4986†	4934†	5117⋆	5010 †
937	7729	4910	4934†	4986†	4934†	5117⋆	5010 †
936	7717	4910	4934†	4986†	4934†	5105⋆	5010 †
935	7705	4898	4922†	4974†	4922†	5093⋆	4998 †
934	7693	4898	4922†	4974†	4922†	5093⋆	4998 †
933	7681	4886	4910†	4974†	4910†	5081⋆	4998 †
932	7669	4886	4910†	4974†	4910†	5081⋆	4998 †
931	7657	4874	4898†	4962†	4898†	5069⋆	4986 †
930	7645	4862	4886†	4950†	4886†	5057⋆	4974 †
929	7633	4850	4874†	4938†	4874†	5045⋆	4962 †
928	7621	4838	4862†	4926†	4862†	5033⋆	4950 †
927	7609	4826	4850†	4914†	4850†	5021⋆	4938 †
926	7609	4826	4850†	4914†	4850†	5021⋆	4938 †
925	7597	4826	4850†	4914†	4850†	5021⋆	4938 †
924	7597	4826	4850†	4914†	4850†	5021⋆	4938 †
923	7585	4814	4838†	4902†	4838†	5009⋆	4926 †
922	7573	4814	4838†	4902†	4838†	5009⋆	4926 †
921	7561	4802	4838†	4890†	4838†	5009⋆	4926 †
920	7549	4790	4826†	4890†	4826†	4997⋆	4926 †
919	7537	4778	4814†	4878†	4814†	4985⋆	4914 †
918	7525	4778	4814†	4878†	4814†	4985⋆	4914 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
917	7513	4766	4814†	4866†	4814†	4985⋆	4914 †
916	7501	4766	4814†	4866†	4814†	4985⋆	4914 †
915	7489	4754	4802†	4854†	4802†	4973⋆	4902 †
914	7477	4742	4790†	4842†	4790†	4973⋆	4890 †
913	7465	4730	4778†	4830†	4778†	4973⋆	4878 †
912	7453	4718	4766†	4818†	4766†	4961⋆	4866 †
911	7441	4706	4754†	4806†	4754†	4949⋆	4854 †
910	7429	4706	4754†	4806†	4754†	4949⋆	4854 †
909	7417	4694	4748†	4794†	4748†	4943⋆	4848 †
908	7405	4682	4736†	4782†	4736†	4931⋆	4836 †
907	7393	4670	4724†	4770†	4724†	4919⋆	4824 †
906	7381	4658	4712†	4758†	4712†	4907⋆	4812 †
905	7369	4646	4700†	4746†	4700†	4895⋆	4800 †
904	7357	4634	4688†	4734†	4688†	4883⋆	4788 †
903	7345	4622	4676†	4722†	4676†	4871⋆	4776 †
902	7333	4610	4664†	4710†	4664†	4859⋆	4764 †
901	7321	4598	4652†	4698†	4652†	4847⋆	4752 †
900	7309	4586	4640†	4686†	4640†	4835⋆	4740 †
899	7297	4574	4628†	4674†	4628†	4823⋆	4728 †
898	7285	4562	4616†	4662†	4616†	4811⋆	4716 †
897	7273	4550	4604†	4650†	4604†	4799⋆	4704 †
896	7261	4538	4592†	4638†	4592†	4787⋆	4692 †
895	7249	4526	4580†	4626†	4580†	4775⋆	4680 †
894	7249	4526	4580†	4626†	4580†	4775⋆	4680 †
893	7237	4526	4580†	4626†	4580†	4775⋆	4680 †
892	7237	4526	4580†	4626†	4580†	4775⋆	4680 †
891	7225	4514	4568†	4614†	4568†	4763⋆	4668 †
890	7225	4514	4568†	4614†	4568†	4763⋆	4668 †
889	7213	4514	4568†	4614†	4568†	4763⋆	4668 †
888	7201	4514	4568†	4614†	4568†	4751⋆	4668 †
887	7189	4502	4556†	4602†	4556†	4739⋆	4656 †
886	7189	4502	4556†	4602†	4556†	4739⋆	4656 †
885	7177	4502	4556†	4602†	4556†	4739⋆	4656 †
884	7177	4502	4556†	4602†	4556†	4739⋆	4656 †
883	7165	4490	4544†	4590†	4544†	4727⋆	4644 †
882	7153	4490	4544†	4578†	4544†	4727⋆	4632 †
881	7141	4478	4532†	4566†	4532†	4727⋆	4620 †
880	7129	4466	4520†	4554†	4520†	4715⋆	4608 †
879	7117	4454	4508†	4542†	4508†	4703⋆	4596 †
878	7117	4454	4508†	4542†	4508†	4703⋆	4596 †
877	7105	4454	4508†	4542†	4508†	4703⋆	4596 †
876	7105	4454	4508†	4542†	4508†	4703⋆	4596 †
875	7093	4442	4496†	4530†	4496†	4691⋆	4584 †
874	7093	4442	4496†	4530†	4496†	4691⋆	4584 †
873	7081	4442	4496†	4530†	4496†	4691⋆	4584 †
872	7069	4442	4496†	4530†	4496†	4679⋆	4584 †
871	7057	4430	4484†	4518†	4484†	4667⋆	4572 †
870	7057	4430	4484†	4518†	4484†	4667⋆	4572 †
869	7045	4418	4472†	4518†	4472†	4655⋆	4572 †
868	7033	4418	4472†	4518†	4472†	4655⋆	4572 †
867	7021	4406	4460†	4506†	4460†	4643⋆	4560 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
866	7009	4394	4448†	4494†	4448†	4631⋆	4548 †
865	6997	4382	4436†	4482†	4436†	4619⋆	4536 †
864	6985	4370	4424†	4470†	4424†	4607⋆	4524 †
863	6973	4358	4412†	4458†	4412†	4595⋆	4512 †
862	6973	4358	4412†	4458†	4412†	4595⋆	4512 †
861	6961	4358	4412†	4458†	4412†	4595⋆	4512 †
860	6961	4358	4412†	4458†	4412†	4595⋆	4512 †
859	6949	4346	4400†	4446†	4400†	4583⋆	4500 †
858	6949	4346	4400†	4446†	4400†	4583⋆	4500 †
857	6937	4346	4400†	4446†	4400†	4583⋆	4500 †
856	6925	4346	4400†	4446†	4400†	4571⋆	4500 †
855	6913	4334	4388†	4434†	4388†	4559⋆	4488 †
854	6913	4334	4388†	4434†	4388†	4559⋆	4488 †
853	6901	4334	4388†	4434†	4388†	4559⋆	4488 †
852	6901	4334	4388†	4434†	4388†	4559⋆	4488 †
851	6889	4322	4376†	4422†	4376†	4547⋆	4476 †
850	6877	4322	4376†	4410†	4376†	4547⋆	4464 †
849	6865	4310	4364†	4398†	4364†	4547⋆	4452 †
848	6853	4298	4352†	4386†	4352†	4535⋆	4440 †
847	6841	4286	4340†	4374†	4340†	4523⋆	4428 †
846	6841	4286	4340†	4374†	4340†	4523⋆	4428 †
845	6829	4286	4340†	4374†	4340†	4523⋆	4428 †
844	6823	4286	4334†	4374†	4334†	4517⋆	4422 †
843	6811	4274	4322†	4362†	4322†	4505⋆	4410 †
842	6799	4274	4310†	4362†	4310†	4493⋆	4398 †
841	6787	4262	4298†	4350†	4298†	4481⋆	4386 †
840	6775	4250	4286†	4338†	4286†	4469⋆	4374 †
839	6763	4238	4274†	4326†	4274†	4457⋆	4362 †
838	6751	4238	4262†	4326†	4262†	4445⋆	4350 †
837	6739	4226	4250†	4314†	4250†	4433⋆	4338 †
836	6727	4214	4238†	4302†	4238†	4421⋆	4326 †
835	6715	4202	4226†	4290†	4226†	4409⋆	4314 †
834	6703	4190	4214†	4278†	4214†	4397⋆	4302 †
833	6691	4178	4202†	4266†	4202†	4385⋆	4290 †
832	6679	4166	4190†	4254†	4190†	4373⋆	4278 †
831	6667	4154	4178†	4242†	4178†	4361⋆	4266 †
830	6667	4154	4178†	4242†	4178†	4361⋆	4266 †
829	6655	4154	4178†	4242†	4178†	4361⋆	4266 †
828	6655	4154	4178†	4242†	4178†	4361⋆	4266 †
827	6643	4142	4166†	4230†	4166†	4349⋆	4254 †
826	6643	4142	4166†	4230†	4166†	4349⋆	4254 †
825	6631	4142	4166†	4230†	4166†	4349⋆	4254 †
824	6619	4142	4166†	4230†	4166†	4337⋆	4254 †
823	6607	4130	4154†	4218†	4154†	4325⋆	4242 †
822	6607	4130	4154†	4218†	4154†	4325⋆	4242 †
821	6595	4130	4154†	4218†	4154†	4325⋆	4242 †
820	6595	4130	4154†	4218†	4154†	4325⋆	4242 †
819	6583	4118	4142†	4206†	4142†	4313⋆	4230 †
818	6575	4114	4138†	4198†	4138†	4309⋆	4222 †
817	6563	4102	4126†	4186†	4126†	4297⋆	4210 †
816	6551	4090	4114†	4174†	4114†	4285⋆	4198 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
815	6539	4078	4102†	4162†	4102†	4273⋆	4186 †
814	6527	4078	4102†	4150†	4102†	4273⋆	4174 †
813	6515	4066	4090†	4138†	4090†	4261⋆	4162 †
812	6503	4066	4090†	4126†	4090†	4261⋆	4150 †
811	6491	4054	4078†	4114†	4078†	4249⋆	4138 †
810	6479	4054	4078†	4102†	4078†	4249⋆	4126 †
809	6467	4042	4066†	4090†	4066†	4237⋆	4114 †
808	6455	4030	4054†	4078†	4054†	4225⋆	4102 †
807	6443	4018	4042†	4066†	4042†	4213⋆	4090 †
806	6431	4018	4042†	4054†	4042†	4213⋆	4078 †
805	6419	4006	4030†	4042†	4030†	4201⋆	4066 †
804	6407	3994	4018†	4030†	4018†	4201⋆	4054 †
803	6395	3982	4006†	4018†	4006†	4189⋆	4042 †
802	6383	3970	3994†	4006†	3994†	4189⋆	4030 †
801	6371	3958	3982†	3994†	3982†	4177⋆	4018 †
800	6359	3946	3970†	3982†	3970†	4165⋆	4006 †
799	6347	3934	3958†	3970†	3958†	4153⋆	3994 †
798	6335	3934	3958†	3958†	3958†	4153⋆	3982 †
797	6323	3922	3946†	3946†	3946†	4141⋆	3970 †
796	6311	3922	3946†	3934†	3946†	4141⋆	3958 †
795	6299	3910	3934†	3922†	3934†	4129⋆	3946 †
794	6287	3910	3934†	3910	3934†	4129⋆	3934 †
793	6275	3898	3922†	3898	3922†	4117⋆	3922 †
792	6263	3886	3910†	3886	3910†	4105⋆	3910 †
791	6251	3874	3898†	3874	3898†	4093⋆	3898 †
790	6239	3862	3886†	3862	3886†	4081⋆	3886 †
789	6227	3850	3874†	3850	3874†	4069⋆	3874 †
788	6215	3838	3862†	3838	3862†	4057⋆	3862 †
787	6203	3826	3850†	3826	3850†	4045⋆	3850 †
786	6191	3814	3838†	3814	3838†	4033⋆	3838 †
785	6179	3802	3826†	3802	3826†	4021⋆	3826 †
784	6167	3790	3814†	3790	3814†	4009⋆	3814 †
783	6155	3778	3802†	3778	3802†	3997⋆	3802 †
782	6143	3766	3790†	3766	3790†	3985⋆	3790 †
781	6131	3754	3778†	3754	3778†	3973⋆	3778 †
780	6119	3742	3766†	3742	3766†	3961⋆	3766 †
779	6107	3730	3754†	3730	3754†	3949⋆	3754 †
778	6095	3718	3742†	3718	3742†	3937⋆	3742 †
777	6083	3706	3730†	3706	3730†	3925⋆	3730 †
776	6071	3694	3718†	3694	3718†	3913⋆	3718 †
775	6059	3682	3706†	3682	3706†	3901⋆	3706 †
774	6047	3670	3694†	3670	3694†	3889⋆	3694 †
773	6035	3658	3682†	3658	3682†	3877⋆	3682 †
772	6023	3646	3670†	3646	3670†	3865⋆	3670 †
771	6011	3634	3658†	3634	3658†	3853⋆	3658 †
770	5999	3622	3646†	3622	3646†	3841⋆	3646 †
769	5987	3610	3634†	3610	3634†	3829⋆	3634 †
768	5975	3598	3622†	3598	3622†	3817⋆	3622 †
767	5963	3586	3610†	3586	3610†	3805⋆	3610 †
766	5963	3586	3610†	3586	3610†	3805⋆	3610 †
765	5951	3586	3610†	3586	3610†	3805⋆	3610 †

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
764	5951	3586	3610†	3586	3610†	3805⋆	3610 †
763	5939	3574	3598†	3574	3598†	3793⋆	3598 †
762	5939	3574	3598†	3574	3598†	3793⋆	3598 †
761	5927	3574	3598†	3574	3598†	3793⋆	3598 †
760	5915	3574	3598†	3574	3598†	3781⋆	3598 †
759	5903	3562	3586†	3562	3586†	3769⋆	3586 †
758	5903	3562	3586†	3562	3586†	3769⋆	3586 †
757	5891	3562	3586†	3562	3586†	3769⋆	3586 †
756	5891	3562	3586†	3562	3586†	3769⋆	3586 †
755	5879	3550	3574†	3550	3574†	3757⋆	3574 †
754	5879	3550	3574†	3550	3574†	3757⋆	3574 †
753	5867	3538	3562†	3538	3562†	3757⋆	3562 †
752	5855	3526	3550†	3526	3550†	3745⋆	3550 †
751	5843	3514	3538†	3514	3538†	3733⋆	3538 †
750	5843	3514	3538†	3514	3538†	3733⋆	3538 †
749	5831	3514	3538†	3514	3538†	3733⋆	3538 †
748	5831	3514	3538†	3514	3538†	3733⋆	3538 †
747	5819	3502	3526†	3502	3526†	3721⋆	3526 †
746	5819	3502	3526†	3502	3526†	3721⋆	3526 †
745	5807	3502	3526†	3502	3526†	3721⋆	3526 †
744	5795	3502	3526†	3502	3526†	3709⋆	3526 †
743	5783	3490	3514†	3490	3514†	3697⋆	3514 †
742	5783	3490	3514†	3490	3514†	3697⋆	3514 †
741	5771	3490	3514†	3490	3514†	3697⋆	3514 †
740	5759	3490	3514†	3490	3514†	3697⋆	3514 †
739	5747	3478	3502†	3478	3502†	3685⋆	3502 †
738	5735	3478	3502†	3478	3502†	3685⋆	3502 †
737	5723	3466	3490†	3466	3490†	3673⋆	3490 †
736	5711	3454	3478†	3454	3478†	3661⋆	3478 †
735	5699	3442	3466†	3442	3466†	3649⋆	3466 †
734	5699	3442	3466†	3442	3466†	3649⋆	3466 †
733	5687	3442	3466†	3442	3466†	3649⋆	3466 †
732	5687	3442	3466†	3442	3466†	3649⋆	3466 †
731	5675	3430	3454†	3430	3454†	3637⋆	3454 †
730	5675	3430	3454†	3430	3454†	3637⋆	3454 †
729	5663	3430	3454†	3430	3454†	3637⋆	3454 †
728	5651	3430	3454†	3430	3454†	3625⋆	3454 †
727	5639	3418	3442†	3418	3442†	3613⋆	3442 †
726	5639	3418	3442†	3418	3442†	3613⋆	3442 †
725	5627	3418	3442†	3418	3442†	3613⋆	3442 †
724	5627	3418	3442†	3418	3442†	3613⋆	3442 †
723	5615	3406	3430†	3406	3430†	3601⋆	3430 †
722	5615	3406	3430†	3406	3430†	3601⋆	3430 †
721	5603	3394	3418†	3394	3418†	3601⋆	3418 †
720	5591	3382	3406†	3382	3406†	3589⋆	3406 †
719	5579	3370	3394†	3370	3394†	3577⋆	3394 †
718	5579	3370	3394†	3370	3394†	3577⋆	3394 †
717	5567	3370	3394†	3370	3394†	3577⋆	3394 †
716	5567	3370	3394†	3370	3394†	3577⋆	3394 †
715	5555	3358	3382†	3358	3382†	3565⋆	3382 †
714	5549	3358	3376†	3358	3376†	3559⋆	3376 †

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
713	5537	3346	3364†	3346	3364†	3547⋆	3364 †
712	5525	3334	3352†	3334	3352†	3535⋆	3352 †
711	5513	3322	3340†	3322	3340†	3523⋆	3340 †
710	5501	3322	3328†	3322	3328†	3511⋆	3328 †
709	5489	3310	3316†	3310	3316†	3499⋆	3316 †
708	5477	3298	3304†	3298	3304†	3487⋆	3304 †
707	5465	3286	3292†	3286	3292†	3475⋆	3292 †
706	5453	3274	3280†	3274	3280†	3463⋆	3280 †
705	5441	3262	3268†	3262	3268†	3451⋆	3268 †
704	5429	3250	3256†	3250	3256†	3439⋆	3256 †
703	5417	3238	3244†	3238	3244†	3427⋆	3244 †
702	5417	3238	3244†	3238	3244†	3427⋆	3244 †
701	5405	3238	3244†	3238	3244†	3427⋆	3244 †
700	5405	3238	3244†	3238	3244†	3427⋆	3244 †
699	5393	3226	3232†	3226	3232†	3415⋆	3232 †
698	5393	3226	3232†	3226	3232†	3415⋆	3232 †
697	5381	3226	3232†	3226	3232†	3415⋆	3232 †
696	5369	3226	3232†	3226	3232†	3403⋆	3232 †
695	5357	3214	3220†	3214	3220†	3391⋆	3220 †
694	5357	3214	3220†	3214	3220†	3391⋆	3220 †
693	5345	3214	3220†	3214	3220†	3391⋆	3220 †
692	5345	3214	3220†	3214	3220†	3391⋆	3220 †
691	5333	3202	3208†	3202	3208†	3379⋆	3208 †
690	5333	3202	3208†	3202	3208†	3379⋆	3208 †
689	5321	3190	3196†	3190	3196†	3379⋆	3196 †
688	5309	3178	3184†	3178	3184†	3367⋆	3184 †
687	5297	3166	3172†	3166	3172†	3355⋆	3172 †
686	5297	3166	3172†	3166	3172†	3355⋆	3172 †
685	5285	3166	3172†	3166	3172†	3355⋆	3172 †
684	5285	3166	3172†	3166	3172†	3355⋆	3172 †
683	5273	3154	3160†	3154	3160†	3343⋆	3160 †
682	5273	3154	3160†	3154	3160†	3343⋆	3160 †
681	5261	3154	3160†	3154	3160†	3343⋆	3160 †
680	5249	3154	3160†	3154	3160†	3331⋆	3160 †
679	5237	3142	3148†	3142	3148†	3319⋆	3148 †
678	5237	3142	3148†	3142	3148†	3319⋆	3148 †
677	5225	3142	3148†	3142	3148†	3319⋆	3148 †
676	5213	3142	3148†	3142	3148†	3319⋆	3148 †
675	5201	3130	3136†	3130	3136†	3307⋆	3136 †
674	5189	3130	3136†	3130	3136†	3307⋆	3136 †
673	5177	3118	3124†	3118	3124†	3295⋆	3124 †
672	5165	3106	3112†	3106	3112†	3283⋆	3112 †
671	5153	3094	3100†	3094	3100†	3271⋆	3100 †
670	5153	3094	3100†	3094	3100†	3271⋆	3100 †
669	5141	3094	3100†	3094	3100†	3271⋆	3100 †
668	5141	3094	3100†	3094	3100†	3271⋆	3100 †
667	5129	3082	3088†	3082	3088†	3259⋆	3088 †
666	5129	3082	3088†	3082	3088†	3259⋆	3088 †
665	5117	3082	3088†	3082	3088†	3259⋆	3088 †
664	5105	3082	3088†	3082	3088†	3247⋆	3088 †
663	5093	3070	3076†	3070	3076†	3235⋆	3076 †

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
662	5093	3070	3076†	3070	3076†	3235⋆	3076 †
661	5081	3070	3076†	3070	3076†	3235⋆	3076 †
660	5081	3070	3076†	3070	3076†	3235⋆	3076 †
659	5069	3058	3064†	3058	3064†	3223⋆	3064 †
658	5057	3058	3064†	3058	3064†	3223⋆	3064 †
657	5045	3046	3052†	3046	3052†	3223⋆	3052 †
656	5033	3034	3040†	3034	3040†	3211⋆	3040 †
655	5021	3022	3028†	3022	3028†	3199⋆	3028 †
654	5009	3022	3028†	3022	3028†	3199⋆	3028 †
653	4997	3010	3028†	3010	3028†	3199⋆	3028 †
652	4985	3010	3028†	3010	3028†	3199⋆	3028 †
651	4973	2998	3016†	2998	3016†	3187⋆	3016 †
650	4961	2998	3016†	2998	3016†	3187⋆	3016 †
649	4949	2986	3010†	2986	3010†	3181⋆	3010 †
648	4937	2974	2998†	2974	2998†	3169⋆	2998 †
647	4925	2962	2986†	2962	2986†	3157⋆	2986 †
646	4913	2950	2974†	2950	2974†	3145⋆	2974 †
645	4901	2938	2962†	2938	2962†	3133⋆	2962 †
644	4889	2926	2950†	2926	2950†	3121⋆	2950 †
643	4877	2914	2938†	2914	2938†	3109⋆	2938 †
642	4865	2902	2926†	2902	2926†	3097⋆	2926 †
641	4853	2890	2914†	2890	2914†	3085⋆	2914 †
640	4841	2878	2902†	2878	2902†	3073⋆	2902 †
639	4829	2866	2890†	2866	2890†	3061⋆	2890 †
638	4829	2866	2890†	2866	2890†	3061⋆	2890 †
637	4817	2866	2890†	2866	2890†	3061⋆	2890 †
636	4817	2866	2890†	2866	2890†	3061⋆	2890 †
635	4805	2854	2878†	2854	2878†	3049⋆	2878 †
634	4805	2854	2878†	2854	2878†	3049⋆	2878 †
633	4793	2854	2878†	2854	2878†	3049⋆	2878 †
632	4781	2854	2878†	2854	2878†	3037⋆	2878 †
631	4769	2842	2866†	2842	2866†	3025⋆	2866 †
630	4769	2842	2866†	2842	2866†	3025⋆	2866 †
629	4757	2842	2866†	2842	2866†	3025⋆	2866 †
628	4757	2842	2866†	2842	2866†	3025⋆	2866 †
627	4745	2830	2854†	2830	2854†	3013⋆	2854 †
626	4745	2830	2854†	2830	2854†	3013⋆	2854 †
625	4733	2818	2842†	2818	2842†	3013⋆	2842 †
624	4721	2806	2830†	2806	2830†	3001⋆	2830 †
623	4709	2794	2818†	2794	2818†	2989⋆	2818 †
622	4709	2794	2818†	2794	2818†	2989⋆	2818 †
621	4697	2794	2818†	2794	2818†	2989⋆	2818 †
620	4697	2794	2818†	2794	2818†	2989⋆	2818 †
619	4685	2782	2806†	2782	2806†	2977⋆	2806 †
618	4685	2782	2806†	2782	2806†	2977⋆	2806 †
617	4673	2782	2806†	2782	2806†	2977⋆	2806 †
616	4661	2782	2806†	2782	2806†	2965⋆	2806 †
615	4649	2770	2794†	2770	2794†	2953⋆	2794 †
614	4649	2770	2794†	2770	2794†	2953⋆	2794 †
613	4637	2770	2794†	2770	2794†	2953⋆	2794 †
612	4637	2770	2794†	2770	2794†	2953⋆	2794 †

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
611	4625	2758	2782†	2758	2782†	2941⋆	2782 †
610	4613	2758	2782†	2758	2782†	2941⋆	2782 †
609	4601	2746	2770†	2746	2770†	2929⋆	2770 †
608	4589	2734	2758†	2734	2758†	2917⋆	2758 †
607	4577	2722	2746†	2722	2746†	2905⋆	2746 †
606	4577	2722	2746†	2722	2746†	2905⋆	2746 †
605	4565	2722	2746†	2722	2746†	2905⋆	2746 †
604	4565	2722	2746†	2722	2746†	2905⋆	2746 †
603	4553	2710	2734†	2710	2734†	2893⋆	2734 †
602	4553	2710	2734†	2710	2734†	2893⋆	2734 †
601	4541	2710	2734†	2710	2734†	2893⋆	2734 †
600	4529	2710	2734†	2710	2734†	2881⋆	2734 †
599	4517	2698	2722†	2698	2722†	2869⋆	2722 †
598	4517	2698	2722†	2698	2722†	2869⋆	2722 †
597	4505	2698	2722†	2698	2722†	2869⋆	2722 †
596	4505	2698	2722†	2698	2722†	2869⋆	2722 †
595	4493	2686	2710†	2686	2710†	2857⋆	2710 †
594	4493	2686	2710†	2686	2710†	2857⋆	2710 †
593	4481	2674	2698†	2674	2698†	2857⋆	2698 †
592	4469	2662	2686†	2662	2686†	2845⋆	2686 †
591	4457	2650	2674†	2650	2674†	2833⋆	2674 †
590	4457	2650	2674†	2650	2674†	2833⋆	2674 †
589	4445	2650	2674†	2650	2674†	2833⋆	2674 †
588	4445	2650	2674†	2650	2674†	2833⋆	2674 †
587	4433	2638	2662†	2638	2662†	2821⋆	2662 †
586	4433	2638	2662†	2638	2662†	2821⋆	2662 †
585	4421	2638	2662†	2638	2662†	2821⋆	2662 †
584	4412	2632	2656†	2632	2656†	2812⋆	2656 †
583	4400	2620	2644†	2620	2644†	2800⋆	2644 †
582	4388	2608	2632†	2608	2632†	2788⋆	2632 †
581	4376	2596	2620†	2596	2620†	2776⋆	2620 †
580	4364	2584	2608†	2584	2608†	2764⋆	2608 †
579	4352	2572	2596†	2572	2596†	2752⋆	2596 †
578	4340	2560	2584†	2560	2584†	2740⋆	2584 †
577	4328	2548	2572†	2548	2572†	2728⋆	2572 †
576	4316	2536	2560†	2536	2560†	2716⋆	2560 †
575	4304	2524	2548†	2524	2548†	2704⋆	2548 †
574	4292	2524	2548†	2524	2548†	2692⋆	2548 †
573	4280	2512	2536†	2524†	2536†	2680⋆	2548 †
572	4268	2512	2536†	2524†	2536†	2668⋆	2548 †
571	4256	2500	2524†	2512†	2524†	2656⋆	2536 †
570	4244	2500	2524†	2512†	2524†	2644⋆	2536 †
569	4232	2488	2512†	2512†	2512†	2632⋆	2536 †
568	4220	2488	2512†	2512†	2512†	2620⋆	2536 †
567	4208	2476	2500†	2500†	2500†	2608⋆	2524 †
566	4196	2476	2500†	2500†	2500†	2596⋆	2524 †
565	4184	2464	2488†	2500†	2488†	2584⋆	2524 †
564	4172	2464	2488†	2500†	2488†	2572⋆	2524 †
563	4160	2452	2476†	2488†	2476†	2560⋆	2512 †
562	4148	2452	2476†	2488†	2476†	2548⋆	2512 †
561	4136	2440	2464†	2476†	2464†	2536⋆	2500 †

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
560	4124	2428	2452†	2464†	2452†	2524⋆	2488 †
559	4112	2416	2440†	2452†	2440†	2512⋆	2476 †
558	4100	2416	2440†	2452†	2440†	2500⋆	2476 †
557	4088	2404	2428†	2452†	2428†	2488⋆	2476 †
556	4076	2404	2428†	2452†	2428†	2476⋆	2476 ⋆
555	4064	2392	2416†	2440†	2416†	2464⋆	2464 ⋆
554	4052	2392	2416†	2440†	2416†	2452†	2464 ⋆
553	4040	2380	2404†	2440†	2404†	2440†	2464 ⋆
552	4028	2380	2404†	2440†	2404†	2428†	2464 ⋆
551	4016	2368	2392†	2428†	2392†	2416†	2452 ⋆
550	4004	2368	2392†	2428†	2392†	2404†	2452 ⋆
549	3992	2356	2380†	2428†	2380†	2392†	2452 ⋆
548	3980	2356	2380†	2428†	2380†	2380†	2452 ⋆
547	3968	2344	2368†	2416†	2368†	2368†	2440 ⋆
546	3956	2332	2356†	2416†	2356†	2356†	2440 ⋆
545	3944	2320	2344†	2408†	2344†	2344†	2432 ⋆
544	3932	2308	2332†	2396†	2332†	2332†	2420 ⋆
543	3920	2296	2320†	2384†	2320†	2320†	2408 ⋆
542	3908	2284	2308†	2372†	2308†	2308†	2396 ⋆
541	3896	2272	2296†	2360†	2296†	2296†	2384 ⋆
540	3884	2260	2284†	2348†	2284†	2284†	2372 ⋆
539	3872	2248	2272†	2336†	2272†	2272†	2360 ⋆
538	3860	2236	2260†	2324†	2260†	2260†	2348 ⋆
537	3848	2224	2248†	2312†	2248†	2248†	2336 ⋆
536	3836	2212	2236†	2300†	2236†	2236†	2324 ⋆
535	3824	2200	2224†	2288†	2224†	2224†	2312 ⋆
534	3812	2188	2212†	2276†	2212†	2212†	2300 ⋆
533	3800	2176	2200†	2264†	2200†	2200†	2288 ⋆
532	3788	2164	2188†	2252†	2188†	2188†	2276 ⋆
531	3776	2152	2176†	2240†	2176†	2176†	2264 ⋆
530	3764	2140	2164†	2228†	2164†	2164†	2252 ⋆
529	3752	2128	2152†	2216†	2152†	2152†	2240 ⋆
528	3740	2116	2140†	2204†	2140†	2140†	2228 ⋆
527	3728	2104	2128†	2192†	2128†	2128†	2216 ⋆
526	3716	2092	2116†	2180†	2116†	2116†	2204 ⋆
525	3704	2080	2104†	2168†	2104†	2104†	2192 ⋆
524	3692	2068	2092†	2156†	2092†	2092†	2180 ⋆
523	3680	2056	2080†	2144†	2080†	2080†	2168 ⋆
522	3668	2044	2068†	2132†	2068†	2068†	2156 ⋆
521	3656	2032	2056†	2120†	2056†	2056†	2144 ⋆
520	3644	2020	2044†	2108†	2044†	2044†	2132 ⋆
519	3632	2008	2032†	2096†	2032†	2032†	2120 ⋆
518	3620	1996	2020†	2084†	2020†	2020†	2108 ⋆
517	3608	1984	2008†	2072†	2008†	2008†	2096 ⋆
516	3596	1972	1996†	2060†	1996†	1996†	2084 ⋆
515	3584	1960	1984†	2048†	1984†	1984†	2072 ⋆
514	3572	1948	1972†	2036†	1972†	1972†	2060 ⋆
513	3560	1936	1960†	2024†	1960†	1960†	2048 ⋆
512	3548	1924	1948†	2012†	1948†	1948†	2036 ⋆
511	3536	1912	1936†	2000†	1936†	1936†	2024 ⋆
510	3536	1912	1936†	2000†	1936†	1936†	2024 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
509	3524	1912	1936†	2000†	1936†	1936†	2024 ⋆
508	3524	1912	1936†	2000†	1936†	1936†	2024 ⋆
507	3512	1900	1924†	1988†	1924†	1924†	2012 ⋆
506	3512	1900	1924†	1988†	1924†	1924†	2012 ⋆
505	3500	1900	1924†	1988†	1924†	1924†	2012 ⋆
504	3500	1900	1924†	1988†	1924†	1924†	2012 ⋆
503	3488	1888	1912†	1976†	1912†	1912†	2000 ⋆
502	3488	1888	1912†	1976†	1912†	1912†	2000 ⋆
501	3476	1888	1912†	1976†	1912†	1912†	2000 ⋆
500	3476	1888	1912†	1976†	1912†	1912†	2000 ⋆
499	3464	1876	1900†	1964†	1900†	1900†	1988 ⋆
498	3464	1876	1900†	1964†	1900†	1900†	1988 ⋆
497	3452	1876	1900†	1964†	1900†	1900†	1988 ⋆
496	3440	1876	1900†	1952†	1900†	1900†	1976 ⋆
495	3428	1864	1888†	1940†	1888†	1888†	1964 ⋆
494	3428	1864	1888†	1940†	1888†	1888†	1964 ⋆
493	3416	1864	1888†	1940†	1888†	1888†	1964 ⋆
492	3416	1864	1888†	1940†	1888†	1888†	1964 ⋆
491	3404	1852	1876†	1928†	1876†	1876†	1952 ⋆
490	3404	1852	1876†	1928†	1876†	1876†	1952 ⋆
489	3392	1852	1876†	1928†	1876†	1876†	1952 ⋆
488	3392	1852	1876†	1928†	1876†	1876†	1952 ⋆
487	3380	1840	1864†	1916†	1864†	1864†	1940 ⋆
486	3380	1840	1864†	1916†	1864†	1864†	1940 ⋆
485	3368	1840	1864†	1916†	1864†	1864†	1940 ⋆
484	3368	1840	1864†	1916†	1864†	1864†	1940 ⋆
483	3356	1828	1852†	1904†	1852†	1852†	1928 ⋆
482	3344	1828	1852†	1904†	1852†	1852†	1928 ⋆
481	3332	1816	1840†	1904†	1840†	1840†	1928 ⋆
480	3320	1804	1828†	1892†	1828†	1828†	1916 ⋆
479	3308	1792	1816†	1880†	1816†	1816†	1904 ⋆
478	3308	1792	1816†	1880†	1816†	1816†	1904 ⋆
477	3296	1792	1816†	1880†	1816†	1816†	1904 ⋆
476	3296	1792	1816†	1880†	1816†	1816†	1904 ⋆
475	3284	1780	1804†	1868†	1804†	1804†	1892 ⋆
474	3284	1780	1804†	1868†	1804†	1804†	1892 ⋆
473	3272	1780	1804†	1868†	1804†	1804†	1892 ⋆
472	3272	1780	1804†	1868†	1804†	1804†	1892 ⋆
471	3260	1768	1792†	1856†	1792†	1792†	1880 ⋆
470	3260	1768	1792†	1856†	1792†	1792†	1880 ⋆
469	3248	1768	1792†	1856†	1792†	1792†	1880 ⋆
468	3248	1768	1792†	1856†	1792†	1792†	1880 ⋆
467	3236	1756	1780†	1844†	1780†	1780†	1868 ⋆
466	3236	1756	1780†	1844†	1780†	1780†	1868 ⋆
465	3224	1756	1780†	1844†	1780†	1780†	1868 ⋆
464	3212	1756	1780†	1832†	1780†	1780†	1856 ⋆
463	3200	1744	1768†	1820†	1768†	1768†	1844 ⋆
462	3200	1744	1768†	1820†	1768†	1768†	1844 ⋆
461	3188	1744	1768†	1820†	1768†	1768†	1844 ⋆
460	3188	1744	1768†	1820†	1768†	1768†	1844 ⋆
459	3176	1732	1756†	1808†	1756†	1756†	1832 ⋆

continued

$m = 12$							
ν	11	10					
$S^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
458	3176	1732	1756†	1808†	1756†	1756†	1832 ⋆
457	3164	1732	1756†	1808†	1756†	1756†	1832 ⋆
456	3164	1732	1756†	1808†	1756†	1756†	1832 ⋆
455	3152	1720	1744†	1796†	1744†	1744†	1820 ⋆
454	3146	1720	1738†	1796†	1738†	1738†	1814 ⋆
453	3134	1708	1726†	1784†	1726†	1726†	1802 ⋆
452	3122	1708	1714†	1784†	1714†	1714†	1790 ⋆
451	3110	1696	1702†	1772†	1702†	1702†	1778 ⋆
450	3098	1684	1690†	1760†	1690†	1690†	1766 ⋆
449	3086	1672	1678†	1748†	1678†	1678†	1754 ⋆
448	3074	1660	1666†	1736†	1666†	1666†	1742 ⋆
447	3062	1648	1654†	1724†	1654†	1654†	1730 ⋆
446	3062	1648	1654†	1724†	1654†	1654†	1730 ⋆
445	3050	1648	1654†	1724†	1654†	1654†	1730 ⋆
444	3050	1648	1654†	1724†	1654†	1654†	1730 ⋆
443	3038	1636	1642†	1712†	1642†	1642†	1718 ⋆
442	3038	1636	1642†	1712†	1642†	1642†	1718 ⋆
441	3026	1636	1642†	1712†	1642†	1642†	1718 ⋆
440	3026	1636	1642†	1712†	1642†	1642†	1718 ⋆
439	3014	1624	1630†	1700†	1630†	1630†	1706 ⋆
438	3014	1624	1630†	1700†	1630†	1630†	1706 ⋆
437	3002	1624	1630†	1700†	1630†	1630†	1706 ⋆
436	3002	1624	1630†	1700†	1630†	1630†	1706 ⋆
435	2990	1612	1618†	1688†	1618†	1618†	1694 ⋆
434	2990	1612	1618†	1688†	1618†	1618†	1694 ⋆
433	2978	1612	1618†	1688†	1618†	1618†	1694 ⋆
432	2966	1612	1618†	1676†	1618†	1618†	1682 ⋆
431	2954	1600	1606†	1664†	1606†	1606†	1670 ⋆
430	2954	1600	1606†	1664†	1606†	1606†	1670 ⋆
429	2942	1600	1606†	1664†	1606†	1606†	1670 ⋆
428	2942	1600	1606†	1664†	1606†	1606†	1670 ⋆
427	2930	1588	1594†	1652†	1594†	1594†	1658 ⋆
426	2930	1588	1594†	1652†	1594†	1594†	1658 ⋆
425	2918	1588	1594†	1652†	1594†	1594†	1658 ⋆
424	2918	1588	1594†	1652†	1594†	1594†	1658 ⋆
423	2906	1576	1582†	1640†	1582†	1582†	1646 ⋆
422	2906	1576	1582†	1640†	1582†	1582†	1646 ⋆
421	2894	1576	1582†	1640†	1582†	1582†	1646 ⋆
420	2894	1576	1582†	1640†	1582†	1582†	1646 ⋆
419	2882	1564	1570†	1628†	1570†	1570†	1634 ⋆
418	2870	1564	1570†	1628†	1570†	1570†	1634 ⋆
417	2858	1552	1558†	1628†	1558†	1558†	1634 ⋆
416	2846	1540	1546†	1616†	1546†	1546†	1622 ⋆
415	2834	1528	1534†	1604†	1534†	1534†	1610 ⋆
414	2834	1528	1534†	1604†	1534†	1534†	1610 ⋆
413	2822	1528	1534†	1604†	1534†	1534†	1610 ⋆
412	2822	1528	1534†	1604†	1534†	1534†	1610 ⋆
411	2810	1516	1522†	1592†	1522†	1522†	1598 ⋆
410	2810	1516	1522†	1592†	1522†	1522†	1598 ⋆
409	2798	1516	1522†	1592†	1522†	1522†	1598 ⋆
408	2798	1516	1522†	1592†	1522†	1522†	1598 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
407	2786	1504	1510†	1580†	1510†	1510†	1586 ⋆
406	2786	1504	1510†	1580†	1510†	1510†	1586 ⋆
405	2774	1504	1510†	1580†	1510†	1510†	1586 ⋆
404	2774	1504	1510†	1580†	1510†	1510†	1586 ⋆
403	2762	1492	1498†	1568†	1498†	1498†	1574 ⋆
402	2762	1492	1498†	1568†	1498†	1498†	1574 ⋆
401	2750	1492	1498†	1568†	1498†	1498†	1574 ⋆
400	2738	1492	1498†	1556†	1498†	1498†	1562 ⋆
399	2726	1480	1486†	1544†	1486†	1486†	1550 ⋆
398	2726	1480	1486†	1544†	1486†	1486†	1550 ⋆
397	2714	1480	1486†	1544†	1486†	1486†	1550 ⋆
396	2714	1480	1486†	1544†	1486†	1486†	1550 ⋆
395	2702	1468	1474†	1532†	1474†	1474†	1538 ⋆
394	2690	1468	1474†	1532†	1474†	1474†	1538 ⋆
393	2678	1456	1474†	1520†	1474†	1474†	1538 ⋆
392	2666	1456	1474†	1520†	1474†	1474†	1538 ⋆
391	2654	1444	1462†	1508†	1462†	1462†	1526 ⋆
390	2642	1444	1462†	1508†	1462†	1462†	1526 ⋆
389	2630	1432	1456†	1496†	1456†	1456†	1520 ⋆
388	2618	1420	1444†	1484†	1444†	1444†	1508 ⋆
387	2606	1408	1432†	1472†	1432†	1432†	1496 ⋆
386	2594	1396	1420†	1460†	1420†	1420†	1484 ⋆
385	2582	1384	1408†	1448†	1408†	1408†	1472 ⋆
384	2570	1372	1396†	1436†	1396†	1396†	1460 ⋆
383	2558	1360	1384†	1424†	1384†	1384†	1448 ⋆
382	2558	1360	1384†	1424†	1384†	1384†	1448 ⋆
381	2546	1360	1384†	1424†	1384†	1384†	1448 ⋆
380	2546	1360	1384†	1424†	1384†	1384†	1448 ⋆
379	2534	1348	1372†	1412†	1372†	1372†	1436 ⋆
378	2534	1348	1372†	1412†	1372†	1372†	1436 ⋆
377	2522	1348	1372†	1412†	1372†	1372†	1436 ⋆
376	2522	1348	1372†	1412†	1372†	1372†	1436 ⋆
375	2510	1336	1360†	1400†	1360†	1360†	1424 ⋆
374	2510	1336	1360†	1400†	1360†	1360†	1424 ⋆
373	2498	1336	1360†	1400†	1360†	1360†	1424 ⋆
372	2498	1336	1360†	1400†	1360†	1360†	1424 ⋆
371	2486	1324	1348†	1388†	1348†	1348†	1412 ⋆
370	2486	1324	1348†	1388†	1348†	1348†	1412 ⋆
369	2474	1324	1348†	1388†	1348†	1348†	1412 ⋆
368	2462	1324	1348†	1376†	1348†	1348†	1400 ⋆
367	2450	1312	1336†	1364†	1336†	1336†	1388 ⋆
366	2450	1312	1336†	1364†	1336†	1336†	1388 ⋆
365	2438	1312	1336†	1364†	1336†	1336†	1388 ⋆
364	2438	1312	1336†	1364†	1336†	1336†	1388 ⋆
363	2426	1300	1324†	1352†	1324†	1324†	1376 ⋆
362	2426	1300	1324†	1352†	1324†	1324†	1376 ⋆
361	2414	1300	1324†	1352†	1324†	1324†	1376 ⋆
360	2414	1300	1324†	1352†	1324†	1324†	1376 ⋆
359	2402	1288	1312†	1340†	1312†	1312†	1364 ⋆
358	2402	1288	1312†	1340†	1312†	1312†	1364 ⋆
357	2390	1288	1312†	1340†	1312†	1312†	1364 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
356	2390	1288	1312†	1340†	1312†	1312†	1364 ⋆
355	2378	1276	1300†	1328†	1300†	1300†	1352 ⋆
354	2378	1276	1300†	1328†	1300†	1300†	1352 ⋆
353	2366	1264	1288†	1328†	1288†	1288†	1352 ⋆
352	2354	1252	1276†	1316†	1276†	1276†	1340 ⋆
351	2342	1240	1264†	1304†	1264†	1264†	1328 ⋆
350	2342	1240	1264†	1304†	1264†	1264†	1328 ⋆
349	2330	1240	1264†	1304†	1264†	1264†	1328 ⋆
348	2330	1240	1264†	1304†	1264†	1264†	1328 ⋆
347	2318	1228	1252†	1292†	1252†	1252†	1316 ⋆
346	2318	1228	1252†	1292†	1252†	1252†	1316 ⋆
345	2306	1228	1252†	1292†	1252†	1252†	1316 ⋆
344	2306	1228	1252†	1292†	1252†	1252†	1316 ⋆
343	2294	1216	1240†	1280†	1240†	1240†	1304 ⋆
342	2294	1216	1240†	1280†	1240†	1240†	1304 ⋆
341	2282	1216	1240†	1280†	1240†	1240†	1304 ⋆
340	2282	1216	1240†	1280†	1240†	1240†	1304 ⋆
339	2270	1204	1228†	1268†	1228†	1228†	1292 ⋆
338	2270	1204	1228†	1268†	1228†	1228†	1292 ⋆
337	2258	1204	1228†	1268†	1228†	1228†	1292 ⋆
336	2246	1204	1228†	1256†	1228†	1228†	1280 ⋆
335	2234	1192	1216†	1244†	1216†	1216†	1268 ⋆
334	2234	1192	1216†	1244†	1216†	1216†	1268 ⋆
333	2222	1192	1216†	1244†	1216†	1216†	1268 ⋆
332	2222	1192	1216†	1244†	1216†	1216†	1268 ⋆
331	2210	1180	1204†	1232†	1204†	1204†	1256 ⋆
330	2210	1180	1204†	1232†	1204†	1204†	1256 ⋆
329	2198	1180	1204†	1232†	1204†	1204†	1256 ⋆
328	2198	1180	1204†	1232†	1204†	1204†	1256 ⋆
327	2186	1168	1192†	1220†	1192†	1192†	1244 ⋆
326	2186	1168	1192†	1220†	1192†	1192†	1244 ⋆
325	2174	1168	1192†	1220†	1192†	1192†	1244 ⋆
324	2168	1168	1186†	1220†	1186†	1186†	1238 ⋆
323	2156	1156	1174†	1208†	1174†	1174†	1226 ⋆
322	2144	1156	1162†	1208†	1162†	1162†	1214 ⋆
321	2132	1144	1150†	1196†	1150†	1150†	1202 ⋆
320	2120	1132	1138†	1184†	1138†	1138†	1190 ⋆
319	2108	1120	1126†	1172†	1126†	1126†	1178 ⋆
318	2108	1120	1126†	1172†	1126†	1126†	1178 ⋆
317	2096	1120	1126†	1172†	1126†	1126†	1178 ⋆
316	2096	1120	1126†	1172†	1126†	1126†	1178 ⋆
315	2084	1108	1114†	1160†	1114†	1114†	1166 ⋆
314	2084	1108	1114†	1160†	1114†	1114†	1166 ⋆
313	2072	1108	1114†	1160†	1114†	1114†	1166 ⋆
312	2072	1108	1114†	1160†	1114†	1114†	1166 ⋆
311	2060	1096	1102†	1148†	1102†	1102†	1154 ⋆
310	2060	1096	1102†	1148†	1102†	1102†	1154 ⋆
309	2048	1096	1102†	1148†	1102†	1102†	1154 ⋆
308	2048	1096	1102†	1148†	1102†	1102†	1154 ⋆
307	2036	1084	1090†	1136†	1090†	1090†	1142 ⋆
306	2036	1084	1090†	1136†	1090†	1090†	1142 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
305	2024	1084	1090†	1136†	1090†	1090†	1142 ⋆
304	2012	1084	1090†	1124†	1090†	1090†	1130 ⋆
303	2000	1072	1078†	1112†	1078†	1078†	1118 ⋆
302	2000	1072	1078†	1112†	1078†	1078†	1118 ⋆
301	1988	1072	1078†	1112†	1078†	1078†	1118 ⋆
300	1988	1072	1078†	1112†	1078†	1078†	1118 ⋆
299	1976	1060	1066†	1100†	1066†	1066†	1106 ⋆
298	1976	1060	1066†	1100†	1066†	1066†	1106 ⋆
297	1964	1060	1066†	1100†	1066†	1066†	1106 ⋆
296	1964	1060	1066†	1100†	1066†	1066†	1106 ⋆
295	1952	1048	1054†	1088†	1054†	1054†	1094 ⋆
294	1952	1048	1054†	1088†	1054†	1054†	1094 ⋆
293	1940	1048	1054†	1088†	1054†	1054†	1094 ⋆
292	1940	1048	1054†	1088†	1054†	1054†	1094 ⋆
291	1928	1036	1042†	1076†	1042†	1042†	1082 ⋆
290	1928	1036	1042†	1076†	1042†	1042†	1082 ⋆
289	1916	1024	1030†	1076†	1030†	1030†	1082 ⋆
288	1904	1012	1018†	1064†	1018†	1018†	1070 ⋆
287	1892	1000	1006†	1052†	1006†	1006†	1058 ⋆
286	1892	1000	1006†	1052†	1006†	1006†	1058 ⋆
285	1880	1000	1006†	1052†	1006†	1006†	1058 ⋆
284	1880	1000	1006†	1052†	1006†	1006†	1058 ⋆
283	1868	988	994†	1040†	994†	994†	1046 ⋆
282	1868	988	994†	1040†	994†	994†	1046 ⋆
281	1856	988	994†	1040†	994†	994†	1046 ⋆
280	1856	988	994†	1040†	994†	994†	1046 ⋆
279	1844	976	982†	1028†	982†	982†	1034 ⋆
278	1844	976	982†	1028†	982†	982†	1034 ⋆
277	1832	976	982†	1028†	982†	982†	1034 ⋆
276	1832	976	982†	1028†	982†	982†	1034 ⋆
275	1820	964	970†	1016†	970†	970†	1022 ⋆
274	1820	964	970†	1016†	970†	970†	1022 ⋆
273	1808	964	970†	1016†	970†	970†	1022 ⋆
272	1800	960	966†	1008†	966†	966†	1014 ⋆
271	1788	948	954†	996†	954†	954†	1002 ⋆
270	1776	948	954†	984†	954†	954†	990 ⋆
269	1764	936	942†	972†	942†	942†	978 ⋆
268	1752	936	942†	960†	942†	942†	966 ⋆
267	1740	924	930†	948†	930†	930†	954 ⋆
266	1728	924	930†	936†	930†	930†	942 ⋆
265	1716	912	918†	924†	918†	918†	930 ⋆
264	1704	912	918⋆	912	918⋆	918⋆	918 ⋆
263	1692	900	906⋆	900	906⋆	906⋆	906 ⋆
262	1680	888	894⋆	888	894⋆	894⋆	894 ⋆
261	1668	876	882⋆	876	882⋆	882⋆	882 ⋆
260	1656	864	870⋆	864	870⋆	870⋆	870 ⋆
259	1644	852	858⋆	852	858⋆	858⋆	858 ⋆
258	1632	840	846⋆	840	846⋆	846⋆	846 ⋆
257	1620	828	834⋆	828	834⋆	834⋆	834 ⋆
256	1608	816	822⋆	816	822⋆	822⋆	822 ⋆
255	1596	804	810⋆	804	810⋆	810⋆	810 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
254	1596	804	810⋆	804	810⋆	810⋆	810 ⋆
253	1584	804	810⋆	804	810⋆	810⋆	810 ⋆
252	1584	804	810⋆	804	810⋆	810⋆	810 ⋆
251	1572	792	798⋆	792	798⋆	798⋆	798 ⋆
250	1572	792	798⋆	792	798⋆	798⋆	798 ⋆
249	1560	792	798⋆	792	798⋆	798⋆	798 ⋆
248	1560	792	798⋆	792	798⋆	798⋆	798 ⋆
247	1548	780	786⋆	780	786⋆	786⋆	786 ⋆
246	1548	780	786⋆	780	786⋆	786⋆	786 ⋆
245	1536	780	786⋆	780	786⋆	786⋆	786 ⋆
244	1536	780	786⋆	780	786⋆	786⋆	786 ⋆
243	1524	768	774⋆	768	774⋆	774⋆	774 ⋆
242	1524	768	774⋆	768	774⋆	774⋆	774 ⋆
241	1512	768	774⋆	768	774⋆	774⋆	774 ⋆
240	1512	768	774⋆	768	774⋆	774⋆	774 ⋆
239	1500	756	762⋆	756	762⋆	762⋆	762 ⋆
238	1500	756	762⋆	756	762⋆	762⋆	762 ⋆
237	1488	756	762⋆	756	762⋆	762⋆	762 ⋆
236	1488	756	762⋆	756	762⋆	762⋆	762 ⋆
235	1476	744	750⋆	744	750⋆	750⋆	750 ⋆
234	1476	744	750⋆	744	750⋆	750⋆	750 ⋆
233	1464	744	750⋆	744	750⋆	750⋆	750 ⋆
232	1464	744	750⋆	744	750⋆	750⋆	750 ⋆
231	1452	732	738⋆	732	738⋆	738⋆	738 ⋆
230	1452	732	738⋆	732	738⋆	738⋆	738 ⋆
229	1440	732	738⋆	732	738⋆	738⋆	738 ⋆
228	1440	732	738⋆	732	738⋆	738⋆	738 ⋆
227	1428	720	726⋆	720	726⋆	726⋆	726 ⋆
226	1428	720	726⋆	720	726⋆	726⋆	726 ⋆
225	1416	720	726⋆	720	726⋆	726⋆	726 ⋆
224	1404	720	726⋆	720	726⋆	726⋆	726 ⋆
223	1392	708	714⋆	708	714⋆	714⋆	714 ⋆
222	1392	708	714⋆	708	714⋆	714⋆	714 ⋆
221	1380	708	714⋆	708	714⋆	714⋆	714 ⋆
220	1380	708	714⋆	708	714⋆	714⋆	714 ⋆
219	1368	696	702⋆	696	702⋆	702⋆	702 ⋆
218	1368	696	702⋆	696	702⋆	702⋆	702 ⋆
217	1356	696	702⋆	696	702⋆	702⋆	702 ⋆
216	1356	696	702⋆	696	702⋆	702⋆	702 ⋆
215	1344	684	690⋆	684	690⋆	690⋆	690 ⋆
214	1344	684	690⋆	684	690⋆	690⋆	690 ⋆
213	1332	684	690⋆	684	690⋆	690⋆	690 ⋆
212	1332	684	690⋆	684	690⋆	690⋆	690 ⋆
211	1320	672	678⋆	672	678⋆	678⋆	678 ⋆
210	1320	672	678⋆	672	678⋆	678⋆	678 ⋆
209	1308	672	678⋆	672	678⋆	678⋆	678 ⋆
208	1308	672	678⋆	672	678⋆	678⋆	678 ⋆
207	1296	660	666⋆	660	666⋆	666⋆	666 ⋆
206	1296	660	666⋆	660	666⋆	666⋆	666 ⋆
205	1284	660	666⋆	660	666⋆	666⋆	666 ⋆
204	1284	660	666⋆	660	666⋆	666⋆	666 ⋆

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
203	1272	648	654⋆	648	654⋆	654⋆	654 ⋆
202	1272	648	654⋆	648	654⋆	654⋆	654 ⋆
201	1260	648	654⋆	648	654⋆	654⋆	654 ⋆
200	1260	648	654⋆	648	654⋆	654⋆	654 ⋆
199	1248	636	642⋆	636	642⋆	642⋆	642 ⋆
198	1248	636	642⋆	636	642⋆	642⋆	642 ⋆
197	1236	636	642⋆	636	642⋆	642⋆	642 ⋆
196	1236	636	642⋆	636	642⋆	642⋆	642 ⋆
195	1224	624	630⋆	624	630⋆	630⋆	630 ⋆
194	1218	624	624	624	624	624	624
193	1206	612	612	612	612	612	612
192	1194	600	600	600	600	600	600
191	1182	588	588	588	588	588	588
190	1182	588	588	588	588	588	588
189	1170	588	588	588	588	588	588
188	1170	588	588	588	588	588	588
187	1158	576	576	576	576	576	576
186	1158	576	576	576	576	576	576
185	1146	576	576	576	576	576	576
184	1146	576	576	576	576	576	576
183	1134	564	564	564	564	564	564
182	1134	564	564	564	564	564	564
181	1122	564	564	564	564	564	564
180	1122	564	564	564	564	564	564
179	1110	552	552	552	552	552	552
178	1110	552	552	552	552	552	552
177	1098	552	552	552	552	552	552
176	1098	552	552	552	552	552	552
175	1086	540	540	540	540	540	540
174	1086	540	540	540	540	540	540
173	1074	540	540	540	540	540	540
172	1074	540	540	540	540	540	540
171	1062	528	528	528	528	528	528
170	1062	528	528	528	528	528	528
169	1050	528	528	528	528	528	528
168	1050	528	528	528	528	528	528
167	1038	516	516	516	516	516	516
166	1038	516	516	516	516	516	516
165	1026	516	516	516	516	516	516
164	1026	516	516	516	516	516	516
163	1014	504	504	504	504	504	504
162	1014	504	504	504	504	504	504
161	1002	504	504	504	504	504	504
160	990	504	504	504	504	504	504
159	978	492	492	492	492	492	492
158	978	492	492	492	492	492	492
157	966	492	492	492	492	492	492
156	966	492	492	492	492	492	492
155	954	480	480	480	480	480	480
154	954	480	480	480	480	480	480
153	942	480	480	480	480	480	480

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
152	942	480	480	480	480	480	480
151	930	468	468	468	468	468	468
150	930	468	468	468	468	468	468
149	918	468	468	468	468	468	468
148	918	468	468	468	468	468	468
147	906	456	456	456	456	456	456
146	906	456	456	456	456	456	456
145	894	456	456	456	456	456	456
144	894	456	456	456	456	456	456
143	882	444	444	444	444	444	444
142	882	444	444	444	444	444	444
141	870	444	444	444	444	444	444
140	870	444	444	444	444	444	444
139	858	432	432	432	432	432	432
138	858	432	432	432	432	432	432
137	846	432	432	432	432	432	432
136	846	432	432	432	432	432	432
135	834	420	420	420	420	420	420
134	834	420	420	420	420	420	420
133	822	420	420	420	420	420	420
132	822	420	420	420	420	420	420
131	810	408	408	408	408	408	408
130	798	408	408	408	408	408	408
129	786	396	402⋆	396	402⋆	402⋆	402 ⋆
128	774	384	390⋆	384	390⋆	390⋆	390 ⋆
127	762	372	378⋆	372	378⋆	378⋆	378 ⋆
126	762	372	378⋆	372	378⋆	378⋆	378 ⋆
125	750	372	378⋆	372	378⋆	378⋆	378 ⋆
124	750	372	378⋆	372	378⋆	378⋆	378 ⋆
123	738	360	366⋆	360	366⋆	366⋆	366 ⋆
122	738	360	366⋆	360	366⋆	366⋆	366 ⋆
121	726	360	366⋆	360	366⋆	366⋆	366 ⋆
120	726	360	366⋆	360	366⋆	366⋆	366 ⋆
119	714	348	354⋆	348	354⋆	354⋆	354 ⋆
118	714	348	354⋆	348	354⋆	354⋆	354 ⋆
117	702	348	354⋆	348	354⋆	354⋆	354 ⋆
116	702	348	354⋆	348	354⋆	354⋆	354 ⋆
115	690	336	342⋆	336	342⋆	342⋆	342 ⋆
114	690	336	342⋆	336	342⋆	342⋆	342 ⋆
113	678	336	342⋆	336	342⋆	342⋆	342 ⋆
112	678	336	342⋆	336	342⋆	342⋆	342 ⋆
111	666	324	330⋆	324	330⋆	330⋆	330 ⋆
110	666	324	330⋆	324	330⋆	330⋆	330 ⋆
109	654	324	330⋆	324	330⋆	330⋆	330 ⋆
108	654	324	330⋆	324	330⋆	330⋆	330 ⋆
107	642	312	318⋆	312	318⋆	318⋆	318 ⋆
106	642	312	318⋆	312	318⋆	318⋆	318 ⋆
105	630	312	318⋆	312	318⋆	318⋆	318 ⋆
104	630	312	318⋆	312	318⋆	318⋆	318 ⋆
103	618	300	306⋆	300	306⋆	306⋆	306 ⋆
102	618	300	306⋆	300	306⋆	306⋆	306 ⋆

continued

$m=12$							
ν	11	10					
$\mathcal{S}^\perp$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
101	606	300	306⋆	300	306⋆	306⋆	306 ⋆
100	606	300	306⋆	300	306⋆	306⋆	306 ⋆
99	594	288	294⋆	288	294⋆	294⋆	294 ⋆
98	594	288	294⋆	288	294⋆	294⋆	294 ⋆
97	582	288	294⋆	288	294⋆	294⋆	294 ⋆
96	582	288	294⋆	288	294⋆	294⋆	294 ⋆
95	570	276	282⋆	276	282⋆	282⋆	282 ⋆
94	570	276	282⋆	276	282⋆	282⋆	282 ⋆
93	558	276	282⋆	276	282⋆	282⋆	282 ⋆
92	558	276	282⋆	276	282⋆	282⋆	282 ⋆
91	546	264	270⋆	264	270⋆	270⋆	270 ⋆
90	546	264	270⋆	264	270⋆	270⋆	270 ⋆
89	534	264	270⋆	264	270⋆	270⋆	270 ⋆
88	534	264	270⋆	264	270⋆	270⋆	270 ⋆
87	522	252	258⋆	252	258⋆	258⋆	258 ⋆
86	522	252	258⋆	252	258⋆	258⋆	258 ⋆
85	510	252	258⋆	252	258⋆	258⋆	258 ⋆
84	510	252	258⋆	252	258⋆	258⋆	258 ⋆
83	498	240	246⋆	240	246⋆	246⋆	246 ⋆
82	498	240	246⋆	240	246⋆	246⋆	246 ⋆
81	486	240	246⋆	240	246⋆	246⋆	246 ⋆
80	486	240	246⋆	240	246⋆	246⋆	246 ⋆
79	474	228	234⋆	228	234⋆	234⋆	234 ⋆
78	474	228	234⋆	228	234⋆	234⋆	234 ⋆
77	462	228	234⋆	228	234⋆	234⋆	234 ⋆
76	462	228	234⋆	228	234⋆	234⋆	234 ⋆
75	450	216	222⋆	216	222⋆	222⋆	222 ⋆
74	450	216	222⋆	216	222⋆	222⋆	222 ⋆
73	438	216	222⋆	216	222⋆	222⋆	222 ⋆
72	438	216	222⋆	216	222⋆	222⋆	222 ⋆
71	426	204	210⋆	204	210⋆	210⋆	210 ⋆
70	426	204	210⋆	204	210⋆	210⋆	210 ⋆
69	414	204	210⋆	204	210⋆	210⋆	210 ⋆
68	414	204	210⋆	204	210⋆	210⋆	210 ⋆
67	402	192	198⋆	192	198⋆	198⋆	198 ⋆
66	402	192	198⋆	192	198⋆	198⋆	198 ⋆
65	390	192	198⋆	192	198⋆	198⋆	198 ⋆
64	384	192	192	192	192	192	192
63	372	180	180	180	180	180	180
62	372	180	180	180	180	180	180
61	360	180	180	180	180	180	180
60	360	180	180	180	180	180	180
59	348	168	168	168	168	168	168
58	348	168	168	168	168	168	168
57	336	168	168	168	168	168	168
56	336	168	168	168	168	168	168
55	324	156	156	156	156	156	156
54	324	156	156	156	156	156	156
53	312	156	156	156	156	156	156
52	312	156	156	156	156	156	156
51	300	144	144	144	144	144	144

continued

$m = 12$							
ν	11	10					
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$	$\mathbb{G}_0$	$\mathbb{G}_{30}$	$\mathbb{G}_{54}$	$\mathbb{G}_{61}$	$\mathbb{G}_{62}$	$\mathbb{G}_{63}$
k_0	K	K	K	K	K	K	K
50	300	144	144	144	144	144	144
49	288	144	144	144	144	144	144
48	288	144	144	144	144	144	144
47	276	132	132	132	132	132	132
46	276	132	132	132	132	132	132
45	264	132	132	132	132	132	132
44	264	132	132	132	132	132	132
43	252	120	120	120	120	120	120
42	252	120	120	120	120	120	120
41	240	120	120	120	120	120	120
40	240	120	120	120	120	120	120
39	228	108	108	108	108	108	108
38	228	108	108	108	108	108	108
37	216	108	108	108	108	108	108
36	216	108	108	108	108	108	108
35	204	96	96	96	96	96	96
34	204	96	96	96	96	96	96
33	192	96	96	96	96	96	96
32	192	96	96	96	96	96	96
31	180	84	84	84	84	84	84
30	180	84	84	84	84	84	84
29	168	84	84	84	84	84	84
28	168	84	84	84	84	84	84
27	156	72	72	72	72	72	72
26	156	72	72	72	72	72	72
25	144	72	72	72	72	72	72
24	144	72	72	72	72	72	72
23	132	60	60	60	60	60	60
22	132	60	60	60	60	60	60
21	120	60	60	60	60	60	60
20	120	60	60	60	60	60	60
19	108	48	48	48	48	48	48
18	108	48	48	48	48	48	48
17	96	48	48	48	48	48	48
16	96	48	48	48	48	48	48
15	84	36	36	36	36	36	36
14	84	36	36	36	36	36	36
13	72	36	36	36	36	36	36
12	72	36	36	36	36	36	36
11	60	24	24	24	24	24	24
10	60	24	24	24	24	24	24
9	48	24	24	24	24	24	24
8	48	24	24	24	24	24	24
7	36	12	12	12	12	12	12
6	36	12	12	12	12	12	12
5	24	12	12	12	12	12	12
4	24	12	12	12	12	12	12
3	12	0	0	0	0	0	0
2	12	0	0	0	0	0	0
1	0	0	0	0	0	0	0

Appendix D Dimension of SSRS Codes (2)

This appendix consists of tables of the best binary dimensions $K(\mathbb{C}(J), \mathcal{S})$ of SSRS codes. Given the dimension of the primal RS code k_0, the maximum possible dimension of SSRS codes with respect to every distinct exceptional subspace, is investigated by changing leading integer J_S for J. Notations used in these tables are briefly explained in the following table.

m	alphabet size of primal field
n	code length ($n = 2^m - 1$)
J	consecutive integer set defining primal RS code
J_S	leading integer in set J
k_0	dimension of primal RS code $k_0 = \|J\|$
d_0	designed minimum distance of SSRS code ($d_0 = n - k_0 + 1$)
ν	alphabet size of subspace $\mathcal{S}$
μ	dimension of $\mathcal{S}^\perp$ ($\mu = m - \nu$)
K	binary dimension $K(\mathbb{C}, \mathcal{S})$ of SSRS code

I. Mark † means that there is a dimension increase as compared to the lower bound.

II. Mark $\star$ means that there is a dimension increase and this dimension is the maximum dimension among all subspaces.

III. Every column shows the maximum binary dimension $K(\mathbb{C}(J), \mathcal{S})$ and the leading integer J_S for J which achieves the dimension. Note that the maximum dimension may be achieved by other leading integer J_S.

IV. All dimensions are computed with respect to representative subspaces from every category.

V. For $m = 8, 9$ equivalent categories are classified into unknown super-categories and the corresponding dimension is computed for every super-category.

VI. Note that category $\mathbb{G}_0$ is ordinary, which gives the lower bound on the dimension.

D.1 $m = 4, n = 15$

$m = 4$								
ν	3		2				1	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S
14	42	1	28	1	28	1	14	1
13	38	1	24	1	24	1	11	0
12	34	1	20	1	20	1	10	1
11	30	1	18	0	18	0	7	0
10	26	1	16	1	16	0	6	1
9	23	11	12	1	14$\star$	1	5	0
8	19	11	8	1	10$\star$	1	4	1
7	17	0	6	0	8$\star$	0	2	4
6	14	1	6	0	8$\star$	0	2	5
5	11	0	6	0	6	0	1	0
4	8	1	4	1	4	1	1	0
3	7	0	2	0	2	0	1	0
2	4	1	2	0	2	0	1	0
1	3	0	2	0	2	0	1	0

D.2 $m = 5, n = 31$

$m=5$								
ν	4		3		2		1	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S
30	120	1	90	1	60	1	30	1
29	115	1	85	1	55	1	26	0
28	110	1	80	1	50	1	25	1
27	105	1	75	1	47	0	21	0
26	100	1	70	1	45	1	20	1
25	95	1	65	1	40	1	16	0
24	90	1	60	1	35	1	15	1
23	85	1	58	0	32	0	11	0
22	80	1	55	1	30	1	11	0
21	75	1	50	1	27	0	11	0
20	70	1	45	1	25	1	10	1
19	65	1	40	1	22	0	6	0
18	60	1	35	1	20	1	6	0
17	55	1	33	23	15	1	6	0
16	50	1	28	23	10	1	5	1
15	49	0	23	0	10	8	1	0
14	45	1	23	0	10	9	1	0
13	40	1	23	0	7	0	1	0
12	35	1	20	1	7	0	1	0
11	34	0	18	0	7	0	1	0
10	30	1	15	1	7	0	1	0
9	25	1	13	0	7	0	1	0
8	20	1	10	1	5	1	1	0
7	19	0	8	0	2	0	1	0
6	15	1	8	0	2	0	1	0
5	14	0	8	0	2	0	1	0
4	10	1	5	1	2	0	1	0
3	9	0	3	0	2	0	1	0
2	5	1	3	0	2	0	1	0
1	4	0	3	0	2	0	1	0

D.3 $m=6, n=63$

$m = 6$

ν	5		4						3								2						1	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_3$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_5$		$\mathbb{G}_6$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_3$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
62	310	1	248	1	248	1	248	1	186	1	186	1	186	1	186	1	124	1	124	1	124	1	62	1
61	304	1	242	1	242	1	242	1	180	1	180	1	180	1	180	1	118	1	118	1	118	1	57	0
60	298	1	236	1	236	1	236	1	174	1	174	1	174	1	174	1	112	1	112	1	112	1	56	1
59	292	1	230	1	230	1	230	1	168	1	168	1	168	1	168	1	108	0	108	0	108	0	51	0
58	286	1	224	1	224	1	224	1	162	1	162	1	162	1	162	1	106	1	106	1	106	1	50	1
57	280	1	218	1	218	1	218	1	156	1	156	1	156	1	156	1	100	1	100	1	100	1	45	0
56	274	1	212	1	212	1	212	1	150	1	150	1	150	1	150	1	94	1	94	1	94	1	44	1
55	268	1	206	1	206	1	206	1	147	0	147	0	147	0	147	0	90	0	90	0	90	0	39	0
54	262	1	200	1	200	1	200	1	144	1	144	1	144	1	144	0	88	1	88	1	88	1	38	1
53	256	1	194	1	195⋆	19	194	1	138	1	138	1	138	1	141⋆	1	82	1	85⋆	1	82	1	36	0
52	250	1	188	1	189⋆	19	188	1	132	1	132	1	132	1	135⋆	1	76	1	79⋆	1	76	1	35	1
51	244	1	182	1	183⋆	19	182	1	126	1	126	1	126	1	129⋆	1	72	0	75⋆	0	72	0	30	0
50	238	1	176	1	177⋆	19	176	1	120	1	120	1	120	1	123⋆	1	70	1	73⋆	1	70	1	29	1
49	232	1	170	1	171⋆	19	170	1	114	1	114	1	114	1	117⋆	1	64	1	67⋆	1	64	1	24	0
48	226	1	164	1	165⋆	19	164	1	108	1	108	1	108	1	111⋆	1	58	1	61⋆	1	58	1	23	1
47	220	1	162	0	162	0	162	0	105	0	105	0	105	0	108⋆	0	54	0	58⋆	8	54	0	20	8
46	214	1	158	1	158	1	158	1	102	1	102	1	102	1	108⋆	0	54	0	58⋆	9	54	0	20	9
45	208	1	152	1	153⋆	0	152	1	96	0	96	0	96	0	105⋆	0	54	0	55⋆	1	54	0	18	0
44	202	1	146	1	149⋆	1	146	1	93	1	93	1	93	1	102⋆	1	52	1	52	1	54⋆	0	18	0
43	196	1	140	1	143†	1	144⋆	0	90	0	90	0	90	0	96⋆	1	48	0	48	0	54⋆	0	18	0
42	190	1	134	1	137†	1	140⋆	0	87	1	87	1	87	1	90⋆	1	46	1	46	1	52⋆	0	17	1
41	185	43	128	1	131†	1	136⋆	1	81	1	83†	1	83†	1	84⋆	1	42	1	42	1	50⋆	1	16	0
40	179	43	122	1	125†	1	130⋆	1	75	1	77†	1	77†	1	78⋆	1	36	1	36	1	44⋆	1	15	1
39	173	43	116	1	119†	1	124⋆	1	72	0	74†	0	74†	0	75⋆	0	32	0	32	0	40⋆	0	11	4
38	167	43	110	1	113†	1	118⋆	1	69	1	71†	1	71†	1	75⋆	0	32	0	32	0	40⋆	0	11	5
37	161	43	104	1	107†	1	112⋆	1	63	1	65†	1	65†	1	75⋆	0	32	0	32	0	38⋆	1	10	0
36	155	43	98	1	101†	1	106⋆	1	57	1	59†	1	59†	1	72⋆	0	30	1	30	1	32⋆	1	9	1
35	150	37	92	1	96†	37	100⋆	1	51	1	53†	1	53†	1	69⋆	1	26	0	29⋆	0	28†	0	7	0
34	144	37	86	1	90†	37	94⋆	1	45	1	47†	1	47†	1	63⋆	1	24	1	27†	1	28⋆	0	7	0
33	138	37	82	43	85†	43	88⋆	1	45	47	45	47	45	47	57⋆	1	18	1	21†	1	26⋆	1	7	0
32	132	37	76	43	80†	15	82⋆	1	39	47	39	47	39	47	51⋆	1	12	1	15†	1	20⋆	1	6	1
31	129	0	72	0	75†	0	80⋆	0	36	16	36	16	36	16	48⋆	0	10	12	14†	47	16⋆	0	3	6
30	124	1	72	0	75†	0	80⋆	0	36	17	36	17	36	17	48⋆	0	10	13	13†	13	16⋆	0	3	7
29	118	1	72	0	75†	0	76⋆	1	30	0	32†	0	32†	0	48⋆	0	8	0	12†	8	16⋆	0	3	8
28	112	1	68	1	71⋆	1	70†	1	30	0	32†	0	32†	0	48⋆	0	8	0	12†	9	16⋆	0	3	9
27	108	0	66	0	66	0	68⋆	0	30	0	32†	0	32†	0	45⋆	0	8	0	11†	0	16⋆	0	2	16

continued

$m = 6$																												
ν	5		4						3								2						1	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_3$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_5$		$\mathbb{G}_6$		$\mathbb{G}_0$		$\mathbb{G}_2$		$\mathbb{G}_3$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
26	103	1	62	1	62	1	68⋆	0	30	0	32†	0	32†	0	42⋆	1	8	0	11†	0	16⋆	0	2	17
25	98	43	56	1	56	1	64⋆	1	30	0	32†	0	32†	0	36⋆	1	8	0	11†	0	16⋆	0	2	18
24	92	43	50	1	50	1	58⋆	1	27	1	29†	1	29†	1	30⋆	1	8	0	11†	0	16⋆	0	2	19
23	90	0	48	0	48	0	56⋆	0	24	0	26†	0	26†	0	27⋆	0	8	0	11†	0	16⋆	0	2	20
22	85	1	48	0	48	0	56⋆	0	24	0	26†	0	26†	0	27⋆	0	8	0	11†	0	16⋆	0	2	21
21	80	0	46	0	46	0	52⋆	0	24	0	24	0	24	0	27⋆	0	8	0	11†	0	14⋆	0	1	0
20	75	1	42	1	42	1	48⋆	1	21	1	21	1	21	1	27⋆	0	8	0	11†	0	12⋆	1	1	0
19	69	1	40	0	40	0	42⋆	1	18	0	18	0	18	0	27⋆	0	8	0	11⋆	0	8	0	1	0
18	63	1	36	1	37⋆	0	36	1	15	0	15	0	15	0	24⋆	0	8	0	9⋆	1	8	0	1	0
17	59	55	30	1	34⋆	55	30	1	15	0	15	0	15	0	21⋆	1	8	0	8	0	8	0	1	0
16	53	55	24	1	28⋆	55	24	1	12	1	12	1	12	1	15⋆	1	6	1	6	1	6	1	1	0
15	50	0	22	0	25⋆	0	22	0	9	0	9	0	9	0	12⋆	0	2	0	3⋆	4	2	0	1	0
14	45	1	22	0	25⋆	0	22	0	9	0	9	0	9	0	12⋆	0	2	0	3⋆	5	2	0	1	0
13	44	0	22	0	25⋆	0	22	0	9	0	9	0	9	0	12⋆	0	2	0	3⋆	6	2	0	1	0
12	39	1	18	1	21⋆	1	18	1	9	0	9	0	9	0	12⋆	0	2	0	3⋆	7	2	0	1	0
11	38	0	16	0	19⋆	0	16	0	9	0	9	0	9	0	12⋆	0	2	0	3⋆	8	2	0	1	0
10	33	1	16	0	19⋆	0	16	0	9	0	9	0	9	0	12⋆	0	2	0	3⋆	9	2	0	1	0
9	29	0	16	0	16	0	16	0	9	0	9	0	9	0	9	0	2	0	2	0	2	0	1	0
8	24	1	12	1	12	1	12	1	6	1	6	1	6	1	6	1	2	0	2	0	2	0	1	0
7	23	0	10	0	10	0	10	0	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0
6	18	1	10	0	10	0	10	0	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0
5	17	0	10	0	10	0	10	0	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0
4	12	1	6	1	6	1	6	1	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0
3	11	0	4	0	4	0	4	0	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0
2	6	1	4	0	4	0	4	0	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0
1	5	0	4	0	4	0	4	0	3	0	3	0	3	0	3	0	2	0	2	0	2	0	1	0

D.4 $m = 7, n = 127$

$m = 7$																				
ν	6		5		4						3						2		1	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
126	756	1	630	1	504	1	504	1	504	1	378	1	378	1	378	1	252	1	126	1
125	749	1	623	1	497	1	497	1	497	1	371	1	371	1	371	1	245	1	120	0

continued

$m=7$																				
ν	6		5		4						3						2		1	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
124	742	1	616	1	490	1	490	1	490	1	364	1	364	1	364	1	238	1	119	1
123	735	1	609	1	483	1	483	1	483	1	357	1	357	1	357	1	233	0	113	0
122	728	1	602	1	476	1	476	1	476	1	350	1	350	1	350	1	231	1	112	1
121	721	1	595	1	469	1	469	1	469	1	343	1	343	1	343	1	224	1	106	0
120	714	1	588	1	462	1	462	1	462	1	336	1	336	1	336	1	217	1	105	1
119	707	1	581	1	455	1	455	1	455	1	332	0	332	0	332	0	212	0	99	0
118	700	1	574	1	448	1	448	1	448	1	329	1	329	1	329	1	210	1	98	1
117	693	1	567	1	441	1	441	1	441	1	322	1	322	1	322	1	203	1	92	0
116	686	1	560	1	434	1	434	1	434	1	315	1	315	1	315	1	196	1	91	1
115	679	1	553	1	427	1	427	1	427	1	308	1	308	1	308	1	191	0	85	0
114	672	1	546	1	420	1	420	1	420	1	301	1	301	1	301	1	189	1	84	1
113	665	1	539	1	413	1	413	1	413	1	294	1	294	1	294	1	182	1	78	0
112	658	1	532	1	406	1	406	1	406	1	287	1	287	1	287	1	175	1	77	1
111	651	1	525	1	403	0	403	0	403	0	283	0	283	0	283	0	170	0	71	0
110	644	1	518	1	399	1	399	1	399	1	280	1	280	1	280	1	168	1	71	0
109	637	1	511	1	392	1	392	1	392	1	273	1	273	1	273	1	163	0	71	0
108	630	1	504	1	385	1	385	1	385	1	266	1	266	1	266	1	161	1	70	1
107	623	1	497	1	378	1	378	1	378	1	259	1	259	1	259	1	156	0	64	0
106	616	1	490	1	371	1	371	1	371	1	252	1	252	1	252	1	154	1	63	1
105	609	1	483	1	364	1	364	1	364	1	245	1	245	1	245	1	147	1	57	0
104	602	1	476	1	357	1	357	1	357	1	238	1	238	1	238	1	140	1	56	1
103	595	1	469	1	350	1	350	1	350	1	234	0	234	0	234	0	135	0	50	0
102	588	1	462	1	343	1	343	1	343	1	231	1	231	1	231	1	133	1	50	0
101	581	1	455	1	336	1	336	1	336	1	224	1	227$\star$	43	224	1	126	1	50	0
100	574	1	448	1	329	1	329	1	329	1	217	1	220$\star$	43	217	1	119	1	49	1
99	567	1	441	1	322	1	322	1	322	1	210	1	213$\star$	43	210	1	114	0	43	0
98	560	1	434	1	315	1	315	1	315	1	203	1	206$\star$	43	203	1	112	1	42	1
97	553	1	427	1	308	1	308	1	308	1	196	1	199$\star$	43	196	1	105	1	36	0
96	546	1	420	1	301	1	301	1	301	1	189	1	192$\star$	43	189	1	98	1	35	1
95	539	1	418	0	298	0	298	0	298	0	185	0	185	0	185	0	98	16	29	0
94	532	1	413	1	294	1	298$\star$	0	294	1	185	0	185	0	185	0	98	17	29	0
93	525	1	406	1	287	1	294$\star$	1	287	1	185	0	185	0	185	0	93	0	29	0
92	518	1	399	1	280	1	287$\star$	1	280	1	182	1	182	1	185$\star$	0	93	0	29	0
91	511	1	392	1	277	0	284$\star$	0	277	0	178	0	178	0	185$\star$	0	93	0	29	0
90	504	1	385	1	273	1	280$\star$	1	273	1	175	1	175	1	182$\star$	1	91	1	29	0
89	497	1	378	1	266	1	273$\star$	1	266	1	168	1	171$\dagger$	0	175$\star$	1	86	0	29	0

continued

$m=7$																				
ν	6		5		4						3						2		1	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
88	490	1	371	1	259	1	266$\star$	1	259	1	161	1	168$\star$	1	168$\star$	1	84	1	29	0
87	483	1	364	1	256	0	259$\star$	1	256	0	157	0	164$\star$	0	164$\star$	0	79	0	29	0
86	476	1	357	1	252	1	252	1	252	1	154	1	161$\star$	1	161$\star$	1	79	0	29	0
85	469	1	350	1	245	1	245	1	245	1	150	0	157$\star$	0	157$\star$	0	79	0	29	0
84	462	1	343	1	238	1	238	1	238	1	147	1	154$\star$	1	154$\star$	1	77	1	28	1
83	455	1	336	1	231	1	231	1	231	1	140	1	147$\star$	1	147$\star$	1	72	0	22	0
82	448	1	329	1	224	1	224	1	224	1	133	1	140$\star$	1	140$\star$	1	70	1	22	0
81	441	1	322	1	217	1	217	1	217	1	126	1	133$\star$	1	133$\star$	1	63	1	22	0
80	434	1	315	1	210	1	210	1	210	1	119	1	126$\star$	1	126$\star$	1	56	1	21	1
79	427	1	308	1	207	0	207	0	207	0	115	0	122$\star$	0	122$\star$	0	51	0	15	0
78	420	1	301	1	203	1	203	1	207$\star$	0	115	0	122$\star$	0	122$\star$	0	51	0	15	0
77	413	1	294	1	196	1	196	1	203$\star$	1	115	0	119$\dagger$	1	122$\star$	0	51	0	15	0
76	406	1	287	1	189	1	189	1	196$\star$	1	112	1	112	1	119$\star$	1	49	1	15	0
75	399	1	280	1	182	1	186$\dagger$	0	189$\star$	1	108	0	108	0	112$\star$	1	44	0	15	0
74	392	1	273	1	175	1	182$\star$	1	182$\star$	1	105	1	105	1	105	1	44	0	15	0
73	385	1	271	91	168	1	175$\star$	1	175$\star$	1	98	1	98	1	98	1	44	0	15	0
72	378	1	264	91	161	1	168$\star$	1	168$\star$	1	91	1	91	1	91	1	42	1	14	1
71	371	1	257	91	154	1	161$\star$	1	161$\star$	1	87	0	87	0	87	0	37	0	8	0
70	364	1	250	91	147	1	154$\star$	1	154$\star$	1	84	1	87$\star$	0	84	1	37	0	8	0
69	357	1	243	91	140	1	147$\star$	1	147$\star$	1	77	1	84$\star$	1	80$\dagger$	0	37	0	8	0
68	350	1	236	91	133	1	140$\star$	1	140$\star$	1	70	1	77$\star$	1	77$\star$	1	35	1	8	0
67	343	1	229	77	126	1	133$\star$	1	133$\star$	1	63	1	73$\star$	94	70$\dagger$	1	30	0	8	0
66	336	1	222	77	119	1	126$\star$	1	126$\star$	1	59	94	66$\star$	94	63$\dagger$	1	28	1	8	0
65	329	1	215	77	116	87	123$\star$	87	119$\dagger$	1	59	95	59	94	59	95	21	1	8	0
64	322	1	208	77	112	31	116$\star$	87	112	1	52	95	52	94	52	95	14	1	7	1
63	321	0	201	0	112	32	112	31	112	32	45	95	49$\star$	24	45	0	14	14	1	0
62	315	1	201	0	112	33	112	32	112	33	42	25	49$\star$	25	45$\dagger$	0	14	15	1	0
61	308	1	201	0	105	33	112$\star$	33	109$\dagger$	0	38	0	45$\star$	0	45$\star$	0	14	16	1	0
60	301	1	196	1	102	0	112$\star$	34	109$\dagger$	0	38	0	45$\star$	0	45$\star$	0	14	17	1	0
59	294	1	194	0	102	0	109$\star$	0	109$\star$	0	38	0	45$\star$	0	45$\star$	0	14	32	1	0
58	287	1	189	1	102	0	109$\star$	0	105$\dagger$	1	38	0	45$\star$	0	45$\star$	0	14	33	1	0
57	280	1	182	1	102	0	105$\star$	1	102	0	38	0	45$\star$	0	45$\star$	0	14	34	1	0
56	273	1	175	1	98	1	98	1	98	1	38	0	45$\star$	0	45$\star$	0	14	35	1	0
55	272	0	173	0	95	0	95	0	95	0	38	0	45$\star$	0	45$\star$	0	14	36	1	0
54	266	1	168	1	95	0	95	0	95	0	38	0	45$\star$	0	45$\star$	0	14	37	1	0
53	259	1	161	1	95	0	95	0	95	0	38	0	45$\star$	0	45$\star$	0	9	0	1	0

continued

$m=7$																				
ν	6		5		4						3						2		1	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
52	252	1	154	1	91	1	91	1	95⋆	0	38	0	42†	1	45⋆	0	9	0	1	0
51	245	1	152	0	88	0	88	0	95⋆	0	38	0	38	0	45⋆	0	9	0	1	0
50	238	1	147	1	84	1	88†	0	91⋆	1	38	0	38	0	45⋆	0	9	0	1	0
49	231	1	140	1	77	1	84⋆	1	84⋆	1	38	0	38	0	42⋆	1	9	0	1	0
48	224	1	133	1	70	1	77⋆	1	77⋆	1	35	1	35	1	35	1	9	0	1	0
47	223	0	131	0	67	0	74⋆	0	74⋆	0	31	0	31	0	31	0	9	0	1	0
46	217	1	131	0	67	0	74⋆	0	74⋆	0	31	0	31	0	31	0	9	0	1	0
45	210	1	131	0	67	0	74⋆	0	74⋆	0	31	0	31	0	31	0	9	0	1	0
44	203	1	126	1	67	0	74⋆	0	74⋆	0	31	0	31	0	31	0	9	0	1	0
43	202	0	124	0	67	0	74⋆	0	74⋆	0	31	0	31	0	31	0	9	0	1	0
42	196	1	119	1	63	1	70⋆	1	70⋆	1	31	0	31	0	31	0	9	0	1	0
41	189	1	112	1	60	0	67⋆	0	67⋆	0	31	0	31	0	31	0	9	0	1	0
40	182	1	105	1	56	1	63⋆	1	63⋆	1	28	1	31⋆	0	28	1	9	0	1	0
39	175	1	103	0	53	0	60⋆	0	60⋆	0	24	0	31⋆	0	24	0	9	0	1	0
38	168	1	98	1	53	0	56†	1	60⋆	0	24	0	31⋆	0	24	0	9	0	1	0
37	161	1	96	0	53	0	53	0	60⋆	0	24	0	31⋆	0	24	0	9	0	1	0
36	154	1	91	1	49	1	49	1	56⋆	1	21	1	28⋆	1	21	1	9	0	1	0
35	147	1	84	1	46	0	46	0	49⋆	1	17	0	24⋆	0	17	0	9	0	1	0
34	140	1	77	1	42	1	42	1	42	1	17	0	24⋆	0	17	0	9	0	1	0
33	133	1	75	111	35	1	35	1	35	1	17	0	21⋆	1	17	0	9	0	1	0
32	126	1	68	111	28	1	28	1	28	1	14	1	14	1	14	1	7	1	1	0
31	125	0	61	0	25	0	28⋆	12	25	0	10	0	10	0	10	0	2	0	1	0
30	119	1	61	0	25	0	28⋆	13	25	0	10	0	10	0	10	0	2	0	1	0
29	118	0	61	0	25	0	28⋆	14	25	0	10	0	10	0	10	0	2	0	1	0
28	112	1	56	1	25	0	28⋆	15	25	0	10	0	10	0	10	0	2	0	1	0
27	111	0	54	0	25	0	28⋆	16	25	0	10	0	10	0	10	0	2	0	1	0
26	105	1	54	0	25	0	28⋆	17	25	0	10	0	10	0	10	0	2	0	1	0
25	98	1	54	0	25	0	25	0	25	0	10	0	10	0	10	0	2	0	1	0
24	91	1	49	1	21	1	21	1	21	1	10	0	10	0	10	0	2	0	1	0
23	90	0	47	0	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0
22	84	1	47	0	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0
21	83	0	47	0	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0
20	77	1	42	1	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0
19	76	0	40	0	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0
18	70	1	35	1	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0
17	63	1	33	0	18	0	18	0	18	0	10	0	10	0	10	0	2	0	1	0

continued

$m=7$																				
ν	6		5		4						3						2		1	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_1$		$\mathbb{G}_{14}$		$\mathbb{G}_0$		$\mathbb{G}_0$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
16	56	1	28	1	14	1	14	1	14	1	7	1	7	1	7	1	2	0	1	0
15	55	0	26	0	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
14	49	1	26	0	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
13	48	0	26	0	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
12	42	1	21	1	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
11	41	0	19	0	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
10	35	1	19	0	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
9	34	0	19	0	11	0	11	0	11	0	3	0	3	0	3	0	2	0	1	0
8	28	1	14	1	7	1	7	1	7	1	3	0	3	0	3	0	2	0	1	0
7	27	0	12	0	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0
6	21	1	12	0	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0
5	20	0	12	0	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0
4	14	1	7	1	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0
3	13	0	5	0	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0
2	7	1	5	0	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0
1	6	0	5	0	4	0	4	0	4	0	3	0	3	0	3	0	2	0	1	0

D.5 $m = 8, n = 255$

$m=8$																		
ν	7		6						5									
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
254	1778	1	1524	1	1524	1	1524	1	1270	1	1270	1	1270	1	1270	1	1270	1
253	1770	1	1516	1	1516	1	1516	1	1262	1	1262	1	1262	1	1262	1	1262	1
252	1762	1	1508	1	1508	1	1508	1	1254	1	1254	1	1254	1	1254	1	1254	1
251	1754	1	1500	1	1500	1	1500	1	1246	1	1246	1	1246	1	1246	1	1246	1
250	1746	1	1492	1	1492	1	1492	1	1238	1	1238	1	1238	1	1238	1	1238	1
249	1738	1	1484	1	1484	1	1484	1	1230	1	1230	1	1230	1	1230	1	1230	1
248	1730	1	1476	1	1476	1	1476	1	1222	1	1222	1	1222	1	1222	1	1222	1
247	1722	1	1468	1	1468	1	1468	1	1214	1	1214	1	1214	1	1214	1	1214	1
246	1714	1	1460	1	1460	1	1460	1	1206	1	1206	1	1206	1	1206	1	1206	1
245	1706	1	1452	1	1452	1	1452	1	1198	1	1198	1	1198	1	1198	1	1198	1
244	1698	1	1444	1	1444	1	1444	1	1190	1	1190	1	1190	1	1190	1	1190	1
243	1690	1	1436	1	1436	1	1436	1	1182	1	1182	1	1182	1	1182	1	1182	1

continued

$m = 8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
242	1682	1	1428	1	1428	1	1428	1	1174	1	1174	1	1174	1	1174	1	1174	1
241	1674	1	1420	1	1420	1	1420	1	1166	1	1166	1	1166	1	1166	1	1166	1
240	1666	1	1412	1	1412	1	1412	1	1158	1	1158	1	1158	1	1158	1	1158	1
239	1658	1	1404	1	1404	1	1404	1	1150	1	1150	1	1150	1	1150	1	1150	1
238	1650	1	1396	1	1396	1	1396	1	1142	1	1142	1	1142	1	1142	1	1142	1
237	1642	1	1388	1	1388	1	1388	1	1134	1	1134	1	1134	1	1134	1	1135⋆	35
236	1634	1	1380	1	1380	1	1380	1	1126	1	1126	1	1126	1	1126	1	1127⋆	35
235	1626	1	1372	1	1372	1	1372	1	1118	1	1118	1	1118	1	1118	1	1119⋆	35
234	1618	1	1364	1	1364	1	1364	1	1110	1	1110	1	1110	1	1110	1	1111⋆	35
233	1610	1	1356	1	1356	1	1356	1	1102	1	1102	1	1102	1	1102	1	1103⋆	35
232	1602	1	1348	1	1348	1	1348	1	1094	1	1094	1	1094	1	1094	1	1095⋆	35
231	1594	1	1340	1	1340	1	1340	1	1086	1	1086	1	1086	1	1086	1	1087⋆	35
230	1586	1	1332	1	1332	1	1332	1	1078	1	1078	1	1078	1	1078	1	1079⋆	35
229	1578	1	1324	1	1324	1	1324	1	1070	1	1070	1	1070	1	1070	1	1071⋆	35
228	1570	1	1316	1	1316	1	1316	1	1062	1	1062	1	1062	1	1062	1	1063⋆	35
227	1562	1	1308	1	1308	1	1308	1	1054	1	1054	1	1054	1	1054	1	1055⋆	35
226	1554	1	1300	1	1300	1	1300	1	1046	1	1046	1	1046	1	1046	1	1047⋆	35
225	1546	1	1292	1	1292	1	1292	1	1038	1	1038	1	1038	1	1038	1	1039⋆	35
224	1538	1	1284	1	1284	1	1284	1	1030	1	1030	1	1030	1	1030	1	1031⋆	35
223	1530	1	1276	1	1276	1	1276	1	1027	0	1027	0	1027	0	1027	0	1027	0
222	1522	1	1268	1	1268	1	1268	1	1022	1	1022	1	1022	1	1022	1	1022	1
221	1514	1	1260	1	1260	1	1260	1	1014	1	1014	1	1014	1	1014	1	1015⋆	0
220	1506	1	1252	1	1252	1	1252	1	1006	1	1006	1	1006	1	1006	1	1010⋆	1
219	1498	1	1244	1	1244	1	1244	1	998	1	998	1	998	1	998	1	1002⋆	1
218	1490	1	1236	1	1236	1	1236	1	990	1	990	1	990	1	990	1	994⋆	1
217	1482	1	1228	1	1228	1	1228	1	982	1	982	1	982	1	982	1	986⋆	1
216	1474	1	1220	1	1220	1	1220	1	974	1	974	1	974	1	974	1	978⋆	1
215	1466	1	1212	1	1212	1	1212	1	966	1	966	1	966	1	966	1	970⋆	1
214	1458	1	1204	1	1204	1	1204	1	958	1	958	1	958	1	958	1	962⋆	1
213	1450	1	1196	1	1196	1	1196	1	950	1	950	1	950	1	950	1	954⋆	1
212	1442	1	1188	1	1188	1	1188	1	942	1	942	1	942	1	942	1	946⋆	1
211	1434	1	1180	1	1180	1	1180	1	934	1	934	1	934	1	934	1	938⋆	1
210	1426	1	1172	1	1172	1	1172	1	926	1	926	1	926	1	926	1	930⋆	1
209	1418	1	1164	1	1164	1	1164	1	918	1	918	1	918	1	918	1	922⋆	1
208	1410	1	1156	1	1156	1	1156	1	910	1	910	1	910	1	910	1	914⋆	1
207	1402	1	1148	1	1148	1	1148	1	902	1	902	1	902	1	902	1	906⋆	1

continued

$m=8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
206	1394	1	1140	1	1140	1	1140	1	894	1	894	1	894	1	894	1	898$\star$	1
205	1386	1	1132	1	1132	1	1132	1	886	1	886	1	886	1	886	1	890$\star$	1
204	1378	1	1124	1	1124	1	1124	1	878	1	878	1	878	1	878	1	882$\star$	1
203	1370	1	1116	1	1118$\star$	69	1118$\star$	69	870	1	870	1	870	1	870	1	875$\star$	69
202	1362	1	1108	1	1110$\star$	69	1110$\star$	69	862	1	862	1	862	1	862	1	867$\star$	69
201	1354	1	1100	1	1102$\star$	69	1102$\star$	69	854	1	854	1	854	1	854	1	859$\star$	69
200	1346	1	1092	1	1094$\star$	69	1094$\star$	69	846	1	846	1	846	1	846	1	851$\star$	69
199	1338	1	1084	1	1086$\star$	69	1086$\star$	69	838	1	838	1	838	1	838	1	843$\star$	69
198	1330	1	1076	1	1078$\star$	69	1078$\star$	69	830	1	830	1	830	1	830	1	835$\star$	69
197	1322	1	1068	1	1070$\star$	69	1070$\star$	69	822	1	822	1	822	1	822	1	827$\star$	69
196	1314	1	1060	1	1062$\star$	69	1062$\star$	69	814	1	814	1	814	1	814	1	819$\star$	69
195	1306	1	1052	1	1054$\star$	69	1054$\star$	69	806	1	806	1	806	1	806	1	811$\star$	69
194	1298	1	1044	1	1046$\star$	69	1046$\star$	69	798	1	798	1	798	1	798	1	803$\star$	69
193	1290	1	1036	1	1038$\star$	69	1038$\star$	69	790	1	790	1	790	1	790	1	795$\star$	69
192	1282	1	1028	1	1030$\star$	69	1030$\star$	69	782	1	782	1	782	1	782	1	790$\star$	31
191	1274	1	1026	0	1026	0	1026	0	779	0	779	0	779	0	779	0	783$\star$	0
190	1266	1	1020	1	1020	1	1020	1	774	1	774	1	774	1	779$\dagger$	0	782$\star$	33
189	1258	1	1012	1	1012	1	1012	1	766	1	766	1	766	1	774$\dagger$	1	775$\star$	0
188	1250	1	1004	1	1004	1	1004	1	758	1	758	1	758	1	766$\dagger$	1	770$\star$	1
187	1242	1	996	1	998$\star$	0	998$\star$	0	751	0	751	0	751	0	759$\dagger$	0	763$\star$	0
186	1234	1	988	1	992$\star$	1	992$\star$	1	746	1	746	1	746	1	754$\dagger$	1	758$\star$	1
185	1226	1	980	1	984$\star$	1	984$\star$	1	738	1	738	1	738	1	746$\dagger$	1	750$\star$	1
184	1218	1	972	1	976$\star$	1	976$\star$	1	730	1	730	1	730	1	738$\dagger$	1	742$\star$	1
183	1210	1	964	1	968$\star$	1	968$\star$	1	727	0	727	0	727	0	735$\star$	0	734$\dagger$	1
182	1202	1	956	1	960$\star$	1	960$\star$	1	722	1	722	1	722	1	730$\star$	1	726$\dagger$	1
181	1194	1	948	1	952$\star$	1	952$\star$	1	714	1	714	1	714	1	722$\star$	1	718$\dagger$	1
180	1186	1	940	1	944$\star$	1	944$\star$	1	706	1	706	1	706	1	714$\star$	1	710$\dagger$	1
179	1178	1	932	1	936$\star$	1	936$\star$	1	698	1	698	1	698	1	706$\star$	1	702$\dagger$	1
178	1170	1	924	1	928$\star$	1	928$\star$	1	690	1	690	1	690	1	698$\star$	1	694$\dagger$	1
177	1162	1	916	1	920$\star$	1	920$\star$	1	682	1	682	1	682	1	690$\star$	1	686$\dagger$	1
176	1154	1	908	1	912$\star$	1	912$\star$	1	674	1	674	1	674	1	682$\star$	1	678$\dagger$	1
175	1146	1	900	1	904$\dagger$	1	910$\star$	0	671	0	671	0	671	0	674$\dagger$	1	675$\star$	0
174	1138	1	892	1	896$\dagger$	1	904$\star$	1	666	1	666	1	666	1	666	1	670$\star$	1
173	1130	1	884	1	888$\dagger$	1	896$\star$	1	658	1	658	1	658	1	658	1	662$\star$	1
172	1122	1	876	1	880$\dagger$	1	888$\star$	1	650	1	650	1	650	1	650	1	654$\star$	1
171	1114	1	868	1	872$\dagger$	1	886$\star$	0	642	1	647$\dagger$	0	642	1	642	1	651$\star$	0

continued

$m = 8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
170	1106	1	860	1	864$\dagger$	1	880$\star$	0	634	1	642$\dagger$	1	634	1	634	1	646$\star$	1
169	1099	171	852	1	856$\dagger$	1	874$\star$	1	626	1	636$\dagger$	1	626	1	626	1	640$\star$	1
168	1091	171	844	1	848$\dagger$	1	866$\star$	1	618	1	628$\dagger$	1	618	1	618	1	632$\star$	1
167	1083	171	836	1	840$\dagger$	1	858$\star$	1	610	1	620$\dagger$	1	610	1	610	1	624$\star$	1
166	1075	171	828	1	832$\dagger$	1	850$\star$	1	602	1	612$\dagger$	1	602	1	602	1	616$\star$	1
165	1067	171	820	1	824$\dagger$	1	842$\star$	1	594	1	604$\dagger$	1	594	1	594	1	608$\star$	1
164	1059	171	812	1	816$\dagger$	1	834$\star$	1	586	1	596$\dagger$	1	586	1	586	1	600$\star$	1
163	1051	171	804	1	808$\dagger$	1	826$\star$	1	578	1	588$\dagger$	1	578	1	578	1	592$\star$	1
162	1043	171	796	1	800$\dagger$	1	818$\star$	1	570	1	580$\dagger$	1	570	1	570	1	584$\star$	1
161	1035	171	788	1	792$\dagger$	1	810$\star$	1	562	1	572$\dagger$	1	562	1	562	1	576$\star$	1
160	1027	171	780	1	784$\dagger$	1	802$\star$	1	554	1	564$\dagger$	1	554	1	554	1	568$\star$	1
159	1019	171	772	1	776$\dagger$	1	794$\star$	1	551	0	561$\dagger$	0	551	0	551	0	565$\star$	0
158	1011	171	764	1	768$\dagger$	1	786$\star$	1	546	1	556$\dagger$	1	551$\dagger$	0	546	1	560$\star$	1
157	1003	171	756	1	760$\dagger$	1	778$\star$	1	538	1	548$\dagger$	1	546$\dagger$	1	538	1	557$\star$	0
156	995	171	748	1	752$\dagger$	1	770$\star$	1	530	1	540$\dagger$	1	538$\dagger$	1	530	1	552$\star$	1
155	987	171	740	1	744$\dagger$	1	762$\star$	1	522	1	532$\dagger$	1	530$\dagger$	1	522	1	549$\star$	0
154	979	171	732	1	736$\dagger$	1	754$\star$	1	514	1	524$\dagger$	1	522$\dagger$	1	514	1	544$\star$	1
153	971	171	724	1	728$\dagger$	1	746$\star$	1	506	1	516$\dagger$	1	514$\dagger$	1	506	1	537$\star$	0
152	963	171	716	1	720$\dagger$	1	738$\star$	1	498	1	508$\dagger$	1	506$\dagger$	1	498	1	532$\star$	1
151	955	171	708	1	712$\dagger$	1	730$\star$	1	490	1	500$\dagger$	1	498$\dagger$	1	495$\dagger$	0	524$\star$	1
150	947	171	700	1	704$\dagger$	1	722$\star$	1	482	1	492$\dagger$	1	490$\dagger$	1	490$\dagger$	1	516$\star$	1
149	939	171	692	1	696$\dagger$	1	714$\star$	1	474	1	484$\dagger$	1	482$\dagger$	1	482$\dagger$	1	508$\star$	1
148	931	171	684	1	688$\dagger$	1	706$\star$	1	466	1	476$\dagger$	1	474$\dagger$	1	474$\dagger$	1	500$\star$	1
147	923	171	676	1	680$\dagger$	1	698$\star$	1	458	1	468$\dagger$	1	466$\dagger$	1	466$\dagger$	1	492$\star$	1
146	915	171	668	1	672$\dagger$	1	690$\star$	1	450	1	460$\dagger$	1	458$\dagger$	1	458$\dagger$	1	484$\star$	1
145	907	171	660	1	664$\dagger$	1	682$\star$	1	442	1	452$\dagger$	1	457$\dagger$	183	450$\dagger$	1	476$\star$	1
144	899	171	652	1	656$\dagger$	1	674$\star$	1	434	1	444$\dagger$	1	449$\dagger$	183	442$\dagger$	1	468$\star$	1
143	891	171	644	1	648$\dagger$	1	666$\star$	1	426	1	436$\dagger$	1	441$\dagger$	183	434$\dagger$	1	460$\star$	1
142	883	171	636	1	640$\dagger$	1	658$\star$	1	418	1	428$\dagger$	1	433$\dagger$	183	426$\dagger$	1	452$\star$	1
141	875	171	628	1	632$\dagger$	1	650$\star$	1	417	183	421$\dagger$	183	425$\dagger$	183	418$\dagger$	1	444$\star$	1
140	867	171	620	1	624$\dagger$	1	642$\star$	1	409	183	413$\dagger$	183	417$\dagger$	183	410$\dagger$	1	436$\star$	1
139	859	171	612	1	616$\dagger$	1	634$\star$	1	401	183	405$\dagger$	183	409$\dagger$	183	402$\dagger$	1	428$\star$	1
138	851	171	604	1	608$\dagger$	1	626$\star$	1	393	183	397$\dagger$	183	401$\dagger$	183	394$\dagger$	1	420$\star$	1
137	843	171	598	171	600$\dagger$	1	618$\star$	1	393	187	397$\dagger$	187	393	183	393	187	412$\star$	1
136	835	171	590	171	592$\dagger$	1	610$\star$	1	385	187	389$\dagger$	187	385	183	385	187	404$\star$	1
135	829	137	582	171	586$\dagger$	137	604$\star$	52	377	187	381$\dagger$	187	377	183	377	187	398$\star$	52

continued

$m=8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
134	821	137	574	171	578†	137	596⋆	52	369	187	373†	187	369	183	369	187	390⋆	52
133	813	137	566	171	570†	137	588⋆	52	361	187	365†	187	361	183	361	187	382⋆	52
132	805	137	558	171	562†	137	580⋆	52	353	187	357†	187	353	183	353	187	374⋆	52
131	797	137	554	149	558†	149	572⋆	52	345	187	349†	157	347†	157	347†	157	366⋆	52
130	789	137	546	149	550†	149	564⋆	52	337	187	341†	157	339†	157	339†	157	361⋆	183
129	781	137	538	149	542†	149	556⋆	52	329	187	333†	157	331†	157	331†	157	353⋆	183
128	773	137	530	149	534†	149	548⋆	52	321	187	325†	157	323†	157	323†	157	345⋆	183
127	769	0	522	0	526†	0	544⋆	0	318	64	322†	64	318	64	318	63	338⋆	44
126	762	1	522	0	526†	0	544⋆	0	318	65	322†	65	318	65	318	64	338⋆	45
125	754	1	522	0	526†	0	538⋆	1	310	65	314†	65	311†	0	318†	65	337⋆	0
124	746	1	516	1	520†	1	530⋆	1	303	0	313†	0	311†	0	318†	66	337⋆	0
123	738	1	514	0	518†	0	528⋆	0	303	0	313†	0	311†	0	311†	0	337⋆	0
122	730	1	508	1	512†	1	528⋆	0	303	0	313†	0	306†	1	311†	0	337⋆	0
121	723	171	500	1	504†	1	522⋆	1	303	0	313†	0	303	0	306†	1	337⋆	0
120	715	171	492	1	496†	1	514⋆	1	298	1	308†	1	298	1	298	1	332⋆	1
119	709	0	490	0	490	0	508⋆	0	295	0	305†	0	295	0	295	0	325⋆	0
118	702	1	484	1	484	1	504⋆	69	295	0	305†	0	295	0	295	0	321⋆	171
117	694	1	476	1	476	1	496⋆	69	295	0	300†	1	295	0	295	0	313⋆	171
116	686	1	468	1	468	1	488⋆	69	290	1	292†	1	295†	0	290	1	305⋆	171
115	678	1	460	1	460	1	480⋆	69	287	0	289†	0	295†	0	287	0	297⋆	171
114	670	1	452	1	452	1	472⋆	69	282	1	284†	1	290⋆	1	287†	0	289†	171
113	662	1	444	1	444	1	464⋆	69	274	1	276†	1	282⋆	1	282⋆	1	281†	171
112	654	1	436	1	436	1	456⋆	69	266	1	268†	1	274⋆	1	274⋆	1	273†	171
111	653	0	434	0	434	0	452⋆	0	263	0	265†	0	271⋆	0	271⋆	0	269†	0
110	646	1	434	0	434	0	452⋆	0	263	0	265†	0	271⋆	0	271⋆	0	269†	0
109	638	1	428	1	428	1	446⋆	1	263	0	265†	0	271⋆	0	271⋆	0	269†	0
108	630	1	420	1	420	1	438⋆	1	258	1	260†	1	266†	1	266†	1	269⋆	0
107	622	1	418	0	418	0	436⋆	0	255	0	257†	0	263†	0	263†	0	269⋆	0
106	614	1	412	1	412	1	436⋆	0	250	1	257†	0	258†	1	258†	1	269⋆	0
105	606	1	404	1	404	1	430⋆	1	242	1	252†	1	255†	0	250†	1	264⋆	1
104	598	1	396	1	396	1	422⋆	1	234	1	244†	1	250†	1	242†	1	256⋆	1
103	590	1	394	0	394	0	420⋆	0	231	0	241†	0	247†	0	239†	0	253⋆	0
102	582	1	388	1	390†	0	416⋆	0	227	0	237†	0	243†	0	235†	0	249⋆	0
101	575	171	380	1	386†	171	410⋆	1	222	1	233†	171	238†	1	235†	0	245⋆	171
100	567	171	372	1	378†	171	402⋆	1	214	1	225†	171	230†	1	230†	1	237⋆	171
99	559	171	364	1	370†	171	394⋆	1	211	0	221†	0	227†	0	227†	0	229⋆	171

continued

$m = 8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
98	551	171	356	1	362†	171	386⋆	1	206	1	216†	1	222⋆	1	222⋆	1	221†	171
97	543	171	350	171	354†	171	378⋆	1	198	1	209†	171	214⋆	1	214⋆	1	213†	171
96	535	171	342	171	346†	171	370⋆	1	190	1	201†	171	206⋆	1	206⋆	1	205†	171
95	533	0	338	0	342†	0	368⋆	0	187	0	197†	0	203⋆	0	203⋆	0	201†	0
94	526	1	338	0	342†	0	368⋆	0	187	0	197†	0	203⋆	0	203⋆	0	201†	0
93	519	171	338	0	342†	0	362⋆	1	187	0	197†	0	203⋆	0	203⋆	0	201†	0
92	511	171	332	1	336†	1	354⋆	1	187	0	197†	0	203⋆	0	203⋆	0	201†	0
91	509	0	330	0	334†	0	352⋆	0	187	0	197†	0	203⋆	0	203⋆	0	201†	0
90	502	1	324	1	328†	1	352⋆	0	187	0	197†	0	198†	1	203⋆	0	201†	0
89	495	171	316	1	320†	1	346⋆	1	187	0	197†	0	195†	0	198†	1	201⋆	0
88	487	171	308	1	312†	1	338⋆	1	182	1	192†	1	190†	1	190†	1	196⋆	1
87	485	0	306	0	310†	0	336⋆	0	179	0	189†	0	187†	0	187†	0	193⋆	0
86	478	1	306	0	310†	0	336⋆	0	179	0	189†	0	187†	0	187†	0	193⋆	0
85	471	0	302	0	306†	0	330⋆	0	177	0	185†	0	185†	0	185†	0	189⋆	0
84	464	1	296	1	300†	1	324⋆	1	172	1	180†	1	180†	1	180†	1	184⋆	1
83	456	1	288	1	292†	1	316⋆	1	169	0	172†	1	177⋆	0	177⋆	0	176†	1
82	448	1	280	1	284†	1	308⋆	1	164	1	164	1	172⋆	1	172⋆	1	168†	1
81	440	1	272	1	276†	1	300⋆	1	156	1	156	1	169⋆	0	164†	1	160†	1
80	432	1	264	1	268†	1	292⋆	1	148	1	148	1	164⋆	1	156†	1	152†	1
79	424	1	262	0	266†	0	284⋆	1	145	0	145	0	161⋆	0	153†	0	149†	0
78	416	1	256	1	260†	1	276⋆	1	145	0	145	0	161⋆	0	148†	1	149†	0
77	408	1	254	0	258†	0	268⋆	1	145	0	145	0	161⋆	0	145	0	149†	0
76	400	1	248	1	252†	1	260⋆	1	140	1	140	1	156⋆	1	140	1	149†	0
75	392	1	246	0	250†	0	252⋆	1	137	0	137	0	153⋆	0	137	0	149†	0
74	384	1	240	1	244⋆	1	244⋆	1	132	1	132	1	148⋆	1	132	1	144†	1
73	376	1	232	1	236⋆	1	236⋆	1	129	0	129	0	145⋆	0	129	0	141†	0
72	368	1	224	1	228⋆	1	228⋆	1	124	1	124	1	140⋆	1	124	1	136†	1
71	360	1	216	1	220⋆	1	220⋆	1	121	0	121	0	132†	1	121	0	133⋆	0
70	352	1	208	1	212⋆	1	212⋆	1	116	1	116	1	124†	1	116	1	133⋆	0
69	344	1	200	1	204⋆	1	204⋆	1	113	0	113	0	116†	1	113	0	133⋆	0
68	336	1	192	1	196⋆	1	196⋆	1	108	1	108	1	108	1	108	1	129⋆	0
67	331	205	184	1	190⋆	205	190⋆	35	100	1	100	1	100	1	100	1	125⋆	205
66	323	205	176	1	182⋆	205	182⋆	35	93	222	93	222	93	222	93	222	117⋆	205
65	315	205	168	1	174⋆	205	174⋆	35	93	223	93	223	93	223	93	223	109⋆	205
64	307	205	160	1	166⋆	205	166⋆	35	85	223	85	223	85	223	85	223	101⋆	205
63	303	0	158	0	162⋆	0	162⋆	0	77	223	77	223	77	223	77	223	97⋆	0

continued

$m=8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
62	296	1	158	0	162⋆	0	162⋆	0	73	0	73	0	73	0	73	0	97⋆	0
61	295	0	158	0	162⋆	0	162⋆	0	73	0	73	0	73	0	73	0	97⋆	0
60	288	1	152	1	156⋆	1	156⋆	1	73	0	73	0	73	0	73	0	97⋆	0
59	287	0	150	0	154⋆	0	154⋆	0	73	0	73	0	73	0	73	0	97⋆	0
58	280	1	150	0	154⋆	0	154⋆	0	73	0	73	0	73	0	73	0	97⋆	0
57	272	1	150	0	154⋆	0	154⋆	0	73	0	73	0	73	0	73	0	97⋆	0
56	264	1	144	1	148⋆	1	148⋆	1	68	1	68	1	68	1	68	1	92⋆	1
55	263	0	142	0	146⋆	0	146⋆	0	65	0	65	0	65	0	65	0	89⋆	0
54	256	1	142	0	146⋆	0	146⋆	0	65	0	65	0	65	0	65	0	89⋆	0
53	255	0	142	0	146⋆	0	146⋆	0	65	0	65	0	65	0	65	0	89⋆	0
52	248	1	136	1	140⋆	1	140⋆	1	65	0	65	0	65	0	65	0	89⋆	0
51	243	0	134	0	134	0	134	0	65	0	65	0	65	0	65	0	85⋆	0
50	236	1	128	1	130⋆	222	130⋆	52	65	0	65	0	65	0	65	0	81⋆	222
49	228	1	120	1	122⋆	222	122⋆	52	65	0	65	0	65	0	65	0	73⋆	222
48	220	1	112	1	114⋆	222	114⋆	52	60	1	60	1	60	1	60	1	65⋆	222
47	219	0	110	0	110	0	110	0	57	0	57	0	57	0	57	0	61⋆	0
46	212	1	110	0	110	0	110	0	57	0	57	0	57	0	57	0	61⋆	0
45	211	0	110	0	110	0	110	0	57	0	57	0	57	0	57	0	61⋆	0
44	204	1	104	1	104	1	104	1	57	0	57	0	57	0	57	0	61⋆	0
43	203	0	102	0	102	0	102	0	57	0	57	0	57	0	57	0	61⋆	0
42	196	1	102	0	102	0	102	0	57	0	57	0	57	0	57	0	61⋆	0
41	188	1	102	0	102	0	102	0	57	0	57	0	57	0	57	0	61⋆	0
40	180	1	96	1	96	1	96	1	52	1	52	1	52	1	52	1	56⋆	1
39	179	0	94	0	94	0	94	0	49	0	49	0	49	0	49	0	53⋆	0
38	172	1	94	0	94	0	94	0	49	0	49	0	49	0	49	0	53⋆	0
37	171	0	94	0	94	0	94	0	49	0	49	0	49	0	49	0	53⋆	0
36	164	1	88	1	88	1	88	1	44	1	44	1	44	1	44	1	53⋆	0
35	156	1	86	0	86	0	86	0	41	0	41	0	41	0	41	0	53⋆	0
34	148	1	80	1	82⋆	0	82⋆	0	37	0	37	0	37	0	37	0	49⋆	0
33	143	239	72	1	78⋆	239	78⋆	69	37	0	37	0	37	0	37	0	45⋆	239
32	135	239	64	1	70⋆	239	70⋆	69	32	1	32	1	32	1	32	1	37⋆	239
31	131	0	62	0	66⋆	0	66⋆	0	29	0	29	0	29	0	29	0	33⋆	0
30	124	1	62	0	66⋆	0	66⋆	0	29	0	29	0	29	0	29	0	33⋆	0
29	123	0	62	0	66⋆	0	66⋆	0	29	0	29	0	29	0	29	0	33⋆	0
28	116	1	56	1	60⋆	1	60⋆	1	29	0	29	0	29	0	29	0	33⋆	0
27	115	0	54	0	58⋆	0	58⋆	0	29	0	29	0	29	0	29	0	33⋆	0

continued

$m=8$																		
ν	7		6						5									
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_5$		$\mathbb{G}_7$		$\mathbb{G}_0$		$\mathbb{G}_{20}$		$\mathbb{G}_{45}$		$\mathbb{G}_{51}$		$\mathbb{G}_{52}$	
k_0	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s	K	J_s
26	108	1	54	0	58$\star$	0	58$\star$	0	29	0	29	0	29	0	29	0	33$\star$	0
25	107	0	54	0	58$\star$	0	58$\star$	0	29	0	29	0	29	0	29	0	33$\star$	0
24	100	1	48	1	52$\star$	1	52$\star$	1	24	1	24	1	24	1	24	1	28$\star$	1
23	99	0	46	0	50$\star$	0	50$\star$	0	21	0	21	0	21	0	21	0	25$\star$	0
22	92	1	46	0	50$\star$	0	50$\star$	0	21	0	21	0	21	0	21	0	25$\star$	0
21	91	0	46	0	50$\star$	0	50$\star$	0	21	0	21	0	21	0	21	0	25$\star$	0
20	84	1	40	1	44$\star$	1	44$\star$	1	21	0	21	0	21	0	21	0	25$\star$	0
19	83	0	38	0	42$\star$	0	42$\star$	0	21	0	21	0	21	0	21	0	25$\star$	0
18	76	1	38	0	42$\star$	0	42$\star$	0	21	0	21	0	21	0	21	0	25$\star$	0
17	71	0	38	0	38	0	38	0	21	0	21	0	21	0	21	0	21	0
16	64	1	32	1	32	1	32	1	16	1	16	1	16	1	16	1	16	1
15	63	0	30	0	30	0	30	0	13	0	13	0	13	0	13	0	13	0
14	56	1	30	0	30	0	30	0	13	0	13	0	13	0	13	0	13	0
13	55	0	30	0	30	0	30	0	13	0	13	0	13	0	13	0	13	0
12	48	1	24	1	24	1	24	1	13	0	13	0	13	0	13	0	13	0
11	47	0	22	0	22	0	22	0	13	0	13	0	13	0	13	0	13	0
10	40	1	22	0	22	0	22	0	13	0	13	0	13	0	13	0	13	0
9	39	0	22	0	22	0	22	0	13	0	13	0	13	0	13	0	13	0
8	32	1	16	1	16	1	16	1	8	1	8	1	8	1	8	1	8	1
7	31	0	14	0	14	0	14	0	5	0	5	0	5	0	5	0	5	0
6	24	1	14	0	14	0	14	0	5	0	5	0	5	0	5	0	5	0
5	23	0	14	0	14	0	14	0	5	0	5	0	5	0	5	0	5	0
4	16	1	8	1	8	1	8	1	5	0	5	0	5	0	5	0	5	0
3	15	0	6	0	6	0	6	0	5	0	5	0	5	0	5	0	5	0
2	8	1	6	0	6	0	6	0	5	0	5	0	5	0	5	0	5	0
1	7	0	6	0	6	0	6	0	5	0	5	0	5	0	5	0	5	0

$m=8$																								
ν	4																							
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_3$		$\mathbb{G}_{23}$		$\mathbb{G}_{32}$		$\mathbb{G}_{47}$		$\mathbb{G}_{49}$		$\mathbb{G}_{73}$		$\mathbb{G}_{77}$		$\mathbb{G}_{104}$		$\mathbb{G}_{106}$		$\mathbb{G}_{107}$		$\mathbb{G}_{108}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
254	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1	1016	1
253	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1	1008	1
252	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1	1000	1
251	992	1	992	1	992	1	992	1	992	1	992	1	992	1	992	1	992	1	992	1	992	1	992	1
250	984	1	984	1	984	1	984	1	984	1	984	1	984	1	984	1	984	1	984	1	984	1	984	1
249	976	1	976	1	976	1	976	1	976	1	976	1	976	1	976	1	976	1	976	1	976	1	976	1
248	968	1	968	1	968	1	968	1	968	1	968	1	968	1	968	1	968	1	968	1	968	1	968	1
247	960	1	960	1	960	1	960	1	960	1	960	1	960	1	960	1	960	1	960	1	960	1	960	1

continued

$m=8$																								
ν	4																							
$S^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_3$		$\mathbb{G}_{23}$		$\mathbb{G}_{32}$		$\mathbb{G}_{47}$		$\mathbb{G}_{49}$		$\mathbb{G}_{73}$		$\mathbb{G}_{77}$		$\mathbb{G}_{104}$		$\mathbb{G}_{106}$		$\mathbb{G}_{107}$		$\mathbb{G}_{108}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
246	952	1	952	1	952	1	952	1	952	1	952	1	952	1	952	1	952	1	952	1	952	1	952	1
245	944	1	944	1	944	1	944	1	944	1	944	1	944	1	944	1	944	1	944	1	944	1	944	1
244	936	1	936	1	936	1	936	1	936	1	936	1	936	1	936	1	936	1	936	1	936	1	936	1
243	928	1	928	1	928	1	928	1	928	1	928	1	928	1	928	1	928	1	928	1	928	1	928	1
242	920	1	920	1	920	1	920	1	920	1	920	1	920	1	920	1	920	1	920	1	920	1	920	1
241	912	1	912	1	912	1	912	1	912	1	912	1	912	1	912	1	912	1	912	1	912	1	912	1
240	904	1	904	1	904	1	904	1	904	1	904	1	904	1	904	1	904	1	904	1	904	1	904	1
239	900	0	900	0	900	0	900	0	900	0	900	0	900	0	900	0	900	0	900	0	900	0	900	0
238	896	1	896	1	896	1	896	1	896	1	896	1	896	1	896	1	896	1	896	1	896	1	896	0
237	888	1	888	1	888	1	888	1	888	1	888	1	888	1	888	1	888	1	888	1	888	1	892★	1
236	880	1	880	1	880	1	880	1	880	1	880	1	880	1	880	1	880	1	880	1	880	1	884★	1
235	872	1	872	1	872	1	872	1	872	1	872	1	872	1	872	1	872	1	872	1	872	1	876★	1
234	864	1	864	1	864	1	864	1	864	1	864	1	864	1	864	1	864	1	864	1	864	1	868★	1
233	856	1	856	1	856	1	856	1	856	1	856	1	856	1	856	1	856	1	856	1	856	1	860★	1
232	848	1	848	1	848	1	848	1	848	1	848	1	848	1	848	1	848	1	848	1	848	1	852★	1
231	840	1	840	1	840	1	840	1	840	1	840	1	840	1	840	1	840	1	840	1	840	1	844★	1
230	832	1	832	1	832	1	832	1	832	1	832	1	832	1	832	1	832	1	832	1	832	1	836★	1
229	824	1	824	1	824	1	824	1	824	1	824	1	824	1	824	1	824	1	824	1	824	1	828★	1
228	816	1	816	1	816	1	816	1	816	1	816	1	816	1	816	1	816	1	816	1	816	1	820★	1
227	808	1	808	1	808	1	808	1	808	1	808	1	808	1	808	1	808	1	808	1	808	1	812★	1
226	800	1	800	1	800	1	800	1	800	1	800	1	800	1	800	1	800	1	800	1	800	1	804★	1
225	792	1	792	1	792	1	792	1	792	1	792	1	792	1	792	1	792	1	792	1	792	1	796★	1
224	784	1	784	1	784	1	784	1	784	1	784	1	784	1	784	1	784	1	784	1	784	1	788★	1
223	780	0	780	0	780	0	780	0	780	0	780	0	780	0	780	0	780	0	780	0	780	0	784★	0
222	776	1	776	1	776	1	776	1	776	1	776	1	776	1	776	1	776	1	776	1	776	1	784★	0
221	768	1	768	1	768	0	768	0	768	1	768	1	768	1	768	1	768	1	768	1	768	1	780★	0
220	760	1	760	1	764†	1	764†	1	760	1	760	1	760	1	760	1	760	1	760	1	760	1	776★	1
219	752	1	752	1	756†	1	756†	1	752	1	752	1	752	1	756†	0	752	1	752	1	752	1	768★	1
218	744	1	744	1	748†	1	748†	1	744	1	744	1	744	1	752†	1	744	1	744	1	744	1	760★	1
217	736	1	736	1	740†	1	740†	1	736	1	736	1	736	1	744†	1	736	1	736	1	736	1	752★	1
216	728	1	728	1	732†	1	732†	1	728	1	728	1	728	1	736†	1	728	1	728	1	728	1	744★	1
215	720	1	720	1	724†	1	724†	1	720	1	720	1	720	1	728†	1	720	1	720	1	720	1	736★	1
214	712	1	712	1	716†	1	716†	1	712	1	712	1	712	1	720†	1	712	1	712	1	712	1	728★	1
213	704	1	704	1	708†	1	708†	1	704	1	704	1	704	1	712†	1	704	1	704	1	704	1	720★	1
212	696	1	696	1	700†	1	700†	1	696	1	696	1	696	1	704†	1	696	1	696	1	696	1	712★	1
211	688	1	688	1	692†	1	692†	1	688	1	688	1	688	1	696†	1	688	1	688	1	688	1	704★	1
210	680	1	680	1	684†	1	684†	1	680	1	680	1	680	1	688†	1	680	1	680	1	680	1	696★	1
209	672	1	672	1	676†	1	676†	1	672	1	672	1	672	1	680†	1	672	1	672	1	672	1	688★	1
208	664	1	664	1	668†	1	668†	1	664	1	664	1	664	1	672†	1	664	1	664	1	664	1	680★	1
207	660	0	660	0	664†	0	664†	0	660	0	660	0	660	0	668†	0	660	0	660	0	660	0	676★	0
206	656	1	656	1	660†	1	660†	1	656	1	656	1	656	1	664†	1	656	1	656	1	656	1	676★	0
205	648	1	648	1	652†	1	652†	1	648	1	648	1	648	1	656†	1	648	1	648	1	648	1	676★	0
204	640	1	640	1	644†	1	644†	1	640	1	640	1	640	1	648†	1	640	1	640	1	640	1	672★	0
203	632	1	632	1	636†	1	636†	1	632	1	632	1	632	1	640†	1	632	1	632	1	632	1	668★	1
202	624	1	624	1	628†	1	628†	1	624	1	624	1	624	1	632†	1	624	1	624	1	624	1	660★	1
201	616	1	616	1	620†	1	620†	1	616	1	616	1	616	1	624†	1	616	1	616	1	616	1	652★	1
200	608	1	608	1	612†	1	612†	1	608	1	608	1	608	1	616†	1	608	1	608	1	608	1	644★	1
199	600	1	600	1	604†	1	604†	1	600	1	600	1	600	1	608†	1	600	1	600	1	600	1	636★	1
198	592	1	592	1	596†	1	596†	1	592	1	592	1	592	1	600†	1	592	1	592	1	592	1	628★	1
197	584	1	584	1	588†	1	588†	1	584	1	584	1	584	1	592†	1	584	1	584	1	584	1	620★	1
196	576	1	576	1	580†	1	580†	1	576	1	576	1	576	1	584†	1	576	1	576	1	576	1	612★	1

continued

$m = 8$																								
ν	4																							
$S^{\perp}$	$\mathbb{G}_{0}$		$\mathbb{G}_{3}$		$\mathbb{G}_{23}$		$\mathbb{G}_{32}$		$\mathbb{G}_{47}$		$\mathbb{G}_{49}$		$\mathbb{G}_{73}$		$\mathbb{G}_{77}$		$\mathbb{G}_{104}$		$\mathbb{G}_{106}$		$\mathbb{G}_{107}$		$\mathbb{G}_{108}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
195	568	1	568	1	572†	1	572†	1	568	1	568	1	568	1	576†	1	568	1	568	1	568	1	604⋆	1
194	560	1	560	1	564†	1	564†	1	560	1	560	1	560	1	568†	1	560	1	560	1	560	1	596⋆	1
193	552	1	552	1	556†	1	556†	1	552	1	552	1	552	1	560†	1	552	1	552	1	552	1	588⋆	1
192	544	1	544	1	552†	31	552†	31	544	1	544	1	544	1	552†	1	544	1	544	1	544	1	580⋆	1
191	540	0	540	0	544†	0	544†	0	540	0	540	0	540	0	552†	32	540	0	540	0	540	0	576⋆	0
190	540	0	540	0	544†	0	544†	0	540	0	540	0	540	0	552†	33	540	0	540	0	540	0	576⋆	0
189	540	0	540	0	544†	0	544†	0	540	0	540	0	540	0	544†	1	540	0	540	0	540	0	576⋆	0
188	536	1	536	1	540†	1	540†	1	536	1	536	1	536	1	536	1	540†	0	536	1	540†	0	576⋆	0
187	532	0	532	0	532	0	532	0	532	0	532	0	532	0	532	0	540†	0	532	0	540†	0	572⋆	0
186	528	1	528	1	528	1	528	1	528	1	528	1	528	1	528	1	536†	1	528	1	536†	1	568⋆	1
185	520	1	520	1	520	1	520	1	520	1	524†	0	520	1	520	1	528†	1	520	1	528†	1	560⋆	1
184	512	1	512	1	512	1	512	1	512	1	520†	1	512	1	512	1	520†	1	512	1	520†	1	552⋆	1
183	508	0	508	0	508	0	508	0	508	0	516†	0	508	0	508	0	516†	0	508	0	516†	0	544⋆	1
182	504	1	504	1	504	1	504	1	504	1	512†	1	504	1	504	1	512†	1	504	1	512†	1	536⋆	1
181	496	1	496	1	496	1	496	1	496	1	504†	1	496	1	496	1	504†	1	496	1	504†	1	528⋆	1
180	488	1	488	1	488	1	488	1	488	1	496†	1	488	1	488	1	496†	1	488	1	496†	1	520⋆	1
179	480	1	480	1	480	1	480	1	480	1	488†	1	480	1	480	1	492†	0	484†	0	488†	1	512⋆	1
178	472	1	472	1	472	1	472	1	472	1	480†	1	472	1	472	1	488†	1	480†	1	480†	1	504⋆	1
177	464	1	464	1	464	1	464	1	464	1	472†	1	464	1	464	1	480†	1	472†	1	472†	1	496⋆	1
176	456	1	456	1	456	1	456	1	456	1	464†	1	456	1	456	1	472†	1	464†	1	464†	1	488⋆	1
175	452	0	452	0	452	0	452	0	452	0	460†	0	452	0	452	0	468†	0	460†	0	460†	0	484⋆	0
174	448	1	448	1	448	1	448	1	452†	0	456†	1	448	1	448	1	468†	0	456†	1	456†	1	484⋆	0
173	444	0	444	0	444	0	444	0	452†	0	452†	0	444	0	444	0	468†	0	452†	0	452†	0	484⋆	0
172	440	1	440	1	440	1	440	1	448†	1	448†	1	440	1	440	1	468†	0	448†	1	448†	1	484⋆	0
171	436	0	436	0	436	0	436	0	440†	1	444†	0	436	0	436	0	468†	0	444†	0	444†	0	484⋆	0
170	432	1	432	1	432	1	432	1	432	1	440†	1	432	1	432	1	464†	0	440†	1	440†	1	480⋆	0
169	424	1	426†	1	424	1	426†	1	424	1	432†	1	424	1	424	1	460†	1	432†	1	432†	1	476⋆	1
168	416	1	418†	1	416	1	418†	1	416	1	424†	1	416	1	416	1	452†	1	424†	1	424†	1	468⋆	1
167	408	1	410†	1	408	1	410†	1	408	1	416†	1	408	1	408	1	444†	1	416†	1	416†	1	460⋆	1
166	400	1	402†	1	400	1	402†	1	400	1	408†	1	400	1	400	1	436†	1	408†	1	408†	1	452⋆	1
165	392	1	394†	1	392	1	394†	1	392	1	400†	1	392	1	392	1	428†	1	400†	1	400†	1	444⋆	1
164	384	1	386†	1	384	1	386†	1	384	1	392†	1	384	1	384	1	420†	1	392†	1	392†	1	436⋆	1
163	376	1	378†	1	376	1	378†	1	376	1	384†	1	376	1	376	1	412†	1	384†	1	384†	1	428⋆	1
162	368	1	370†	1	368	1	370†	1	368	1	376†	1	368	1	368	1	404†	1	376†	1	376†	1	420⋆	1
161	360	1	362†	1	360	1	362†	1	360	1	368†	1	360	1	360	1	396†	1	368†	1	368†	1	412⋆	1
160	352	1	354†	1	352	1	354†	1	352	1	360†	1	352	1	352	1	388†	1	360†	1	360†	1	404⋆	1
159	348	0	350†	0	348	0	350†	0	348	0	356†	0	348	0	348	0	384†	0	356†	0	356†	0	400⋆	0
158	348	0	350†	0	348	0	350†	0	348	0	356†	0	348	0	348	0	384†	0	356†	0	356†	0	400⋆	0
157	348	0	350†	0	348	0	350†	0	348	0	356†	0	348	0	348	0	380†	1	352†	1	356†	0	400⋆	0
156	344	1	346†	1	344	1	346†	1	344	1	352†	1	344	1	344	1	372†	1	344	1	352†	1	400⋆	0
155	340	0	342†	0	340	0	342†	0	340	0	344†	1	340	0	340	0	368†	0	340	0	348†	0	400⋆	0
154	336	1	338†	1	336	1	338†	1	336	1	336	1	340†	0	336	1	368†	0	336	1	344†	1	400⋆	0
153	328	1	330†	1	328	0	330†	0	328	1	328	1	336†	1	328	1	364†	1	328	1	336†	1	396⋆	0
152	320	1	322†	1	324†	1	326†	1	320	1	320	1	328†	1	320	1	356†	1	320	1	328†	1	392⋆	1
151	316	0	318†	0	320†	0	322†	0	316	0	316	0	324†	0	316	0	348†	1	316	0	320†	1	384⋆	1
150	312	1	314†	1	316†	1	318†	1	312	1	312	1	320†	1	312	1	340†	1	312	1	312	1	376⋆	1
149	304	1	306†	1	308†	1	310†	1	308†	0	304	1	312†	1	304	1	332†	1	304	1	304	1	368⋆	1
148	296	1	298†	1	300†	1	302†	1	304†	1	296	1	304†	1	296	1	324†	1	296	1	296	1	360⋆	1
147	288	1	290†	1	292†	1	294†	1	296†	1	288	1	296†	1	292†	0	316†	1	288	1	288	1	352⋆	1
146	280	1	282†	1	284†	1	286†	1	288†	1	280	1	288†	1	288†	1	308†	1	280	1	280	1	344⋆	1
145	272	1	274†	1	276†	1	278†	1	280†	1	272	1	280†	1	280†	1	300†	1	272	1	272	1	336⋆	1

continued

$m=8$																								
ν	4																							
$S^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_3$		$\mathbb{G}_{23}$		$\mathbb{G}_{32}$		$\mathbb{G}_{47}$		$\mathbb{G}_{49}$		$\mathbb{G}_{73}$		$\mathbb{G}_{77}$		$\mathbb{G}_{104}$		$\mathbb{G}_{106}$		$\mathbb{G}_{107}$		$\mathbb{G}_{108}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
144	264	1	266†	1	268†	1	270†	1	272†	1	264	1	272†	1	272†	1	292†	1	264	1	264	1	328⋆	1
143	260	0	262†	0	264†	0	266†	0	268†	0	260	0	268†	0	268†	0	288†	0	260	0	260	0	324⋆	0
142	256	1	258†	1	260†	1	262†	1	264†	1	256	1	264†	1	264†	1	288†	0	260†	0	256	1	324⋆	0
141	248	1	250†	1	252†	1	254†	1	256†	1	252†	0	256†	1	256†	1	284†	1	256†	1	248	1	324⋆	0
140	240	1	242†	1	244†	1	246†	1	248†	1	248†	1	248†	1	248†	1	276†	1	248†	1	240	1	324⋆	0
139	232	1	234†	1	236†	1	238†	1	240†	1	240†	1	240†	1	240†	1	272†	0	240†	1	236†	0	324⋆	0
138	224	1	226†	1	228†	1	230†	1	232†	1	232†	1	232†	1	232†	1	272†	0	232†	1	232†	1	324⋆	0
137	216	1	218†	1	220†	1	222†	1	224†	1	224†	1	224†	1	224†	1	268†	1	224†	1	224†	1	324⋆	0
136	208	1	210†	1	212†	1	214†	1	216†	1	216†	1	216†	1	216†	1	260†	1	216†	1	216†	1	320⋆	0
135	200	1	202†	1	204†	1	206†	1	208†	1	208†	1	208†	1	208†	1	252†	1	208†	1	208†	1	316⋆	1
134	192	1	194†	1	196†	1	198†	1	200†	1	200†	1	200†	1	200†	1	244†	1	200†	1	200†	1	308⋆	1
133	184	1	186†	1	188†	1	190†	1	192†	1	192†	1	192†	1	192†	1	236†	1	192†	1	192†	1	300⋆	1
132	176	1	178†	1	180†	1	182†	1	184†	1	184†	1	184†	1	184†	1	228†	1	184†	1	184†	1	292⋆	1
131	168	1	172†	52	172†	1	176†	52	176†	1	180†	157	176†	1	176†	1	220†	1	176†	1	176†	1	284⋆	1
130	160	1	164†	52	164†	1	168†	52	168†	1	172†	157	168†	1	168†	1	212†	1	168†	1	168†	1	276⋆	1
129	156	175	160†	183	160†	175	164†	183	164†	175	164†	157	164†	183	164†	175	204†	1	164†	183	164†	175	268⋆	1
128	148	175	152†	183	152†	27	156†	183	156†	175	156†	157	156†	183	156†	175	196†	1	156†	183	156†	175	260⋆	1
127	144	48	148†	56	148†	48	152†	56	152†	56	152†	48	152†	48	152†	30	192†	0	152†	48	152†	56	256⋆	0
126	144	49	148†	57	148†	49	152†	57	152†	57	152†	49	152†	49	152†	31	192†	0	152†	49	152†	57	256⋆	0
125	140	0	144†	182	144†	0	148†	182	148†	0	148†	0	148†	0	152†	32	192†	0	148†	0	148†	0	256⋆	0
124	140	0	144†	183	144†	0	148†	183	148†	0	148†	0	148†	0	152†	33	192†	0	148†	0	148†	0	256⋆	0
123	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	192†	0	148†	0	148†	0	256⋆	0
122	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	192†	0	148†	0	148†	0	256⋆	0
121	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	192†	0	148†	0	148†	0	256⋆	0
120	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	192†	0	148†	0	148†	0	256⋆	0
119	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	192†	0	148†	0	148†	0	252⋆	0
118	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	192†	0	148†	0	148†	0	248⋆	1
117	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	188†	1	148†	0	148†	0	240⋆	1
116	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	180†	1	144†	1	148†	0	232⋆	1
115	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	148†	0	176†	0	140	0	148†	0	224⋆	1
114	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	144†	1	176†	0	140	0	148†	0	216⋆	1
113	140	0	142†	0	144†	0	146†	0	148†	0	148†	0	148†	0	140	0	172†	1	140	0	144†	1	208⋆	1
112	136	1	138†	1	140†	1	142†	1	144†	1	144†	1	144†	1	136	1	164†	1	136	1	136	1	200⋆	1
111	132	0	134†	0	136†	0	138†	0	140†	0	140†	0	140†	0	132	0	160†	0	132	0	132	0	196⋆	0
110	132	0	134†	0	136†	0	138†	0	140†	0	140†	0	140†	0	132	0	160†	0	132	0	132	0	196⋆	0
109	132	0	134†	0	136†	0	138†	0	140†	0	140†	0	140†	0	132	0	160†	0	132	0	132	0	196⋆	0
108	132	0	134†	0	136†	0	138†	0	140†	0	136†	1	140†	0	132	0	160†	0	132	0	132	0	196⋆	0
107	132	0	134†	0	136†	0	138†	0	140†	0	132	0	140†	0	132	0	160†	0	132	0	132	0	196⋆	0
106	132	0	134†	0	136†	0	138†	0	140†	0	132	0	136†	1	132	0	160†	0	132	0	132	0	196⋆	0
105	132	0	134†	0	136†	0	138†	0	140†	0	132	0	132	0	132	0	160†	0	132	0	132	0	196⋆	0
104	128	1	130†	1	132†	1	134†	1	136†	1	128	1	128	1	128	1	160†	0	132†	0	128	1	196⋆	0
103	124	0	126†	0	128†	0	130†	0	132†	0	124	0	124	0	124	0	160†	0	132†	0	124	0	196⋆	0
102	124	0	126†	0	124	0	126†	0	132†	0	124	0	124	0	124	0	160†	0	132†	0	124	0	192⋆	0
101	124	0	126†	0	124	0	126†	0	128†	1	124	0	124	0	124	0	156†	1	132†	0	124	0	188⋆	1
100	120	1	122†	1	120	1	122†	1	120	1	120	1	120	1	124†	0	148†	1	128†	1	120	1	180⋆	1
99	116	0	118†	0	116	0	118†	0	116	0	116	0	116	0	124†	0	144†	0	124†	0	116	0	172⋆	1
98	112	1	114†	1	112	1	114†	1	112	1	112	1	112	1	120†	1	144†	0	120†	1	116†	0	164⋆	1
97	104	1	106†	1	104	1	106†	1	104	1	104	1	104	1	112†	1	140†	1	112†	1	112†	1	156⋆	1
96	96	1	98†	1	96	1	98†	1	96	1	96	1	96	1	104†	1	132†	1	104†	1	104†	1	148⋆	1
95	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
94	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0

continued

$m=8$																								
ν	4																							
$S^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_3$		$\mathbb{G}_{23}$		$\mathbb{G}_{32}$		$\mathbb{G}_{47}$		$\mathbb{G}_{49}$		$\mathbb{G}_{73}$		$\mathbb{G}_{77}$		$\mathbb{G}_{104}$		$\mathbb{G}_{106}$		$\mathbb{G}_{107}$		$\mathbb{G}_{108}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
93	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
92	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
91	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
90	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
89	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
88	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
87	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
86	92	0	94†	0	92	0	94†	0	92	0	92	0	92	0	100†	0	128†	0	100†	0	100†	0	144⋆	0
85	92	0	92	0	92	0	92	0	92	0	92	0	92	0	100†	0	124†	0	100†	0	100†	0	140⋆	0
84	88	1	88	1	88	1	88	1	88	1	88	1	92†	0	96†	1	120†	1	96†	1	96†	1	136⋆	1
83	84	0	84	0	84	0	84	0	84	0	84	0	92†	0	92†	0	112†	1	92†	0	92†	0	128⋆	1
82	80	1	80	1	80	1	80	1	80	1	80	1	88†	1	88†	1	104†	1	88†	1	88†	1	120⋆	1
81	76	0	76	0	76	0	76	0	76	0	76	0	80†	1	84†	0	96†	1	84†	0	84†	0	112⋆	1
80	72	1	72	1	72	1	72	1	72	1	72	1	72	1	80†	1	88†	1	80†	1	80†	1	104⋆	1
79	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	84†	0	76†	0	76†	0	100⋆	0
78	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	84†	0	76†	0	76†	0	100⋆	0
77	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	84†	0	76†	0	76†	0	100⋆	0
76	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	80†	1	76†	0	72†	1	100⋆	0
75	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	76†	0	76†	0	68	0	100⋆	0
74	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	76†	0	76†	0	68	0	100⋆	0
73	68	0	68	0	68	0	68	0	68	0	68	0	68	0	76†	0	76†	0	76†	0	68	0	100⋆	0
72	64	1	64	1	64	1	64	1	64	1	64	1	64	1	72†	1	72†	1	72†	1	64	1	100⋆	0
71	60	0	60	0	60	0	60	0	60	0	60	0	60	0	68†	0	68†	0	68†	0	60	0	100⋆	0
70	60	0	60	0	60	0	60	0	60	0	60	0	60	0	64†	1	68†	0	68†	0	60	0	100⋆	0
69	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	68†	0	68†	0	60	0	100⋆	0
68	56	1	56	1	56	0	56	0	56	1	56	1	56	1	56	1	64†	1	64†	1	56	1	96⋆	0
67	52	0	52	0	56†	0	56†	0	52	0	52	0	52	0	52	0	56†	1	56†	1	52	0	92⋆	1
66	48	1	48	1	52†	1	52†	1	48	1	52†	0	48	1	48	1	48	1	48	1	48	1	84⋆	1
65	40	1	40	1	44†	1	44†	1	40	1	52†	223	40	1	40	1	40	1	40	1	40	1	76⋆	1
64	32	1	32	1	36†	1	36†	1	32	1	44†	223	32	1	32	1	32	1	32	1	32	1	68⋆	1
63	28	0	28	0	36†	223	36†	223	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
62	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
61	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
60	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
59	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
58	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
57	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
56	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
55	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
54	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
53	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
52	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	64⋆	0
51	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	60⋆	0
50	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	56⋆	1
49	28	0	28	0	32†	0	32†	0	28	0	36†	0	28	0	28	0	28	0	28	0	28	0	48⋆	1
48	24	1	24	1	28†	1	28†	1	24	1	32†	1	24	1	24	1	24	1	24	1	24	1	40⋆	1
47	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
46	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
45	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
44	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
43	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0

continued

$m=8$																								
ν	4																							
$\mathcal{S}^{\perp}$	$\mathbb{G}_{0}$		$\mathbb{G}_{3}$		$\mathbb{G}_{23}$		$\mathbb{G}_{32}$		$\mathbb{G}_{47}$		$\mathbb{G}_{49}$		$\mathbb{G}_{73}$		$\mathbb{G}_{77}$		$\mathbb{G}_{104}$		$\mathbb{G}_{106}$		$\mathbb{G}_{107}$		$\mathbb{G}_{108}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
42	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
41	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
40	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
39	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
38	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
37	20	0	20	0	24†	0	24†	0	20	0	28†	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
36	20	0	20	0	24†	0	24†	0	20	0	24†	1	20	0	20	0	20	0	20	0	20	0	36⋆	0
35	20	0	20	0	24†	0	24†	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	36⋆	0
34	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	32⋆	0
33	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	20	0	28⋆	1
32	16	1	16	1	16	1	16	1	16	1	16	1	16	1	16	1	16	1	16	1	16	1	20⋆	1
31	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
30	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
29	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
28	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
27	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
26	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
25	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
24	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
23	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
22	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
21	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
20	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
19	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
18	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	16⋆	0
17	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0
16	8	1	8	1	8	1	8	1	8	1	8	1	8	1	8	1	8	1	8	1	8	1	8	1
15	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
14	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
13	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
12	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
11	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
10	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
9	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
8	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
7	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
6	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
5	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
4	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
3	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
2	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
1	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0

D.6 $m = 9, n = 511$

$m=9$																						
ν	8		7				6															
$S^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
510	4080	1	3570	1	3570	1	3060	1	3060	1	3060	1	3060	1	3060	1	3060	1	3060	1	3060	1	3060	1
509	4071	1	3561	1	3561	1	3051	1	3051	1	3051	1	3051	1	3051	1	3051	1	3051	1	3051	1	3051	1
508	4062	1	3552	1	3552	1	3042	1	3042	1	3042	1	3042	1	3042	1	3042	1	3042	1	3042	1	3042	1
507	4053	1	3543	1	3543	1	3033	1	3033	1	3033	1	3033	1	3033	1	3033	1	3033	1	3033	1	3033	1
506	4044	1	3534	1	3534	1	3024	1	3024	1	3024	1	3024	1	3024	1	3024	1	3024	1	3024	1	3024	1
505	4035	1	3525	1	3525	1	3015	1	3015	1	3015	1	3015	1	3015	1	3015	1	3015	1	3015	1	3015	1
504	4026	1	3516	1	3516	1	3006	1	3006	1	3006	1	3006	1	3006	1	3006	1	3006	1	3006	1	3006	1
503	4017	1	3507	1	3507	1	2997	1	2997	1	2997	1	2997	1	2997	1	2997	1	2997	1	2997	1	2997	1
502	4008	1	3498	1	3498	1	2988	1	2988	1	2988	1	2988	1	2988	1	2988	1	2988	1	2988	1	2988	1
501	3999	1	3489	1	3489	1	2979	1	2979	1	2979	1	2979	1	2979	1	2979	1	2979	1	2979	1	2979	1
500	3990	1	3480	1	3480	1	2970	1	2970	1	2970	1	2970	1	2970	1	2970	1	2970	1	2970	1	2970	1
499	3981	1	3471	1	3471	1	2961	1	2961	1	2961	1	2961	1	2961	1	2961	1	2961	1	2961	1	2961	1
498	3972	1	3462	1	3462	1	2952	1	2952	1	2952	1	2952	1	2952	1	2952	1	2952	1	2952	1	2952	1
497	3963	1	3453	1	3453	1	2943	1	2943	1	2943	1	2943	1	2943	1	2943	1	2943	1	2943	1	2943	1
496	3954	1	3444	1	3444	1	2934	1	2934	1	2934	1	2934	1	2934	1	2934	1	2934	1	2934	1	2934	1
495	3945	1	3435	1	3435	1	2925	1	2925	1	2925	1	2925	1	2925	1	2925	1	2925	1	2925	1	2925	1
494	3936	1	3426	1	3426	1	2916	1	2916	1	2916	1	2916	1	2916	1	2916	1	2916	1	2916	1	2916	1
493	3927	1	3417	1	3417	1	2907	1	2907	1	2907	1	2907	1	2907	1	2907	1	2907	1	2907	1	2907	1
492	3918	1	3408	1	3408	1	2898	1	2898	1	2898	1	2898	1	2898	1	2898	1	2898	1	2898	1	2898	1
491	3909	1	3399	1	3399	1	2889	1	2889	1	2889	1	2889	1	2889	1	2889	1	2889	1	2889	1	2889	1
490	3900	1	3390	1	3390	1	2880	1	2880	1	2880	1	2880	1	2880	1	2880	1	2880	1	2880	1	2880	1
489	3891	1	3381	1	3381	1	2871	1	2871	1	2871	1	2871	1	2871	1	2871	1	2871	1	2871	1	2871	1
488	3882	1	3372	1	3372	1	2862	1	2862	1	2862	1	2862	1	2862	1	2862	1	2862	1	2862	1	2862	1
487	3873	1	3363	1	3363	1	2853	1	2853	1	2853	1	2853	1	2853	1	2853	1	2853	1	2853	1	2853	1
486	3864	1	3354	1	3354	1	2844	1	2844	1	2844	1	2844	1	2844	1	2844	1	2844	1	2844	1	2844	1
485	3855	1	3345	1	3345	1	2835	1	2835	1	2835	1	2835	1	2835	1	2835	1	2835	1	2835	1	2835	1
484	3846	1	3336	1	3336	1	2826	1	2826	1	2826	1	2826	1	2826	1	2826	1	2826	1	2826	1	2826	1
483	3837	1	3327	1	3327	1	2817	1	2817	1	2817	1	2817	1	2817	1	2817	1	2817	1	2817	1	2817	1
482	3828	1	3318	1	3318	1	2808	1	2808	1	2808	1	2808	1	2808	1	2808	1	2808	1	2808	1	2808	1
481	3819	1	3309	1	3309	1	2799	1	2799	1	2799	1	2799	1	2799	1	2799	1	2799	1	2799	1	2799	1
480	3810	1	3300	1	3300	1	2790	1	2790	1	2790	1	2790	1	2790	1	2790	1	2790	1	2790	1	2790	1
479	3801	1	3291	1	3291	1	2781	1	2781	1	2781	1	2781	1	2781	1	2781	1	2781	1	2781	1	2781	1
478	3792	1	3282	1	3282	1	2772	1	2772	1	2772	1	2772	1	2772	1	2772	1	2772	1	2772	1	2772	1
477	3783	1	3273	1	3273	1	2763	1	2763	1	2763	1	2763	1	2763	1	2763	1	2763	1	2763	1	2763	1
476	3774	1	3264	1	3264	1	2754	1	2754	1	2754	1	2754	1	2754	1	2754	1	2754	1	2754	1	2754	1
475	3765	1	3255	1	3255	1	2745	1	2745	1	2745	1	2745	1	2745	1	2745	1	2745	1	2745	1	2745	1
474	3756	1	3246	1	3246	1	2736	1	2736	1	2736	1	2736	1	2736	1	2736	1	2736	1	2736	1	2736	1
473	3747	1	3237	1	3237	1	2727	1	2727	1	2727	1	2727	1	2727	1	2727	1	2727	1	2727	1	2727	1
472	3738	1	3228	1	3228	1	2718	1	2718	1	2718	1	2718	1	2718	1	2718	1	2718	1	2718	1	2718	1
471	3729	1	3219	1	3219	1	2709	1	2709	1	2709	1	2709	1	2709	1	2709	1	2709	1	2709	1	2709	1
470	3720	1	3210	1	3210	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1
469	3711	1	3201	1	3201	1	2691	1	2691	1	2691	1	2691	1	2691	1	2691	1	2691	1	2691	1	2691	1
468	3702	1	3192	1	3192	1	2682	1	2682	1	2682	1	2682	1	2682	1	2682	1	2682	1	2682	1	2682	1
467	3693	1	3183	1	3183	1	2673	1	2673	1	2673	1	2673	1	2673	1	2673	1	2673	1	2673	1	2673	1
466	3684	1	3174	1	3174	1	2664	1	2664	1	2664	1	2664	1	2664	1	2664	1	2664	1	2664	1	2664	1
465	3675	1	3165	1	3165	1	2655	1	2655	1	2655	1	2655	1	2655	1	2655	1	2655	1	2655	1	2655	1
464	3666	1	3156	1	3156	1	2646	1	2646	1	2646	1	2646	1	2646	1	2646	1	2646	1	2646	1	2646	1
463	3657	1	3147	1	3147	1	2637	1	2637	1	2637	1	2637	1	2637	1	2637	1	2637	1	2637	1	2637	1
462	3648	1	3138	1	3138	1	2628	1	2628	1	2628	1	2628	1	2628	1	2628	1	2628	1	2628	1	2628	1
461	3639	1	3129	1	3129	1	2619	1	2619	1	2619	1	2619	1	2619	1	2619	1	2619	1	2619	1	2619	1

continued

$m = 9$																								
ν	8		7				6																	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
460	3630	1	3120	1	3120	1	2610	1	2610	1	2610	1	2610	1	2610	1	2610	1	2610	1	2610	1	2610	1
459	3621	1	3111	1	3111	1	2601	1	2601	1	2601	1	2601	1	2601	1	2601	1	2601	1	2601	1	2601	1
458	3612	1	3102	1	3102	1	2592	1	2592	1	2592	1	2592	1	2592	1	2592	1	2592	1	2592	1	2592	1
457	3603	1	3093	1	3093	1	2583	1	2583	1	2583	1	2583	1	2583	1	2583	1	2583	1	2583	1	2583	1
456	3594	1	3084	1	3084	1	2574	1	2574	1	2574	1	2574	1	2574	1	2574	1	2574	1	2574	1	2574	1
455	3585	1	3075	1	3075	1	2565	1	2565	1	2565	1	2565	1	2565	1	2565	1	2565	1	2565	1	2565	1
454	3576	1	3066	1	3066	1	2556	1	2556	1	2556	1	2556	1	2556	1	2556	1	2556	1	2556	1	2556	1
453	3567	1	3057	1	3057	1	2547	1	2547	1	2547	1	2547	1	2547	1	2547	1	2547	1	2547	1	2547	1
452	3558	1	3048	1	3048	1	2538	1	2538	1	2538	1	2538	1	2538	1	2538	1	2538	1	2538	1	2538	1
451	3549	1	3039	1	3039	1	2529	1	2529	1	2529	1	2529	1	2529	1	2529	1	2529	1	2529	1	2529	1
450	3540	1	3030	1	3030	1	2520	1	2520	1	2520	1	2520	1	2520	1	2520	1	2520	1	2520	1	2520	1
449	3531	1	3021	1	3021	1	2511	1	2511	1	2511	1	2511	1	2511	1	2511	1	2511	1	2511	1	2511	1
448	3522	1	3012	1	3012	1	2502	1	2502	1	2502	1	2502	1	2502	1	2502	1	2502	1	2502	1	2502	1
447	3513	1	3003	1	3003	1	2499	0	2499	0	2499	0	2499	0	2499	0	2499	0	2499	0	2499	0	2499	0
446	3504	1	2994	1	2994	1	2493	1	2493	1	2493	1	2493	1	2493	1	2493	1	2493	1	2493	1	2493	1
445	3495	1	2985	1	2985	1	2484	1	2484	1	2484	1	2484	1	2484	1	2484	1	2484	1	2484	1	2484	1
444	3486	1	2976	1	2976	1	2475	1	2475	1	2475	1	2475	1	2475	1	2475	1	2475	1	2475	1	2475	1
443	3477	1	2967	1	2967	1	2466	1	2466	1	2466	1	2466	1	2466	1	2466	1	2466	1	2466	1	2466	1
442	3468	1	2958	1	2958	1	2457	1	2457	1	2457	1	2457	1	2457	1	2457	1	2457	1	2457	1	2457	1
441	3459	1	2949	1	2949	1	2448	1	2448	1	2448	1	2448	1	2448	1	2448	1	2448	1	2448	1	2448	1
440	3450	1	2940	1	2940	1	2439	1	2439	1	2439	1	2439	1	2439	1	2439	1	2439	1	2439	1	2439	1
439	3441	1	2931	1	2931	1	2430	1	2430	1	2430	1	2430	1	2430	1	2430	1	2430	1	2430	1	2436★	0
438	3432	1	2922	1	2922	1	2421	1	2421	1	2421	1	2421	1	2421	1	2421	1	2421	1	2421	1	2430★	0
437	3423	1	2913	1	2914★	147	2412	1	2412	1	2412	1	2412	1	2412	1	2412	1	2412	1	2412	1	2424★	1
436	3414	1	2904	1	2905★	147	2403	1	2403	1	2403	1	2403	1	2403	1	2403	1	2403	1	2403	1	2415★	1
435	3405	1	2895	1	2896★	147	2394	1	2394	1	2394	1	2394	1	2394	1	2394	1	2394	1	2394	1	2406★	1
434	3396	1	2886	1	2887★	147	2385	1	2385	1	2385	1	2385	1	2385	1	2385	1	2385	1	2385	1	2397★	1
433	3387	1	2877	1	2878★	147	2376	1	2376	1	2376	1	2376	1	2376	1	2376	1	2376	1	2376	1	2388★	1
432	3378	1	2868	1	2869★	147	2367	1	2367	1	2367	1	2367	1	2367	1	2367	1	2367	1	2367	1	2379★	1
431	3369	1	2859	1	2860★	147	2358	1	2358	1	2358	1	2358	1	2358	1	2358	1	2358	1	2358	1	2370★	1
430	3360	1	2850	1	2851★	147	2349	1	2349	1	2349	1	2349	1	2349	1	2349	1	2349	1	2349	1	2361★	1
429	3351	1	2841	1	2842★	147	2340	1	2340	1	2340	1	2340	1	2340	1	2340	1	2340	1	2340	1	2352★	1
428	3342	1	2832	1	2833★	147	2331	1	2331	1	2331	1	2331	1	2331	1	2331	1	2331	1	2331	1	2343★	1
427	3333	1	2823	1	2824★	147	2322	1	2322	1	2322	1	2322	1	2322	1	2322	1	2322	1	2322	1	2334★	1
426	3324	1	2814	1	2815★	147	2313	1	2313	1	2313	1	2313	1	2313	1	2313	1	2313	1	2313	1	2325★	1
425	3315	1	2805	1	2806★	147	2304	1	2304	1	2304	1	2304	1	2304	1	2304	1	2304	1	2304	1	2316★	1
424	3306	1	2796	1	2797★	147	2295	1	2295	1	2295	1	2295	1	2295	1	2295	1	2295	1	2295	1	2307★	1
423	3297	1	2787	1	2788★	147	2286	1	2286	1	2286	1	2286	1	2286	1	2286	1	2286	1	2286	1	2298★	1
422	3288	1	2778	1	2779★	147	2277	1	2277	1	2277	1	2277	1	2277	1	2277	1	2277	1	2277	1	2289★	1
421	3279	1	2769	1	2770★	147	2268	1	2268	1	2268	1	2268	1	2268	1	2268	1	2268	1	2268	1	2280★	1
420	3270	1	2760	1	2761★	147	2259	1	2259	1	2259	1	2259	1	2259	1	2259	1	2259	1	2259	1	2271★	1
419	3261	1	2751	1	2752★	147	2250	1	2250	1	2250	1	2250	1	2250	1	2250	1	2250	1	2250	1	2262★	1
418	3252	1	2742	1	2743★	147	2241	1	2241	1	2241	1	2241	1	2241	1	2241	1	2241	1	2241	1	2253★	1
417	3243	1	2733	1	2734★	147	2232	1	2232	1	2232	1	2232	1	2232	1	2232	1	2232	1	2232	1	2244★	1
416	3234	1	2724	1	2725★	147	2223	1	2223	1	2223	1	2223	1	2223	1	2223	1	2223	1	2223	1	2235★	1
415	3225	1	2715	1	2716★	147	2214	1	2214	1	2214	1	2214	1	2214	1	2214	1	2214	1	2214	1	2226★	1
414	3216	1	2706	1	2707★	147	2205	1	2205	1	2205	1	2205	1	2205	1	2205	1	2205	1	2205	1	2217★	1
413	3207	1	2697	1	2698★	147	2196	1	2196	1	2196	1	2196	1	2196	1	2196	1	2196	1	2196	1	2208★	1
412	3198	1	2688	1	2689★	147	2187	1	2187	1	2187	1	2187	1	2187	1	2187	1	2187	1	2187	1	2199★	1
411	3189	1	2679	1	2680★	147	2178	1	2178	1	2178	1	2178	1	2178	1	2178	1	2178	1	2178	1	2190★	1
410	3180	1	2670	1	2671★	147	2169	1	2169	1	2169	1	2169	1	2169	1	2169	1	2169	1	2169	1	2181★	1

continued

$m = 9$																								
ν	8		7				6																	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
409	3171	1	2661	1	2662⋆	147	2160	1	2160	1	2160	1	2160	1	2160	1	2160	1	2160	1	2160	1	2172⋆	1
408	3162	1	2652	1	2653⋆	147	2151	1	2151	1	2151	1	2151	1	2151	1	2151	1	2151	1	2151	1	2163⋆	1
407	3153	1	2643	1	2644⋆	147	2142	1	2142	1	2142	1	2142	1	2142	1	2142	1	2142	1	2142	1	2154⋆	1
406	3144	1	2634	1	2635⋆	147	2133	1	2133	1	2133	1	2133	1	2133	1	2133	1	2133	1	2133	1	2145⋆	1
405	3135	1	2625	1	2626⋆	147	2124	1	2124	1	2124	1	2124	1	2124	1	2124	1	2124	1	2124	1	2136⋆	1
404	3126	1	2616	1	2617⋆	147	2115	1	2115	1	2115	1	2115	1	2115	1	2115	1	2115	1	2115	1	2127⋆	1
403	3117	1	2607	1	2608⋆	147	2106	1	2106	1	2106	1	2106	1	2106	1	2106	1	2106	1	2106	1	2118⋆	1
402	3108	1	2598	1	2599⋆	147	2097	1	2097	1	2097	1	2097	1	2097	1	2097	1	2097	1	2097	1	2109⋆	1
401	3099	1	2589	1	2590⋆	147	2088	1	2088	1	2088	1	2088	1	2088	1	2088	1	2088	1	2088	1	2100⋆	1
400	3090	1	2580	1	2581⋆	147	2079	1	2079	1	2079	1	2079	1	2079	1	2079	1	2079	1	2079	1	2091⋆	1
399	3081	1	2571	1	2572⋆	147	2070	1	2070	1	2070	1	2070	1	2070	1	2070	1	2070	1	2070	1	2082⋆	1
398	3072	1	2562	1	2563⋆	147	2061	1	2061	1	2061	1	2061	1	2061	1	2061	1	2061	1	2061	1	2073⋆	1
397	3063	1	2553	1	2554⋆	147	2052	1	2052	1	2052	1	2052	1	2052	1	2052	1	2052	1	2052	1	2064⋆	1
396	3054	1	2544	1	2545⋆	147	2043	1	2043	1	2043	1	2043	1	2043	1	2043	1	2043	1	2043	1	2055⋆	1
395	3045	1	2535	1	2536⋆	147	2034	1	2034	1	2034	1	2034	1	2034	1	2034	1	2034	1	2034	1	2046⋆	1
394	3036	1	2526	1	2527⋆	147	2025	1	2025	1	2025	1	2025	1	2025	1	2025	1	2025	1	2025	1	2037⋆	1
393	3027	1	2517	1	2518⋆	147	2016	1	2016	1	2016	1	2016	1	2016	1	2016	1	2016	1	2016	1	2028⋆	1
392	3018	1	2508	1	2509⋆	147	2007	1	2007	1	2007	1	2007	1	2007	1	2007	1	2007	1	2007	1	2019⋆	1
391	3009	1	2499	1	2500⋆	147	1998	1	1998	1	1998	1	1998	1	1998	1	1998	1	1998	1	1998	1	2010⋆	1
390	3000	1	2490	1	2491⋆	147	1989	1	1989	1	1989	1	1989	1	1989	1	1989	1	1989	1	1989	1	2001⋆	1
389	2991	1	2481	1	2482⋆	147	1980	1	1980	1	1980	1	1980	1	1980	1	1980	1	1980	1	1980	1	1992⋆	1
388	2982	1	2472	1	2473⋆	147	1971	1	1971	1	1971	1	1971	1	1971	1	1971	1	1971	1	1971	1	1983⋆	1
387	2973	1	2463	1	2464⋆	147	1962	1	1962	1	1962	1	1962	1	1962	1	1962	1	1962	1	1962	1	1974⋆	1
386	2964	1	2454	1	2455⋆	147	1953	1	1953	1	1953	1	1953	1	1953	1	1953	1	1953	1	1953	1	1965⋆	1
385	2955	1	2445	1	2446⋆	147	1944	1	1944	1	1944	1	1944	1	1944	1	1944	1	1944	1	1944	1	1956⋆	1
384	2946	1	2436	1	2437⋆	147	1935	1	1935	1	1935	1	1935	1	1935	1	1935	1	1935	1	1935	1	1947⋆	1
383	2937	1	2434	0	2434	0	1932	0	1932	0	1932	0	1932	0	1932	0	1932	0	1932	0	1932	0	1944⋆	0
382	2928	1	2427	1	2427	1	1926	1	1926	1	1926	1	1926	1	1926	1	1932†	0	1926	1	1926	1	1944⋆	0
381	2919	1	2418	1	2418	1	1917	1	1917	1	1917	1	1917	1	1917	1	1926†	1	1917	1	1923†	0	1938⋆	1
380	2910	1	2409	1	2409	1	1908	1	1908	1	1908	1	1908	1	1908	1	1917†	1	1908	1	1917†	1	1929⋆	1
379	2901	1	2400	1	2400	1	1899	1	1899	1	1899	1	1899	1	1899	1	1908†	1	1899	1	1908†	1	1920⋆	1
378	2892	1	2391	1	2391	1	1890	1	1890	1	1890	1	1890	1	1890	1	1899†	1	1890	1	1899†	1	1911⋆	1
377	2883	1	2382	1	2382	1	1881	1	1881	1	1881	1	1881	1	1881	1	1890†	1	1881	1	1890†	1	1902⋆	1
376	2874	1	2373	1	2373	1	1872	1	1872	1	1872	1	1872	1	1872	1	1881†	1	1872	1	1881†	1	1893⋆	1
375	2865	1	2364	1	2364	1	1869	0	1869	0	1869	0	1869	0	1869	0	1878†	0	1869	0	1878†	0	1890⋆	0
374	2856	1	2355	1	2355	1	1863	1	1863	1	1863	1	1863	1	1863	1	1872†	1	1863	1	1872†	1	1890⋆	0
373	2847	1	2346	1	2347⋆	147	1854	1	1854	1	1854	1	1854	1	1854	1	1863†	1	1854	1	1863†	1	1884⋆	1
372	2838	1	2337	1	2338⋆	147	1845	1	1845	1	1845	1	1845	1	1845	1	1854†	1	1845	1	1854†	1	1875⋆	1
371	2829	1	2328	1	2329⋆	147	1836	1	1836	1	1836	1	1836	1	1836	1	1845†	1	1836	1	1845†	1	1866⋆	1
370	2820	1	2319	1	2320⋆	147	1827	1	1827	1	1827	1	1827	1	1827	1	1836†	1	1827	1	1836†	1	1857⋆	1
369	2811	1	2310	1	2311⋆	147	1818	1	1818	1	1818	1	1818	1	1818	1	1827†	1	1818	1	1827†	1	1848⋆	1
368	2802	1	2301	1	2302⋆	147	1809	1	1809	1	1809	1	1809	1	1809	1	1818†	1	1809	1	1818†	1	1839⋆	1
367	2793	1	2292	1	2299⋆	0	1806	0	1806	0	1806	0	1806	0	1806	0	1815†	0	1806	0	1809†	1	1836⋆	0
366	2784	1	2283	1	2292⋆	1	1800	1	1800	1	1800	1	1800	1	1800	1	1809†	1	1800	1	1800	1	1836⋆	0
365	2775	1	2274	1	2284⋆	0	1791	1	1791	1	1791	0	1791	1	1791	1	1800†	1	1791	1	1791	1	1830⋆	0
364	2766	1	2265	1	2277⋆	1	1782	1	1782	1	1785†	1	1782	1	1782	1	1791†	1	1782	1	1782	1	1824⋆	1
363	2757	1	2256	1	2268⋆	1	1773	1	1773	1	1776†	1	1773	1	1773	1	1782†	1	1773	1	1773	1	1815⋆	1
362	2748	1	2247	1	2259⋆	1	1764	1	1764	1	1767†	1	1764	1	1764	1	1773†	1	1764	1	1764	1	1806⋆	1
361	2739	1	2238	1	2250⋆	1	1755	1	1755	1	1758†	1	1755	1	1755	1	1764†	1	1755	1	1755	1	1797⋆	1
360	2730	1	2229	1	2241⋆	1	1746	1	1746	1	1749†	1	1746	1	1746	1	1755†	1	1746	1	1746	1	1788⋆	1
359	2721	1	2220	1	2232⋆	1	1737	1	1737	1	1740†	1	1737	1	1737	1	1746†	1	1737	1	1737	1	1779⋆	1

continued

$m=9$																								
ν	8		7				6																	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
358	2712	1	2211	1	2223⋆	1	1728	1	1728	1	1731†	1	1728	1	1728	1	1737†	1	1728	1	1728	1	1770⋆	1
357	2703	1	2202	1	2214⋆	1	1719	1	1719	1	1722†	1	1719	1	1719	1	1728†	1	1719	1	1719	1	1761⋆	1
356	2694	1	2193	1	2205⋆	1	1710	1	1710	1	1713†	1	1710	1	1710	1	1719†	1	1710	1	1710	1	1752⋆	1
355	2685	1	2184	1	2196⋆	1	1701	1	1701	1	1704†	1	1701	1	1701	1	1710†	1	1701	1	1701	1	1743⋆	1
354	2676	1	2175	1	2187⋆	1	1692	1	1692	1	1695†	1	1692	1	1692	1	1701†	1	1692	1	1692	1	1734⋆	1
353	2667	1	2166	1	2178⋆	1	1683	1	1683	1	1686†	1	1683	1	1683	1	1692†	1	1683	1	1683	1	1725⋆	1
352	2658	1	2157	1	2169⋆	1	1674	1	1674	1	1677†	1	1674	1	1674	1	1683†	1	1674	1	1674	1	1716⋆	1
351	2649	1	2148	1	2160⋆	1	1671	0	1671	0	1674†	0	1671	0	1671	0	1674†	1	1671	0	1671	0	1707⋆	1
350	2640	1	2139	1	2151⋆	1	1665	1	1665	1	1668†	1	1665	1	1665	1	1665	1	1665	1	1665	1	1698⋆	1
349	2631	1	2130	1	2142⋆	1	1656	1	1656	1	1659†	1	1656	1	1662†	0	1656	1	1656	1	1656	1	1689⋆	1
348	2622	1	2121	1	2133⋆	1	1647	1	1647	1	1650†	1	1647	1	1656†	1	1647	1	1647	1	1647	1	1680⋆	1
347	2613	1	2112	1	2124⋆	1	1638	1	1644†	0	1641†	1	1638	1	1647†	1	1638	1	1638	1	1638	1	1671⋆	1
346	2604	1	2103	1	2115⋆	1	1629	1	1638†	1	1632†	1	1629	1	1638†	1	1629	1	1629	1	1629	1	1662⋆	1
345	2595	1	2094	1	2106⋆	1	1620	1	1629†	1	1623†	1	1620	1	1629†	1	1620	1	1620	1	1620	1	1653⋆	1
344	2586	1	2085	1	2097⋆	1	1611	1	1620†	1	1614†	1	1611	1	1620†	1	1611	1	1611	1	1611	1	1644⋆	1
343	2577	1	2076	1	2088⋆	1	1602	1	1611†	1	1605†	1	1602	1	1611†	1	1602	1	1602	1	1602	1	1635⋆	1
342	2568	1	2067	1	2079⋆	1	1593	1	1602†	1	1596†	1	1593	1	1602†	1	1593	1	1593	1	1593	1	1626⋆	1
341	2559	1	2058	1	2070⋆	1	1584	1	1593†	1	1587†	1	1584	1	1593†	1	1584	1	1584	1	1584	1	1617⋆	1
340	2550	1	2049	1	2061⋆	1	1575	1	1584†	1	1578†	1	1575	1	1584†	1	1575	1	1575	1	1575	1	1608⋆	1
339	2541	1	2040	1	2052⋆	1	1566	1	1575†	1	1569†	1	1566	1	1575†	1	1566	1	1566	1	1566	1	1599⋆	1
338	2532	1	2031	1	2043⋆	1	1557	1	1566†	1	1560†	1	1557	1	1566†	1	1557	1	1557	1	1557	1	1590⋆	1
337	2523	1	2022	1	2034⋆	1	1548	1	1557†	1	1551†	1	1548	1	1557†	1	1548	1	1548	1	1548	1	1581⋆	1
336	2514	1	2013	1	2025⋆	1	1539	1	1548†	1	1542†	1	1539	1	1548†	1	1539	1	1539	1	1539	1	1572⋆	1
335	2505	1	2004	1	2016⋆	1	1530	1	1539†	1	1533†	1	1530	1	1539†	1	1530	1	1530	1	1530	1	1563⋆	1
334	2496	1	1995	1	2007⋆	1	1521	1	1530†	1	1524†	1	1521	1	1530†	1	1521	1	1521	1	1521	1	1554⋆	1
333	2487	1	1986	1	1998⋆	1	1512	1	1521†	1	1515†	1	1512	1	1521†	1	1512	1	1512	1	1512	1	1545⋆	1
332	2478	1	1977	1	1989⋆	1	1503	1	1512†	1	1506†	1	1503	1	1512†	1	1503	1	1503	1	1503	1	1536⋆	1
331	2469	1	1968	1	1980⋆	1	1494	1	1503†	1	1497†	1	1494	1	1503†	1	1494	1	1494	1	1494	1	1527⋆	1
330	2460	1	1959	1	1971⋆	1	1485	1	1494†	1	1488†	1	1485	1	1494†	1	1485	1	1485	1	1485	1	1518⋆	1
329	2451	1	1950	1	1962⋆	1	1476	1	1485†	1	1479†	1	1476	1	1485†	1	1476	1	1476	1	1476	1	1509⋆	1
328	2442	1	1941	1	1953⋆	1	1467	1	1476†	1	1470†	1	1467	1	1476†	1	1467	1	1467	1	1467	1	1500⋆	1
327	2433	1	1932	1	1944⋆	1	1458	1	1467†	1	1461†	1	1458	1	1467†	1	1458	1	1458	1	1458	1	1491⋆	1
326	2424	1	1923	1	1935⋆	1	1449	1	1458†	1	1452†	1	1449	1	1458†	1	1449	1	1449	1	1449	1	1482⋆	1
325	2415	1	1914	1	1926⋆	1	1440	1	1449†	1	1443†	1	1440	1	1449†	1	1440	1	1440	1	1440	1	1473⋆	1
324	2406	1	1905	1	1917⋆	1	1431	1	1440†	1	1434†	1	1431	1	1440†	1	1431	1	1431	1	1431	1	1464⋆	1
323	2397	1	1896	1	1908⋆	1	1422	1	1431†	1	1425†	1	1422	1	1431†	1	1422	1	1422	1	1422	1	1455⋆	1
322	2388	1	1887	1	1899⋆	1	1413	1	1422†	1	1416†	1	1413	1	1422†	1	1413	1	1413	1	1413	1	1446⋆	1
321	2379	1	1878	1	1890⋆	1	1404	1	1413†	1	1407†	1	1404	1	1413†	1	1404	1	1404	1	1404	1	1437⋆	1
320	2370	1	1869	1	1881⋆	1	1395	1	1404†	1	1398†	1	1395	1	1404†	1	1395	1	1395	1	1395	1	1428⋆	1
319	2361	1	1860	1	1872⋆	1	1392	0	1401†	0	1395†	0	1392	0	1401†	0	1392	0	1392	0	1392	0	1425⋆	0
318	2352	1	1851	1	1863⋆	1	1386	1	1395†	1	1389†	1	1386	1	1395†	1	1386	1	1392†	0	1386	1	1425⋆	0
317	2343	1	1842	1	1854⋆	1	1377	1	1386†	1	1380†	1	1383†	0	1386†	1	1377	1	1386†	1	1377	1	1425⋆	0
316	2334	1	1833	1	1845⋆	1	1368	1	1377†	1	1371†	1	1377†	1	1377†	1	1368	1	1377†	1	1368	1	1419⋆	1
315	2325	1	1824	1	1836⋆	1	1359	1	1368†	1	1362†	1	1368†	1	1368†	1	1359	1	1368†	1	1359	1	1410⋆	1
314	2316	1	1815	1	1827⋆	1	1350	1	1359†	1	1353†	1	1359†	1	1359†	1	1350	1	1359†	1	1350	1	1401⋆	1
313	2307	1	1806	1	1818⋆	1	1341	1	1350†	1	1344†	1	1350†	1	1350†	1	1341	1	1350†	1	1341	1	1392⋆	1
312	2298	1	1797	1	1809⋆	1	1332	1	1341†	1	1335†	1	1341†	1	1341†	1	1332	1	1341†	1	1332	1	1383⋆	1
311	2289	1	1788	1	1800⋆	1	1323	1	1332†	1	1326†	1	1332†	1	1332†	1	1323	1	1332†	1	1329†	0	1380⋆	0
310	2280	1	1779	1	1791⋆	1	1314	1	1323†	1	1317†	1	1323†	1	1323†	1	1314	1	1323†	1	1323†	1	1380⋆	0
309	2271	1	1770	1	1782⋆	1	1305	1	1314†	1	1308†	1	1314†	1	1314†	1	1305	1	1314†	1	1314†	1	1380⋆	0
308	2262	1	1761	1	1773⋆	1	1296	1	1305†	1	1299†	1	1305†	1	1305†	1	1296	1	1305†	1	1305†	1	1374⋆	1

continued

$m=9$																								
ν	8		7				6																	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
307	2253	1	1752	1	1764⋆	1	1287	1	1296†	1	1290†	1	1296†	1	1296†	1	1287	1	1296†	1	1296†	1	1365⋆	1
306	2244	1	1743	1	1755⋆	1	1278	1	1287†	1	1281†	1	1287†	1	1287†	1	1278	1	1287†	1	1287†	1	1356⋆	1
305	2235	1	1734	1	1746⋆	1	1269	1	1278†	1	1272†	1	1278†	1	1278†	1	1269	1	1278†	1	1278†	1	1347⋆	1
304	2226	1	1725	1	1737⋆	1	1260	1	1269†	1	1263†	1	1269†	1	1269†	1	1260	1	1269†	1	1269†	1	1338⋆	1
303	2217	1	1716	1	1728⋆	1	1251	1	1260†	1	1254†	1	1260†	1	1260†	1	1257†	0	1260†	1	1260†	1	1335⋆	0
302	2208	1	1707	1	1719⋆	1	1242	1	1251†	1	1245†	1	1251†	1	1251†	1	1251†	1	1251†	1	1251†	1	1335⋆	0
301	2199	1	1698	1	1710⋆	1	1233	1	1242†	1	1236†	1	1242†	1	1242†	1	1242†	1	1242†	1	1242†	1	1335⋆	0
300	2190	1	1689	1	1701⋆	1	1224	1	1233†	1	1227†	1	1233†	1	1233†	1	1233†	1	1233†	1	1233†	1	1329⋆	1
299	2181	1	1680	1	1692⋆	1	1215	1	1224†	1	1218†	1	1224†	1	1224†	1	1224†	1	1224†	1	1224†	1	1320⋆	1
298	2172	1	1671	1	1683⋆	1	1206	1	1215†	1	1209†	1	1215†	1	1215†	1	1215†	1	1215†	1	1215†	1	1311⋆	1
297	2163	1	1669	363	1674⋆	1	1197	1	1206†	1	1200†	1	1206†	1	1206†	1	1206†	1	1206†	1	1206†	1	1302⋆	1
296	2154	1	1660	363	1665⋆	1	1188	1	1197†	1	1191†	1	1197†	1	1197†	1	1197†	1	1197†	1	1197†	1	1293⋆	1
295	2145	1	1651	363	1656⋆	1	1179	1	1188†	1	1182†	1	1188†	1	1188†	1	1188†	1	1188†	1	1188†	1	1290⋆	0
294	2136	1	1642	363	1647⋆	1	1170	1	1179†	1	1173†	1	1179†	1	1179†	1	1179†	1	1179†	1	1179†	1	1290⋆	0
293	2127	1	1633	363	1638⋆	1	1161	1	1170†	1	1164†	1	1170†	1	1170†	1	1170†	1	1170†	1	1170†	1	1290⋆	0
292	2118	1	1624	363	1629⋆	1	1152	1	1161†	1	1155†	1	1161†	1	1161†	1	1161†	1	1161†	1	1161†	1	1284⋆	0
291	2111	293	1615	363	1621⋆	293	1143	1	1152†	1	1146†	1	1152†	1	1152†	1	1152†	1	1152†	1	1152†	1	1278⋆	1
290	2102	293	1606	363	1612⋆	293	1134	1	1143†	1	1137†	1	1143†	1	1143†	1	1143†	1	1143†	1	1143†	1	1269⋆	1
289	2093	293	1597	363	1603⋆	293	1125	1	1134†	1	1128†	1	1134†	1	1134†	1	1134†	1	1134†	1	1134†	1	1260⋆	1
288	2084	293	1588	363	1594⋆	293	1116	1	1125†	1	1119†	1	1125†	1	1125†	1	1125†	1	1125†	1	1125†	1	1251⋆	1
287	2075	293	1579	363	1585⋆	293	1107	1	1116†	1	1110†	1	1116†	1	1116†	1	1116†	1	1116†	1	1116†	1	1242⋆	1
286	2066	293	1570	363	1576⋆	293	1098	1	1107†	1	1101†	1	1107†	1	1107†	1	1107†	1	1107†	1	1107†	1	1233⋆	1
285	2057	293	1561	363	1567⋆	293	1089	1	1098†	1	1092†	1	1098†	1	1098†	1	1098†	1	1098†	1	1098†	1	1224⋆	1
284	2048	293	1552	363	1558⋆	293	1080	1	1089†	1	1083†	1	1089†	1	1089†	1	1089†	1	1089†	1	1089†	1	1215⋆	1
283	2039	293	1543	363	1549⋆	293	1071	1	1080†	1	1074†	1	1080†	1	1080†	1	1080†	1	1080†	1	1080†	1	1206⋆	1
282	2030	293	1534	363	1540⋆	293	1062	1	1071†	1	1065†	1	1071†	1	1071†	1	1071†	1	1071†	1	1071†	1	1197⋆	1
281	2021	293	1525	363	1531⋆	293	1053	1	1062†	1	1056†	1	1062†	1	1062†	1	1062†	1	1062†	1	1062†	1	1188⋆	1
280	2012	293	1516	363	1522⋆	293	1044	1	1053†	1	1047†	1	1053†	1	1053†	1	1053†	1	1053†	1	1053†	1	1179⋆	1
279	2003	293	1507	363	1513⋆	293	1035	1	1044†	1	1038†	1	1044†	1	1044†	1	1044†	1	1044†	1	1044†	1	1170⋆	1
278	1994	293	1498	363	1504⋆	293	1026	1	1035†	1	1029†	1	1035†	1	1035†	1	1035†	1	1035†	1	1035†	1	1161⋆	1
277	1985	293	1489	363	1495⋆	293	1017	1	1026†	1	1020†	1	1026†	1	1026†	1	1026†	1	1026†	1	1026†	1	1152⋆	1
276	1976	293	1480	363	1486⋆	293	1008	1	1017†	1	1011†	1	1017†	1	1017†	1	1017†	1	1017†	1	1017†	1	1143⋆	1
275	1967	293	1471	363	1477⋆	293	999	1	1008†	1	1002†	1	1008†	1	1008†	1	1008†	1	1008†	1	1008†	1	1134⋆	1
274	1958	293	1462	363	1468⋆	293	990	1	999†	1	993†	1	999†	1	999†	1	999†	1	999†	1	999†	1	1125⋆	1
273	1949	293	1453	363	1459⋆	293	981	1	990†	1	984†	1	990†	1	990†	1	990†	1	990†	1	990†	1	1116⋆	1
272	1940	293	1444	363	1450⋆	293	972	1	981†	1	975†	1	981†	1	981†	1	981†	1	981†	1	981†	1	1107⋆	1
271	1931	293	1435	363	1441⋆	293	963	1	972†	1	966†	1	972†	1	972†	1	972†	1	972†	1	972†	1	1098⋆	1
270	1922	293	1426	363	1432⋆	293	954	1	963†	1	957†	1	963†	1	963†	1	963†	1	963†	1	963†	1	1089⋆	1
269	1913	293	1417	363	1423⋆	293	945	1	954†	1	948†	1	954†	1	954†	1	954†	1	954†	1	954†	1	1080⋆	1
268	1904	293	1408	363	1414⋆	293	936	1	945†	1	939†	1	945†	1	945†	1	945†	1	945†	1	945†	1	1071⋆	1
267	1895	293	1399	363	1405⋆	293	927	1	936†	1	930†	1	936†	1	936†	1	936†	1	936†	1	936†	1	1062⋆	1
266	1886	293	1390	363	1396⋆	293	918	1	927†	1	921†	1	927†	1	927†	1	927†	1	927†	1	927†	1	1053⋆	1
265	1877	293	1381	363	1387⋆	293	915	347	918†	1	918†	347	924†	347	924†	347	924†	347	918†	1	924†	347	1044⋆	1
264	1868	293	1372	363	1378⋆	293	906	347	909†	1	909†	347	915†	347	915†	347	915†	347	909†	1	915†	347	1035⋆	1
263	1859	293	1363	281	1375⋆	281	897	347	906†	347	900†	347	906†	347	906†	347	906†	347	900†	1	906†	347	1026⋆	1
262	1850	293	1354	281	1366⋆	281	888	347	897†	347	891†	347	897†	347	897†	347	897†	347	891†	1	897†	347	1017⋆	1
261	1841	293	1345	281	1357⋆	281	879	347	888†	347	882†	347	888†	347	888†	347	888†	347	882†	1	888†	347	1008⋆	1
260	1832	293	1336	281	1348⋆	281	870	347	879†	347	873†	347	879†	347	879†	347	879†	347	873†	1	879†	347	999⋆	1
259	1823	293	1327	281	1339⋆	281	861	301	870†	301	864†	347	870†	301	870†	309	870†	301	870†	309	870†	301	990⋆	1
258	1814	293	1318	281	1330⋆	281	855	125	861†	301	855	125	861†	301	861†	309	861†	301	864†	125	861†	301	981⋆	1
257	1805	293	1309	281	1321⋆	281	846	125	852†	301	846	125	852†	301	852†	309	855†	125	855†	125	852†	301	972⋆	1

continued

$m=9$																								
ν	8		7				6																	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
256	1796	293	1300	281	1312⋆	281	846	127	846	127	846	127	846	127	846	127	846	125	846	125	846	125	963⋆	1
255	1793	0	1291	0	1303⋆	0	846	128	846	128	846	128	846	128	846	128	846	127	846	128	846	128	960⋆	0
254	1785	1	1291	0	1303⋆	0	846	129	846	129	846	129	846	129	846	129	846	128	846	129	846	129	960⋆	0
253	1776	1	1291	0	1303⋆	0	837	129	837	129	837	129	837	129	837	129	846†	129	837	129	837	128	960⋆	0
252	1767	1	1284	1	1296⋆	1	828	129	834†	0	828	0	834†	0	834†	0	846†	130	834†	0	837†	129	960⋆	0
251	1758	1	1282	0	1287⋆	1	825	0	834†	0	828†	0	834†	0	834†	0	837†	130	834†	0	834†	0	954⋆	1
250	1749	1	1275	1	1278⋆	1	825	0	834†	0	828†	0	834†	0	834†	0	834†	0	828†	1	834†	0	945⋆	1
249	1740	1	1266	1	1269⋆	1	825	0	834†	0	828†	0	834†	0	834†	0	828†	1	825	0	834†	0	936⋆	1
248	1731	1	1257	1	1260⋆	1	819	1	828†	1	822†	1	828†	1	828†	1	819	1	819	1	828†	1	927⋆	1
247	1722	1	1255	0	1258⋆	0	816	0	825†	0	819†	0	825†	0	825†	0	816	0	816	0	825†	0	924⋆	0
246	1713	1	1248	1	1258⋆	0	816	0	825†	0	819†	0	819†	1	825†	0	816	0	816	0	825†	0	924⋆	0
245	1704	1	1239	1	1251⋆	1	816	0	825†	0	819†	0	816	0	825†	0	816	0	816	0	825†	0	924⋆	0
244	1695	1	1230	1	1242⋆	1	810	1	819†	1	813†	1	810	1	819†	1	810	1	816†	0	819†	1	924⋆	0
243	1688	341	1221	1	1234⋆	341	807	0	816†	0	810†	0	807	0	816†	0	807	0	816†	0	810†	1	918⋆	1
242	1679	341	1212	1	1225⋆	341	801	1	810†	1	804†	1	801	1	810†	1	807†	0	810†	1	801	1	909⋆	1
241	1670	341	1203	1	1216⋆	341	792	1	801†	1	795†	1	792	1	801†	1	801†	1	801†	1	792	1	900⋆	1
240	1661	341	1194	1	1207⋆	341	783	1	792†	1	786†	1	783	1	792†	1	792†	1	792†	1	783	1	891⋆	1
239	1658	0	1192	0	1204⋆	0	780	0	789†	0	783†	0	780	0	789†	0	789†	0	789†	0	780	0	888⋆	0
238	1650	1	1185	1	1197⋆	1	780	0	789†	0	783†	0	780	0	789†	0	789†	0	789†	0	780	0	888⋆	0
237	1641	1	1176	1	1195⋆	0	780	0	789†	0	783†	0	780	0	783†	1	789†	0	789†	0	780	0	888⋆	0
236	1632	1	1167	1	1188⋆	1	774	1	783†	1	777†	1	780†	0	774	1	783†	1	783†	1	774	1	888⋆	0
235	1623	1	1158	1	1179⋆	1	771	0	774†	1	774†	0	780†	0	771	0	780†	0	780†	0	771	0	882⋆	1
234	1614	1	1149	1	1170⋆	1	765	1	765	1	768†	1	774†	1	765	1	774†	1	774†	1	765	1	873⋆	1
233	1605	1	1140	1	1161⋆	1	756	1	756	1	759†	1	765†	1	756	1	765†	1	771†	0	756	1	864⋆	1
232	1596	1	1131	1	1152⋆	1	747	1	747	1	750†	1	756†	1	747	1	756†	1	765†	1	747	1	855⋆	1
231	1587	1	1129	0	1150⋆	0	744	0	744	0	747†	0	753†	0	744	0	753†	0	762†	0	744	0	852⋆	0
230	1578	1	1122	1	1143⋆	1	738	1	738	1	741†	1	747†	1	738	1	747†	1	756†	1	744†	0	852⋆	0
229	1569	1	1113	1	1134⋆	1	729	1	729	1	732†	1	738†	1	729	1	744†	0	747†	1	738†	1	852⋆	0
228	1560	1	1104	1	1125⋆	1	720	1	720	1	723†	1	729†	1	720	1	738†	1	738†	1	729†	1	852⋆	0
227	1553	293	1095	1	1117⋆	293	711	1	711	1	714†	1	720†	1	711	1	729†	1	729†	1	720†	1	846⋆	1
226	1544	293	1086	1	1108⋆	293	702	1	702	1	705†	1	711†	1	702	1	720†	1	720†	1	711†	1	837⋆	1
225	1535	293	1077	1	1099⋆	293	693	1	693	1	696†	1	702†	1	693	1	711†	1	711†	1	702†	1	828⋆	1
224	1526	293	1068	1	1090⋆	293	684	1	684	1	687†	1	693†	1	684	1	702†	1	702†	1	693†	1	819⋆	1
223	1523	0	1066	0	1087⋆	0	681	0	681	0	684†	0	690†	0	681	0	699†	0	699†	0	690†	0	816⋆	0
222	1515	1	1066	0	1087⋆	0	681	0	681	0	684†	0	690†	0	681	0	699†	0	699†	0	690†	0	816⋆	0
221	1506	1	1066	0	1087⋆	0	681	0	681	0	684†	0	690†	0	681	0	699†	0	699†	0	690†	0	816⋆	0
220	1497	1	1059	1	1080⋆	1	681	0	681	0	684†	0	690†	0	681	0	699†	0	699†	0	690†	0	816⋆	0
219	1490	0	1054	0	1072⋆	0	681	0	681	0	681	0	690†	0	681	0	699†	0	699†	0	690†	0	810⋆	0
218	1482	1	1047	1	1065⋆	1	675	1	675	1	675	1	684†	1	681†	0	693†	1	693†	1	684†	1	804⋆	1
217	1473	1	1038	1	1056⋆	1	666	1	666	1	666	1	681†	0	675†	1	684†	1	684†	1	675†	1	795⋆	1
216	1464	1	1029	1	1047⋆	1	657	1	657	1	657	1	675†	1	666†	1	675†	1	675†	1	666†	1	786⋆	1
215	1455	1	1027	0	1038⋆	1	654	0	654	0	654	0	672†	0	663†	0	672†	0	672†	0	663†	0	777⋆	1
214	1446	1	1020	1	1029⋆	1	648	1	654†	0	648	1	666†	1	657†	1	666†	1	666†	1	657†	1	768⋆	1
213	1437	1	1011	1	1020⋆	1	639	1	648†	1	639	1	657†	1	648†	1	657†	1	657†	1	648†	1	759⋆	1
212	1428	1	1002	1	1011⋆	1	630	1	639†	1	630	1	648†	1	639†	1	648†	1	648†	1	639†	1	750⋆	1
211	1419	1	993	1	1002⋆	1	627	0	636†	0	627	0	645†	0	630†	1	645†	0	645†	0	636†	0	741⋆	1
210	1410	1	984	1	993⋆	1	621	1	630†	1	621	1	639†	1	621	1	639†	1	639†	1	630†	1	732⋆	1
209	1401	1	975	1	984⋆	1	612	1	621†	1	612	1	630†	1	612	1	630†	1	630†	1	621†	1	723⋆	1
208	1392	1	966	1	975⋆	1	603	1	612†	1	603	1	621†	1	603	1	621†	1	621†	1	612†	1	714⋆	1
207	1383	1	964	0	966⋆	1	600	0	609†	0	600	0	618†	0	600	0	618†	0	618†	0	609†	0	705⋆	1
206	1374	1	957	1	957	1	600	0	609†	0	600	0	618†	0	600	0	618†	0	618†	0	603†	1	696⋆	1

continued

$m = 9$																								
ν	8		7				6																	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
205	1365	1	948	1	948	1	600	0	603†	1	600	0	618†	0	600	0	618†	0	618†	0	600	0	687⋆	1
204	1356	1	939	1	939	1	594	1	594	1	594	1	612†	1	594	1	612†	1	612†	1	594	1	678⋆	1
203	1347	1	930	1	930	1	591	0	591	0	591	0	603†	1	591	0	609†	0	609†	0	591	0	669⋆	1
202	1338	1	921	1	921	1	585	1	585	1	585	1	594†	1	585	1	603†	1	603†	1	585	1	660⋆	1
201	1329	1	912	1	912	1	576	1	576	1	576	1	585†	1	576	1	594†	1	594†	1	576	1	651⋆	1
200	1320	1	903	1	903	1	567	1	567	1	567	1	576†	1	567	1	585†	1	585†	1	567	1	642⋆	1
199	1311	1	894	1	894	1	564	0	564	0	564	0	567†	1	564	0	582†	0	582†	0	564	0	633⋆	1
198	1302	1	885	1	885	1	558	1	558	1	558	1	558	1	558	1	576†	1	576†	1	558	1	624⋆	1
197	1293	1	876	1	876	1	549	1	549	1	549	1	549	1	549	1	567†	1	567†	1	549	1	615⋆	1
196	1284	1	867	1	867	1	540	1	540	1	540	1	540	1	540	1	558†	1	558†	1	540	1	606⋆	1
195	1275	1	858	1	858	1	531	1	531	1	531	1	531	1	531	1	549†	1	549†	1	531	1	597⋆	1
194	1266	1	849	1	849	1	522	1	522	1	522	1	522	1	522	1	540†	1	540†	1	522	1	588⋆	1
193	1257	1	840	1	840	1	513	1	513	1	513	1	513	1	519†	347	531†	1	531†	1	513	1	579⋆	1
192	1248	1	831	1	831	1	504	1	504	1	504	1	504	1	510†	347	522†	1	522†	1	504	1	570⋆	1
191	1247	0	829	0	829	0	501	0	501	0	501	0	501	0	501	0	519†	0	519†	0	501	0	567⋆	0
190	1239	1	829	0	829	0	501	0	501	0	501	0	501	0	501	0	519†	0	519†	0	501	0	567⋆	0
189	1230	1	829	0	829	0	501	0	501	0	501	0	501	0	501	0	519†	0	519†	0	501	0	567⋆	0
188	1221	1	822	1	822	1	501	0	501	0	501	0	501	0	501	0	519†	0	519†	0	501	0	567⋆	0
187	1220	0	820	0	820	0	501	0	501	0	501	0	501	0	501	0	519†	0	519†	0	501	0	567⋆	0
186	1212	1	813	1	813	1	501	0	501	0	501	0	501	0	501	0	519†	0	513†	1	501	0	561⋆	1
185	1203	1	804	1	804	1	501	0	501	0	501	0	501	0	501	0	513†	1	510†	0	501	0	552⋆	1
184	1194	1	795	1	795	1	495	1	495	1	495	1	495	1	495	1	504†	1	504†	1	495	1	543⋆	1
183	1193	0	793	0	793	0	492	0	492	0	492	0	492	0	492	0	501†	0	501†	0	492	0	540⋆	0
182	1185	1	793	0	793	0	492	0	492	0	492	0	492	0	492	0	501†	0	501†	0	492	0	540⋆	0
181	1176	1	786	1	786	1	492	0	492	0	492	0	492	0	492	0	501†	0	501†	0	492	0	540⋆	0
180	1167	1	777	1	777	1	486	1	486	1	486	1	486	1	486	1	495†	1	501†	0	486	1	540⋆	0
179	1158	1	775	0	775	0	483	0	483	0	483	0	483	0	483	0	492†	0	501†	0	483	0	540⋆	0
178	1149	1	768	1	768	1	477	1	477	1	477	1	477	1	477	1	492†	0	495†	1	477	1	534⋆	1
177	1140	1	759	1	759	1	468	1	468	1	468	1	468	1	468	1	486†	1	486†	1	468	1	525⋆	1
176	1131	1	750	1	750	1	459	1	459	1	459	1	459	1	459	1	477†	1	477†	1	459	1	516⋆	1
175	1130	0	748	0	748	0	456	0	456	0	456	0	456	0	456	0	474†	0	474†	0	456	0	513⋆	0
174	1122	1	748	0	748	0	456	0	456	0	456	0	456	0	456	0	474†	0	474†	0	456	0	513⋆	0
173	1113	1	748	0	748	0	456	0	456	0	456	0	456	0	456	0	474†	0	474†	0	456	0	513⋆	0
172	1104	1	741	1	741	1	456	0	456	0	456	0	456	0	456	0	474†	0	474†	0	456	0	513⋆	0
171	1103	0	739	0	739	0	456	0	456	0	456	0	456	0	456	0	474†	0	474†	0	456	0	513⋆	0
170	1095	1	732	1	732	1	450	1	450	1	450	1	450	1	450	1	468†	1	468†	1	450	1	507⋆	1
169	1086	1	723	1	723	1	441	1	441	1	441	1	441	1	441	1	459†	1	459†	1	441	1	498⋆	1
168	1077	1	714	1	714	1	432	1	432	1	432	1	432	1	432	1	450†	1	450†	1	432	1	489⋆	1
167	1068	1	705	1	705	1	429	0	429	0	429	0	429	0	429	0	447†	0	447†	0	429	0	486⋆	0
166	1059	1	696	1	696	1	423	1	423	1	423	1	423	1	429†	0	441†	1	441†	1	423	1	486⋆	0
165	1050	1	687	1	687	1	420	0	420	0	420	0	420	0	429†	0	438†	0	438†	0	420	0	486⋆	0
164	1041	1	678	1	678	1	414	1	414	1	414	1	414	1	423†	1	432†	1	432†	1	414	1	486⋆	0
163	1032	1	669	1	669	1	405	1	405	1	405	1	405	1	414†	1	423†	1	429†	0	405	1	486⋆	0
162	1023	1	660	1	661⋆	366	396	1	396	1	396	1	396	1	405†	1	414†	1	423†	1	396	1	480⋆	1
161	1014	1	651	1	652⋆	366	387	1	387	1	387	1	387	1	396†	1	405†	1	414†	1	387	1	471⋆	1
160	1005	1	642	1	643⋆	366	378	1	378	1	378	1	378	1	387†	1	396†	1	405†	1	378	1	462⋆	1
159	996	1	640	0	640	0	375	0	375	0	375	0	375	0	384†	0	393†	0	402†	0	375	0	459⋆	0
158	987	1	633	1	640⋆	0	375	0	375	0	375	0	375	0	384†	0	387†	1	402†	0	375	0	459⋆	0
157	978	1	631	0	640⋆	0	375	0	375	0	375	0	375	0	384†	0	384†	0	402†	0	375	0	459⋆	0
156	969	1	624	1	633⋆	1	369	1	369	1	369	1	369	1	378†	1	378†	1	396†	1	375†	0	459⋆	0
155	960	1	622	0	631⋆	0	366	0	366	0	366	0	366	0	375†	0	375†	0	393†	0	375†	0	459⋆	0

continued

$m=9$																								
ν	8		7				6																	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
154	951	1	615	1	625⋆	366	360	1	366†	0	360	1	360	1	369†	1	369†	1	387†	1	369†	1	453⋆	1
153	942	1	606	1	616⋆	366	357	0	366†	0	357	0	357	0	360†	1	366†	0	384†	0	366†	0	444⋆	1
152	933	1	597	1	607⋆	366	351	1	360†	1	351	1	351	1	351	1	360†	1	378†	1	360†	1	435⋆	1
151	924	1	595	0	604⋆	0	348	0	357†	0	348	0	348	0	348	0	357†	0	375†	0	357†	0	432⋆	0
150	915	1	588	1	604⋆	0	348	0	357†	0	348	0	348	0	348	0	351†	1	375†	0	357†	0	432⋆	0
149	906	1	586	0	604⋆	0	348	0	357†	0	348	0	348	0	348	0	348	0	375†	0	357†	0	432⋆	0
148	897	1	579	1	597⋆	1	342	1	351†	1	342	1	342	1	342	1	342	1	369†	1	351†	1	432⋆	0
147	888	1	570	1	595⋆	0	339	0	342†	1	339	0	339	0	339	0	339	0	366†	0	348†	0	432⋆	0
146	879	1	561	1	589⋆	0	333	1	333	1	333	0	333	1	333	1	333	1	360†	1	342†	1	426⋆	0
145	872	439	552	1	583⋆	439	324	1	324	1	327†	1	324	1	324	1	324	1	351†	1	333†	1	420⋆	1
144	863	439	543	1	574⋆	439	315	1	315	1	318†	1	315	1	315	1	315	1	342†	1	324†	1	411⋆	1
143	854	439	534	1	565⋆	439	312	0	312	0	315†	0	312	0	312	0	312	0	333†	1	321†	0	402⋆	1
142	845	439	525	1	556⋆	439	306	1	306	1	309†	1	312†	0	306	1	306	1	324†	1	315†	1	393⋆	1
141	836	439	516	1	547⋆	439	303	0	303	0	306†	0	312†	0	303	0	303	0	315†	1	312†	0	384⋆	1
140	827	439	507	1	538⋆	439	297	1	297	1	300†	1	306†	1	297	1	297	1	306†	1	306†	1	375⋆	1
139	818	439	498	1	529⋆	439	294	0	294	0	297†	0	303†	0	294	0	294	0	297†	1	303†	0	366⋆	1
138	809	439	489	1	520⋆	439	288	1	288	1	291†	1	303†	0	288	1	288	1	288	1	297†	1	357⋆	1
137	800	439	480	1	511⋆	439	279	1	279	1	282†	1	297†	1	279	1	279	1	279	1	294†	0	348⋆	1
136	791	439	471	1	502⋆	439	270	1	270	1	273†	1	288†	1	270	1	270	1	270	1	288†	1	339⋆	1
135	782	439	462	1	493⋆	439	261	1	261	1	264†	1	279†	1	261	1	261	1	261	1	279†	1	330⋆	1
134	773	439	453	1	484⋆	439	252	1	252	1	255†	1	270†	1	252	1	252	1	252	1	270†	1	321⋆	1
133	764	439	444	1	475⋆	439	243	1	243	1	246†	1	261†	1	243	1	243	1	243	1	261†	1	312⋆	1
132	755	439	435	1	466⋆	439	234	1	234	1	237†	1	252†	1	234	1	234	1	234	1	252†	1	303⋆	1
131	746	439	433	413	463⋆	413	225	1	225	1	228†	1	243†	1	225	1	225	1	225	1	243†	1	294⋆	1
130	737	439	424	413	454⋆	413	216	1	216	1	219†	1	234†	1	216	1	216	1	216	1	234†	1	285⋆	1
129	728	439	415	413	445⋆	413	207	1	207	1	213†	439	225†	1	207	1	207	1	207	1	225†	1	276⋆	1
128	719	439	406	413	436⋆	413	198	1	198	1	204†	439	216†	1	198	1	198	1	198	1	216†	1	267⋆	1
127	716	0	397	0	427⋆	0	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	264⋆	0
126	708	1	397	0	427⋆	0	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	264⋆	0
125	707	0	397	0	427⋆	0	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	264⋆	0
124	699	1	390	1	420⋆	1	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	264⋆	0
123	698	0	388	0	418⋆	0	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	264⋆	0
122	690	1	388	0	418⋆	0	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	264⋆	0
121	681	1	388	0	412⋆	439	195	0	195	0	198†	0	213†	0	195	0	195	0	195	0	213†	0	258⋆	1
120	672	1	381	1	403⋆	439	189	1	189	1	192†	1	207†	1	189	1	189	1	189	1	207†	1	249⋆	1
119	671	0	379	0	400⋆	0	186	0	186	0	189†	0	204†	0	186	0	186	0	186	0	204†	0	246⋆	0
118	663	1	379	0	400⋆	0	186	0	186	0	189†	0	204†	0	186	0	186	0	186	0	204†	0	246⋆	0
117	662	0	379	0	400⋆	0	186	0	186	0	189†	0	204†	0	186	0	186	0	186	0	204†	0	246⋆	0
116	654	1	372	1	393⋆	1	186	0	186	0	189†	0	204†	0	186	0	186	0	186	0	204†	0	246⋆	0
115	645	1	370	0	391⋆	0	186	0	186	0	189†	0	204†	0	186	0	186	0	186	0	204†	0	246⋆	0
114	636	1	363	1	391⋆	0	186	0	186	0	189†	0	198†	1	186	0	186	0	186	0	204†	0	246⋆	0
113	629	439	354	1	385⋆	439	186	0	186	0	189†	0	195†	0	186	0	186	0	186	0	198†	1	240⋆	1
112	620	439	345	1	376⋆	439	180	1	180	1	183†	1	189†	1	180	1	180	1	180	1	189†	1	231⋆	1
111	617	0	343	0	373⋆	0	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	228⋆	0
110	609	1	343	0	373⋆	0	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	228⋆	0
109	608	0	343	0	373⋆	0	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	228⋆	0
108	600	1	336	1	366⋆	1	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	228⋆	0
107	599	0	334	0	364⋆	0	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	228⋆	0
106	591	1	334	0	364⋆	0	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	228⋆	0
105	582	1	334	0	357⋆	1	177	0	177	0	180†	0	186†	0	177	0	177	0	177	0	186†	0	222⋆	1
104	573	1	327	1	348⋆	1	171	1	171	1	174†	1	180†	1	171	1	171	1	171	1	180†	1	213⋆	1

continued

$m=9$																								
ν	8		7				6																	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
103	572	0	325	0	346⋆	0	168	0	168	0	171†	0	177†	0	168	0	168	0	168	0	177†	0	210⋆	0
102	564	1	318	1	339⋆	1	168	0	168	0	171†	0	177†	0	168	0	168	0	168	0	177†	0	210⋆	0
101	555	1	316	0	337⋆	0	168	0	168	0	171†	0	177†	0	168	0	168	0	168	0	177†	0	210⋆	0
100	546	1	309	1	330⋆	1	162	1	162	1	165†	1	177†	0	162	1	162	1	162	1	171†	1	210⋆	0
99	537	1	307	0	328⋆	0	159	0	159	0	162†	0	177†	0	159	0	159	0	159	0	168†	0	210⋆	0
98	528	1	300	1	321⋆	1	153	1	153	1	156†	1	171†	1	153	1	153	1	153	1	168†	0	210⋆	0
97	521	439	291	1	313⋆	439	144	1	144	1	147†	1	162†	1	144	1	144	1	144	1	162†	1	204⋆	1
96	512	439	282	1	304⋆	439	135	1	135	1	138†	1	153†	1	135	1	135	1	135	1	153†	1	195⋆	1
95	509	0	280	0	301⋆	0	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	192⋆	0
94	501	1	280	0	301⋆	0	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	192⋆	0
93	500	0	280	0	301⋆	0	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	192⋆	0
92	492	1	273	1	294⋆	1	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	192⋆	0
91	491	0	271	0	292⋆	0	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	192⋆	0
90	483	1	271	0	292⋆	0	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	192⋆	0
89	476	439	271	0	286⋆	439	132	0	132	0	135†	0	150†	0	132	0	132	0	132	0	150†	0	186⋆	1
88	467	439	264	1	277⋆	439	126	1	126	1	129†	1	144†	1	126	1	126	1	126	1	144†	1	177⋆	1
87	464	0	262	0	274⋆	0	123	0	123	0	126†	0	141†	0	123	0	123	0	123	0	141†	0	174⋆	0
86	456	1	262	0	274⋆	0	123	0	123	0	126†	0	141†	0	123	0	123	0	123	0	141†	0	174⋆	0
85	455	0	262	0	274⋆	0	123	0	123	0	126†	0	141†	0	123	0	123	0	123	0	141†	0	174⋆	0
84	447	1	255	1	267⋆	1	123	0	123	0	126†	0	141†	0	123	0	123	0	123	0	141†	0	174⋆	0
83	446	0	253	0	265⋆	0	123	0	123	0	126†	0	141†	0	123	0	123	0	123	0	141†	0	174⋆	0
82	438	1	246	1	265⋆	0	123	0	123	0	126†	0	135†	1	123	0	123	0	123	0	141†	0	174⋆	0
81	431	439	237	1	259⋆	439	123	0	123	0	126†	0	132†	0	123	0	123	0	123	0	135†	1	168⋆	1
80	422	439	228	1	250⋆	439	117	1	117	1	120†	1	126†	1	117	1	117	1	117	1	126†	1	159⋆	1
79	419	0	226	0	247⋆	0	114	0	114	0	117†	0	123†	0	114	0	114	0	114	0	123†	0	156⋆	0
78	411	1	226	0	247⋆	0	114	0	114	0	117†	0	123†	0	114	0	114	0	114	0	123†	0	156⋆	0
77	410	0	226	0	247⋆	0	114	0	114	0	117†	0	123†	0	114	0	114	0	114	0	123†	0	156⋆	0
76	402	1	219	1	240⋆	1	114	0	114	0	117†	0	123†	0	114	0	114	0	114	0	123†	0	156⋆	0
75	401	0	217	0	238⋆	0	114	0	114	0	117†	0	123†	0	114	0	114	0	114	0	123†	0	156⋆	0
74	393	1	217	0	238⋆	0	114	0	114	0	117†	0	123†	0	114	0	114	0	114	0	123†	0	156⋆	0
73	386	0	214	0	232⋆	0	114	0	114	0	114	0	123†	0	114	0	114	0	114	0	123†	0	150⋆	0
72	378	1	207	1	225⋆	1	108	1	108	1	108	1	117†	1	108	1	108	1	108	1	117†	1	144⋆	1
71	369	1	205	0	216⋆	1	105	0	105	0	105	0	114†	0	105	0	105	0	105	0	114†	0	135⋆	1
70	360	1	198	1	207⋆	1	105	0	105	0	105	0	114†	0	105	0	105	0	105	0	108†	1	126⋆	1
69	351	1	196	0	198⋆	1	105	0	105	0	105	0	114†	0	105	0	105	0	105	0	105	0	117⋆	1
68	342	1	189	1	189	1	99	1	99	1	99	1	108⋆	1	99	1	99	1	99	1	99	1	108⋆	1
67	333	1	180	1	180	1	96	0	96	0	96	0	99⋆	1	96	0	96	0	96	0	96	0	99⋆	1
66	324	1	171	1	171	1	90	1	90	1	90	1	90	1	90	1	90	1	90	1	90	1	90	1
65	315	1	169	479	169	479	81	1	81	1	81	1	81	1	81	1	81	1	81	1	81	1	81	1
64	306	1	160	479	160	479	72	1	72	1	72	1	72	1	72	1	72	1	72	1	72	1	72	1
63	305	0	151	0	151	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
62	297	1	151	0	151	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
61	296	0	151	0	151	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
60	288	1	144	1	144	1	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
59	287	0	142	0	142	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
58	279	1	142	0	142	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
57	278	0	142	0	142	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0	69	0
56	270	1	135	1	135	1	63	1	63	1	63	1	63	1	63	1	63	1	63	1	63	1	63	1
55	269	0	133	0	133	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0
54	261	1	133	0	133	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0
53	260	0	133	0	133	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0

continued

$m=9$																								
ν	8		7				6																	
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
52	252	1	126	1	126	1	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0
51	251	0	124	0	124	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0
50	243	1	124	0	124	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0
49	234	1	124	0	124	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0	60	0
48	225	1	117	1	117	1	54	1	54	1	54	1	54	1	54	1	54	1	54	1	54	1	54	1
47	224	0	115	0	115	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
46	216	1	115	0	115	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
45	215	0	115	0	115	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
44	207	1	108	1	108	1	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
43	206	0	106	0	106	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
42	198	1	106	0	106	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
41	197	0	106	0	106	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0	51	0
40	189	1	99	1	99	1	45	1	45	1	45	1	45	1	45	1	45	1	45	1	45	1	45	1
39	188	0	97	0	97	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
38	180	1	97	0	97	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
37	179	0	97	0	97	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
36	171	1	90	1	90	1	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
35	170	0	88	0	88	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
34	162	1	81	1	81	1	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
33	153	1	79	0	79	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0	42	0
32	144	1	72	1	72	1	36	1	36	1	36	1	36	1	36	1	36	1	36	1	36	1	36	1
31	143	0	70	0	70	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
30	135	1	70	0	70	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
29	134	0	70	0	70	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
28	126	1	63	1	63	1	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
27	125	0	61	0	61	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
26	117	1	61	0	61	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
25	116	0	61	0	61	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0
24	108	1	54	1	54	1	27	1	27	1	27	1	27	1	27	1	27	1	27	1	27	1	27	1
23	107	0	52	0	52	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
22	99	1	52	0	52	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
21	98	0	52	0	52	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
20	90	1	45	1	45	1	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
19	89	0	43	0	43	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
18	81	1	43	0	43	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
17	80	0	43	0	43	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0
16	72	1	36	1	36	1	18	1	18	1	18	1	18	1	18	1	18	1	18	1	18	1	18	1
15	71	0	34	0	34	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
14	63	1	34	0	34	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
13	62	0	34	0	34	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
12	54	1	27	1	27	1	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
11	53	0	25	0	25	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
10	45	1	25	0	25	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
9	44	0	25	0	25	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
8	36	1	18	1	18	1	9	1	9	1	9	1	9	1	9	1	9	1	9	1	9	1	9	1
7	35	0	16	0	16	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0
6	27	1	16	0	16	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0
5	26	0	16	0	16	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0
4	18	1	9	1	9	1	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0
3	17	0	7	0	7	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0
2	9	1	7	0	7	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0

continued

	$m=9$																							
ν	8		7				6																	
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{10}$		$\mathbb{G}_0$		$\mathbb{G}_9$		$\mathbb{G}_{11}$		$\mathbb{G}_{115}$		$\mathbb{G}_{141}$		$\mathbb{G}_{148}$		$\mathbb{G}_{172}$		$\mathbb{G}_{175}$		$\mathbb{G}_{176}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
1	8	0	7	0	7	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0

D.7 $m = 10, n = 1023$

	$m=10$																					
ν	9		8						7													
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
1022	9198	1	8176	1	8176	1	8176	1	7154	1	7154	1	7154	1	7154	1	7154	1	7154	1	7154	1
1021	9188	1	8166	1	8166	1	8166	1	7144	1	7144	1	7144	1	7144	1	7144	1	7144	1	7144	1
1020	9178	1	8156	1	8156	1	8156	1	7134	1	7134	1	7134	1	7134	1	7134	1	7134	1	7134	1
1019	9168	1	8146	1	8146	1	8146	1	7124	1	7124	1	7124	1	7124	1	7124	1	7124	1	7124	1
1018	9158	1	8136	1	8136	1	8136	1	7114	1	7114	1	7114	1	7114	1	7114	1	7114	1	7114	1
1017	9148	1	8126	1	8126	1	8126	1	7104	1	7104	1	7104	1	7104	1	7104	1	7104	1	7104	1
1016	9138	1	8116	1	8116	1	8116	1	7094	1	7094	1	7094	1	7094	1	7094	1	7094	1	7094	1
1015	9128	1	8106	1	8106	1	8106	1	7084	1	7084	1	7084	1	7084	1	7084	1	7084	1	7084	1
1014	9118	1	8096	1	8096	1	8096	1	7074	1	7074	1	7074	1	7074	1	7074	1	7074	1	7074	1
1013	9108	1	8086	1	8086	1	8086	1	7064	1	7064	1	7064	1	7064	1	7064	1	7064	1	7064	1
1012	9098	1	8076	1	8076	1	8076	1	7054	1	7054	1	7054	1	7054	1	7054	1	7054	1	7054	1
1011	9088	1	8066	1	8066	1	8066	1	7044	1	7044	1	7044	1	7044	1	7044	1	7044	1	7044	1
1010	9078	1	8056	1	8056	1	8056	1	7034	1	7034	1	7034	1	7034	1	7034	1	7034	1	7034	1
1009	9068	1	8046	1	8046	1	8046	1	7024	1	7024	1	7024	1	7024	1	7024	1	7024	1	7024	1
1008	9058	1	8036	1	8036	1	8036	1	7014	1	7014	1	7014	1	7014	1	7014	1	7014	1	7014	1
1007	9048	1	8026	1	8026	1	8026	1	7004	1	7004	1	7004	1	7004	1	7004	1	7004	1	7004	1
1006	9038	1	8016	1	8016	1	8016	1	6994	1	6994	1	6994	1	6994	1	6994	1	6994	1	6994	1
1005	9028	1	8006	1	8006	1	8006	1	6984	1	6984	1	6984	1	6984	1	6984	1	6984	1	6984	1
1004	9018	1	7996	1	7996	1	7996	1	6974	1	6974	1	6974	1	6974	1	6974	1	6974	1	6974	1
1003	9008	1	7986	1	7986	1	7986	1	6964	1	6964	1	6964	1	6964	1	6964	1	6964	1	6964	1
1002	8998	1	7976	1	7976	1	7976	1	6954	1	6954	1	6954	1	6954	1	6954	1	6954	1	6954	1
1001	8988	1	7966	1	7966	1	7966	1	6944	1	6944	1	6944	1	6944	1	6944	1	6944	1	6944	1
1000	8978	1	7956	1	7956	1	7956	1	6934	1	6934	1	6934	1	6934	1	6934	1	6934	1	6934	1
999	8968	1	7946	1	7946	1	7946	1	6924	1	6924	1	6924	1	6924	1	6924	1	6924	1	6924	1
998	8958	1	7936	1	7936	1	7936	1	6914	1	6914	1	6914	1	6914	1	6914	1	6914	1	6914	1
997	8948	1	7926	1	7926	1	7926	1	6904	1	6904	1	6904	1	6904	1	6904	1	6904	1	6904	1
996	8938	1	7916	1	7916	1	7916	1	6894	1	6894	1	6894	1	6894	1	6894	1	6894	1	6894	1
995	8928	1	7906	1	7906	1	7906	1	6884	1	6884	1	6884	1	6884	1	6884	1	6884	1	6884	1
994	8918	1	7896	1	7896	1	7896	1	6874	1	6874	1	6874	1	6874	1	6874	1	6874	1	6874	1
993	8908	1	7886	1	7886	1	7886	1	6864	1	6864	1	6864	1	6864	1	6864	1	6864	1	6864	1
992	8898	1	7876	1	7876	1	7876	1	6854	1	6854	1	6854	1	6854	1	6854	1	6854	1	6854	1
991	8888	1	7866	1	7866	1	7866	1	6844	1	6844	1	6844	1	6844	1	6844	1	6844	1	6844	1
990	8878	1	7856	1	7856	1	7856	1	6834	1	6834	1	6834	1	6834	1	6834	1	6834	1	6834	1
989	8868	1	7846	1	7846	1	7846	1	6824	1	6824	1	6824	1	6824	1	6824	1	6824	1	6824	1
988	8858	1	7836	1	7836	1	7836	1	6814	1	6814	1	6814	1	6814	1	6814	1	6814	1	6814	1
987	8848	1	7826	1	7826	1	7826	1	6804	1	6804	1	6804	1	6804	1	6804	1	6804	1	6804	1
986	8838	1	7816	1	7816	1	7816	1	6794	1	6794	1	6794	1	6794	1	6794	1	6794	1	6794	1
985	8828	1	7806	1	7806	1	7806	1	6784	1	6784	1	6784	1	6784	1	6784	1	6784	1	6784	1
984	8818	1	7796	1	7796	1	7796	1	6774	1	6774	1	6774	1	6774	1	6774	1	6774	1	6774	1
983	8808	1	7786	1	7786	1	7786	1	6764	1	6764	1	6764	1	6764	1	6764	1	6764	1	6764	1
982	8798	1	7776	1	7776	1	7776	1	6754	1	6754	1	6754	1	6754	1	6754	1	6754	1	6754	1

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
981	8788	1	7766	1	7766	1	7766	1	6744	1	6744	1	6744	1	6744	1	6744	1	6744	1	6744	1
980	8778	1	7756	1	7756	1	7756	1	6734	1	6734	1	6734	1	6734	1	6734	1	6734	1	6734	1
979	8768	1	7746	1	7746	1	7746	1	6724	1	6724	1	6724	1	6724	1	6724	1	6724	1	6724	1
978	8758	1	7736	1	7736	1	7736	1	6714	1	6714	1	6714	1	6714	1	6714	1	6714	1	6714	1
977	8748	1	7726	1	7726	1	7726	1	6704	1	6704	1	6704	1	6704	1	6704	1	6704	1	6704	1
976	8738	1	7716	1	7716	1	7716	1	6694	1	6694	1	6694	1	6694	1	6694	1	6694	1	6694	1
975	8728	1	7706	1	7706	1	7706	1	6684	1	6684	1	6684	1	6684	1	6684	1	6684	1	6684	1
974	8718	1	7696	1	7696	1	7696	1	6674	1	6674	1	6674	1	6674	1	6674	1	6674	1	6674	1
973	8708	1	7686	1	7686	1	7686	1	6664	1	6664	1	6664	1	6664	1	6664	1	6664	1	6664	1
972	8698	1	7676	1	7676	1	7676	1	6654	1	6654	1	6654	1	6654	1	6654	1	6654	1	6654	1
971	8688	1	7666	1	7666	1	7666	1	6644	1	6644	1	6644	1	6644	1	6644	1	6644	1	6644	1
970	8678	1	7656	1	7656	1	7656	1	6634	1	6634	1	6634	1	6634	1	6634	1	6634	1	6634	1
969	8668	1	7646	1	7646	1	7646	1	6624	1	6624	1	6624	1	6624	1	6624	1	6624	1	6624	1
968	8658	1	7636	1	7636	1	7636	1	6614	1	6614	1	6614	1	6614	1	6614	1	6614	1	6614	1
967	8648	1	7626	1	7626	1	7626	1	6604	1	6604	1	6604	1	6604	1	6604	1	6604	1	6604	1
966	8638	1	7616	1	7616	1	7616	1	6594	1	6594	1	6594	1	6594	1	6594	1	6594	1	6594	1
965	8628	1	7606	1	7606	1	7606	1	6584	1	6584	1	6584	1	6584	1	6584	1	6584	1	6584	1
964	8618	1	7596	1	7596	1	7596	1	6574	1	6574	1	6574	1	6574	1	6574	1	6574	1	6574	1
963	8608	1	7586	1	7586	1	7586	1	6564	1	6564	1	6564	1	6564	1	6564	1	6564	1	6564	1
962	8598	1	7576	1	7576	1	7576	1	6554	1	6554	1	6554	1	6554	1	6554	1	6554	1	6554	1
961	8588	1	7566	1	7566	1	7566	1	6544	1	6544	1	6544	1	6544	1	6544	1	6544	1	6544	1
960	8578	1	7556	1	7556	1	7556	1	6534	1	6534	1	6534	1	6534	1	6534	1	6534	1	6534	1
959	8568	1	7546	1	7546	1	7546	1	6524	1	6524	1	6524	1	6524	1	6524	1	6524	1	6524	1
958	8558	1	7536	1	7536	1	7536	1	6514	1	6514	1	6514	1	6514	1	6514	1	6514	1	6514	1
957	8548	1	7526	1	7526	1	7526	1	6504	1	6504	1	6504	1	6504	1	6504	1	6504	1	6504	1
956	8538	1	7516	1	7516	1	7516	1	6494	1	6494	1	6494	1	6494	1	6494	1	6494	1	6494	1
955	8528	1	7506	1	7506	1	7506	1	6484	1	6484	1	6484	1	6484	1	6484	1	6484	1	6484	1
954	8518	1	7496	1	7496	1	7496	1	6474	1	6474	1	6474	1	6474	1	6474	1	6474	1	6474	1
953	8508	1	7486	1	7486	1	7486	1	6464	1	6464	1	6464	1	6464	1	6464	1	6464	1	6464	1
952	8498	1	7476	1	7476	1	7476	1	6454	1	6454	1	6454	1	6454	1	6454	1	6454	1	6454	1
951	8488	1	7466	1	7466	1	7466	1	6444	1	6444	1	6444	1	6444	1	6444	1	6444	1	6444	1
950	8478	1	7456	1	7456	1	7456	1	6434	1	6434	1	6434	1	6434	1	6434	1	6434	1	6434	1
949	8468	1	7446	1	7446	1	7446	1	6424	1	6424	1	6424	1	6424	1	6424	1	6424	1	6424	1
948	8458	1	7436	1	7436	1	7436	1	6414	1	6414	1	6414	1	6414	1	6414	1	6414	1	6414	1
947	8448	1	7426	1	7426	1	7426	1	6404	1	6404	1	6404	1	6404	1	6404	1	6404	1	6404	1
946	8438	1	7416	1	7416	1	7416	1	6394	1	6394	1	6394	1	6394	1	6394	1	6394	1	6394	1
945	8428	1	7406	1	7406	1	7406	1	6384	1	6384	1	6384	1	6384	1	6384	1	6384	1	6384	1
944	8418	1	7396	1	7396	1	7396	1	6374	1	6374	1	6374	1	6374	1	6374	1	6374	1	6374	1
943	8408	1	7386	1	7386	1	7386	1	6364	1	6364	1	6364	1	6364	1	6364	1	6364	1	6364	1
942	8398	1	7376	1	7376	1	7376	1	6354	1	6354	1	6354	1	6354	1	6354	1	6354	1	6354	1
941	8388	1	7366	1	7366	1	7366	1	6344	1	6344	1	6344	1	6344	1	6344	1	6344	1	6344	1
940	8378	1	7356	1	7356	1	7356	1	6334	1	6334	1	6334	1	6334	1	6334	1	6334	1	6334	1
939	8368	1	7346	1	7346	1	7346	1	6324	1	6324	1	6324	1	6324	1	6324	1	6324	1	6324	1
938	8358	1	7336	1	7336	1	7336	1	6314	1	6314	1	6314	1	6314	1	6314	1	6314	1	6314	1
937	8348	1	7326	1	7326	1	7326	1	6304	1	6304	1	6304	1	6304	1	6304	1	6304	1	6304	1
936	8338	1	7316	1	7316	1	7316	1	6294	1	6294	1	6294	1	6294	1	6294	1	6294	1	6294	1
935	8328	1	7306	1	7306	1	7306	1	6284	1	6284	1	6284	1	6284	1	6284	1	6284	1	6284	1
934	8318	1	7296	1	7296	1	7296	1	6274	1	6274	1	6274	1	6274	1	6274	1	6274	1	6274	1
933	8308	1	7286	1	7286	1	7286	1	6264	1	6264	1	6264	1	6264	1	6264	1	6264	1	6264	1
932	8298	1	7276	1	7276	1	7276	1	6254	1	6254	1	6254	1	6254	1	6254	1	6254	1	6254	1
931	8288	1	7266	1	7266	1	7266	1	6244	1	6244	1	6244	1	6244	1	6244	1	6244	1	6244	1

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$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
930	8278	1	7256	1	7256	1	7256	1	6234	1	6234	1	6234	1	6234	1	6234	1	6234	1	6234	1
929	8268	1	7246	1	7246	1	7246	1	6224	1	6224	1	6224	1	6224	1	6224	1	6224	1	6224	1
928	8258	1	7236	1	7236	1	7236	1	6214	1	6214	1	6214	1	6214	1	6214	1	6214	1	6214	1
927	8248	1	7226	1	7226	1	7226	1	6204	1	6204	1	6204	1	6204	1	6204	1	6204	1	6204	1
926	8238	1	7216	1	7216	1	7216	1	6194	1	6194	1	6194	1	6194	1	6194	1	6194	1	6194	1
925	8228	1	7206	1	7206	1	7206	1	6184	1	6184	1	6184	1	6184	1	6184	1	6184	1	6184	1
924	8218	1	7196	1	7196	1	7196	1	6174	1	6174	1	6174	1	6174	1	6174	1	6174	1	6174	1
923	8208	1	7186	1	7186	1	7186	1	6164	1	6164	1	6164	1	6164	1	6164	1	6164	1	6166$\star$	133
922	8198	1	7176	1	7176	1	7176	1	6154	1	6154	1	6154	1	6154	1	6154	1	6154	1	6156$\star$	133
921	8188	1	7166	1	7166	1	7166	1	6144	1	6144	1	6144	1	6144	1	6144	1	6144	1	6146$\star$	133
920	8178	1	7156	1	7156	1	7156	1	6134	1	6134	1	6134	1	6134	1	6134	1	6134	1	6136$\star$	133
919	8168	1	7146	1	7146	1	7146	1	6124	1	6124	1	6124	1	6124	1	6124	1	6124	1	6126$\star$	133
918	8158	1	7136	1	7136	1	7136	1	6114	1	6114	1	6114	1	6114	1	6114	1	6114	1	6116$\star$	133
917	8148	1	7126	1	7126	1	7126	1	6104	1	6104	1	6104	1	6104	1	6104	1	6104	1	6106$\star$	133
916	8138	1	7116	1	7116	1	7116	1	6094	1	6094	1	6094	1	6094	1	6094	1	6094	1	6096$\star$	133
915	8128	1	7106	1	7106	1	7106	1	6084	1	6084	1	6084	1	6084	1	6084	1	6084	1	6086$\star$	133
914	8118	1	7096	1	7096	1	7096	1	6074	1	6074	1	6074	1	6074	1	6074	1	6074	1	6076$\star$	133
913	8108	1	7086	1	7086	1	7086	1	6064	1	6064	1	6064	1	6064	1	6064	1	6064	1	6066$\star$	133
912	8098	1	7076	1	7076	1	7076	1	6054	1	6054	1	6054	1	6054	1	6054	1	6054	1	6056$\star$	133
911	8088	1	7066	1	7066	1	7066	1	6044	1	6044	1	6044	1	6044	1	6044	1	6044	1	6046$\star$	133
910	8078	1	7056	1	7056	1	7056	1	6034	1	6034	1	6034	1	6034	1	6034	1	6034	1	6036$\star$	133
909	8068	1	7046	1	7046	1	7046	1	6024	1	6024	1	6024	1	6024	1	6024	1	6024	1	6026$\star$	133
908	8058	1	7036	1	7036	1	7036	1	6014	1	6014	1	6014	1	6014	1	6014	1	6014	1	6016$\star$	133
907	8048	1	7026	1	7026	1	7026	1	6004	1	6004	1	6004	1	6004	1	6004	1	6004	1	6006$\star$	133
906	8038	1	7016	1	7016	1	7016	1	5994	1	5994	1	5994	1	5994	1	5994	1	5994	1	5996$\star$	133
905	8028	1	7006	1	7006	1	7006	1	5984	1	5984	1	5984	1	5984	1	5984	1	5984	1	5986$\star$	133
904	8018	1	6996	1	6996	1	6996	1	5974	1	5974	1	5974	1	5974	1	5974	1	5974	1	5976$\star$	133
903	8008	1	6986	1	6986	1	6986	1	5964	1	5964	1	5964	1	5964	1	5964	1	5964	1	5966$\star$	133
902	7998	1	6976	1	6976	1	6976	1	5954	1	5954	1	5954	1	5954	1	5954	1	5954	1	5956$\star$	133
901	7988	1	6966	1	6966	1	6966	1	5944	1	5944	1	5944	1	5944	1	5944	1	5944	1	5946$\star$	133
900	7978	1	6956	1	6956	1	6956	1	5934	1	5934	1	5934	1	5934	1	5934	1	5934	1	5936$\star$	133
899	7968	1	6946	1	6946	1	6946	1	5924	1	5924	1	5924	1	5924	1	5924	1	5924	1	5926$\star$	133
898	7958	1	6936	1	6936	1	6936	1	5914	1	5914	1	5914	1	5914	1	5914	1	5914	1	5916$\star$	133
897	7948	1	6926	1	6926	1	6926	1	5904	1	5904	1	5904	1	5904	1	5904	1	5904	1	5906$\star$	133
896	7938	1	6916	1	6916	1	6916	1	5894	1	5894	1	5894	1	5894	1	5894	1	5894	1	5896$\star$	133
895	7928	1	6906	1	6906	1	6906	1	5891	0	5891	0	5891	0	5891	0	5891	0	5891	0	5891	0
894	7918	1	6896	1	6896	1	6896	1	5884	1	5884	1	5884	1	5884	1	5884	1	5884	1	5884	1
893	7908	1	6886	1	6886	1	6886	1	5874	1	5874	1	5874	1	5874	1	5874	1	5874	1	5874	1
892	7898	1	6876	1	6876	1	6876	1	5864	1	5864	1	5864	1	5864	1	5864	1	5864	1	5864	1
891	7888	1	6866	1	6866	1	6866	1	5854	1	5854	1	5854	1	5854	1	5854	1	5854	1	5856$\star$	0
890	7878	1	6856	1	6856	1	6856	1	5844	1	5844	1	5844	1	5844	1	5844	1	5844	1	5849$\star$	1
889	7868	1	6846	1	6846	1	6846	1	5834	1	5834	1	5834	1	5834	1	5834	1	5834	1	5839$\star$	1
888	7858	1	6836	1	6836	1	6836	1	5824	1	5824	1	5824	1	5824	1	5824	1	5824	1	5829$\star$	1
887	7848	1	6826	1	6826	1	6826	1	5814	1	5814	1	5814	1	5814	1	5814	1	5814	1	5819$\star$	1
886	7838	1	6816	1	6816	1	6816	1	5804	1	5804	1	5804	1	5804	1	5804	1	5804	1	5809$\star$	1
885	7828	1	6806	1	6806	1	6806	1	5794	1	5794	1	5794	1	5794	1	5794	1	5794	1	5799$\star$	1
884	7818	1	6796	1	6796	1	6796	1	5784	1	5784	1	5784	1	5784	1	5784	1	5784	1	5789$\star$	1
883	7808	1	6786	1	6786	1	6786	1	5774	1	5774	1	5774	1	5774	1	5774	1	5774	1	5779$\star$	1
882	7798	1	6776	1	6776	1	6776	1	5764	1	5764	1	5764	1	5764	1	5764	1	5764	1	5769$\star$	1
881	7788	1	6766	1	6766	1	6766	1	5754	1	5754	1	5754	1	5754	1	5754	1	5754	1	5759$\star$	1
880	7778	1	6756	1	6756	1	6756	1	5744	1	5744	1	5744	1	5744	1	5744	1	5744	1	5749$\star$	1

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$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
879	7768	1	6746	1	6746	1	6746	1	5734	1	5734	1	5734	1	5734	1	5734	1	5734	1	5739⋆	1
878	7758	1	6736	1	6736	1	6736	1	5724	1	5724	1	5724	1	5724	1	5724	1	5724	1	5729⋆	1
877	7748	1	6726	1	6726	1	6726	1	5714	1	5714	1	5714	1	5714	1	5714	1	5714	1	5719⋆	1
876	7738	1	6716	1	6716	1	6716	1	5704	1	5704	1	5704	1	5704	1	5704	1	5704	1	5709⋆	1
875	7728	1	6706	1	6706	1	6706	1	5694	1	5694	1	5694	1	5694	1	5694	1	5694	1	5699⋆	1
874	7718	1	6696	1	6696	1	6696	1	5684	1	5684	1	5684	1	5684	1	5684	1	5684	1	5689⋆	1
873	7708	1	6686	1	6686	1	6686	1	5674	1	5674	1	5674	1	5674	1	5674	1	5674	1	5679⋆	1
872	7698	1	6676	1	6676	1	6676	1	5664	1	5664	1	5664	1	5664	1	5664	1	5664	1	5669⋆	1
871	7688	1	6666	1	6666	1	6666	1	5654	1	5654	1	5654	1	5654	1	5654	1	5654	1	5659⋆	1
870	7678	1	6656	1	6656	1	6656	1	5644	1	5644	1	5644	1	5644	1	5644	1	5644	1	5649⋆	1
869	7668	1	6646	1	6646	1	6646	1	5634	1	5634	1	5634	1	5634	1	5634	1	5634	1	5639⋆	1
868	7658	1	6636	1	6636	1	6636	1	5624	1	5624	1	5624	1	5624	1	5624	1	5624	1	5629⋆	1
867	7648	1	6626	1	6626	1	6626	1	5614	1	5614	1	5614	1	5614	1	5614	1	5614	1	5619⋆	1
866	7638	1	6616	1	6616	1	6616	1	5604	1	5604	1	5604	1	5604	1	5604	1	5604	1	5609⋆	1
865	7628	1	6606	1	6606	1	6606	1	5594	1	5594	1	5594	1	5594	1	5594	1	5594	1	5599⋆	1
864	7618	1	6596	1	6596	1	6596	1	5584	1	5584	1	5584	1	5584	1	5584	1	5584	1	5589⋆	1
863	7608	1	6586	1	6586	1	6586	1	5574	1	5574	1	5574	1	5574	1	5574	1	5574	1	5579⋆	1
862	7598	1	6576	1	6576	1	6576	1	5564	1	5564	1	5564	1	5564	1	5564	1	5564	1	5569⋆	1
861	7588	1	6566	1	6566	1	6566	1	5554	1	5554	1	5554	1	5554	1	5554	1	5554	1	5559⋆	1
860	7578	1	6556	1	6556	1	6556	1	5544	1	5544	1	5544	1	5544	1	5544	1	5544	1	5549⋆	1
859	7568	1	6546	1	6546	1	6546	1	5534	1	5534	1	5534	1	5534	1	5534	1	5534	1	5539⋆	1
858	7558	1	6536	1	6536	1	6536	1	5524	1	5524	1	5524	1	5524	1	5524	1	5524	1	5529⋆	1
857	7548	1	6526	1	6526	1	6526	1	5514	1	5514	1	5514	1	5514	1	5514	1	5514	1	5519⋆	1
856	7538	1	6516	1	6516	1	6516	1	5504	1	5504	1	5504	1	5504	1	5504	1	5504	1	5509⋆	1
855	7528	1	6506	1	6506	1	6506	1	5494	1	5494	1	5494	1	5494	1	5494	1	5494	1	5499⋆	1
854	7518	1	6496	1	6496	1	6496	1	5484	1	5484	1	5484	1	5484	1	5484	1	5484	1	5489⋆	1
853	7508	1	6486	1	6486	1	6486	1	5474	1	5474	1	5474	1	5474	1	5474	1	5474	1	5479⋆	1
852	7498	1	6476	1	6476	1	6476	1	5464	1	5464	1	5464	1	5464	1	5464	1	5464	1	5469⋆	1
851	7488	1	6466	1	6466	1	6466	1	5454	1	5454	1	5454	1	5454	1	5454	1	5454	1	5459⋆	1
850	7478	1	6456	1	6456	1	6456	1	5444	1	5444	1	5444	1	5444	1	5444	1	5444	1	5449⋆	1
849	7468	1	6446	1	6446	1	6446	1	5434	1	5434	1	5434	1	5434	1	5434	1	5434	1	5439⋆	1
848	7458	1	6436	1	6436	1	6436	1	5424	1	5424	1	5424	1	5424	1	5424	1	5424	1	5429⋆	1
847	7448	1	6426	1	6426	1	6426	1	5414	1	5414	1	5414	1	5414	1	5414	1	5414	1	5419⋆	1
846	7438	1	6416	1	6416	1	6416	1	5404	1	5404	1	5404	1	5404	1	5404	1	5404	1	5409⋆	1
845	7428	1	6406	1	6406	1	6406	1	5394	1	5394	1	5394	1	5394	1	5394	1	5394	1	5399⋆	1
844	7418	1	6396	1	6396	1	6396	1	5384	1	5384	1	5384	1	5384	1	5384	1	5384	1	5389⋆	1
843	7408	1	6386	1	6386	1	6386	1	5374	1	5374	1	5374	1	5374	1	5374	1	5374	1	5379⋆	1
842	7398	1	6376	1	6376	1	6376	1	5364	1	5364	1	5364	1	5364	1	5364	1	5364	1	5369⋆	1
841	7388	1	6366	1	6366	1	6366	1	5354	1	5354	1	5354	1	5354	1	5354	1	5354	1	5359⋆	1
840	7378	1	6356	1	6356	1	6356	1	5344	1	5344	1	5344	1	5344	1	5344	1	5344	1	5349⋆	1
839	7368	1	6346	1	6346	1	6346	1	5334	1	5334	1	5334	1	5334	1	5334	1	5334	1	5339⋆	1
838	7358	1	6336	1	6336	1	6336	1	5324	1	5324	1	5324	1	5324	1	5324	1	5324	1	5329⋆	1
837	7348	1	6326	1	6326	1	6326	1	5314	1	5314	1	5314	1	5314	1	5314	1	5314	1	5319⋆	1
836	7338	1	6316	1	6316	1	6316	1	5304	1	5304	1	5304	1	5304	1	5304	1	5304	1	5309⋆	1
835	7328	1	6306	1	6306	1	6306	1	5294	1	5294	1	5294	1	5294	1	5294	1	5294	1	5299⋆	1
834	7318	1	6296	1	6296	1	6296	1	5284	1	5284	1	5284	1	5284	1	5284	1	5284	1	5289⋆	1
833	7308	1	6286	1	6286	1	6286	1	5274	1	5274	1	5274	1	5274	1	5274	1	5274	1	5279⋆	1
832	7298	1	6276	1	6276	1	6276	1	5264	1	5264	1	5264	1	5264	1	5264	1	5264	1	5269⋆	1
831	7288	1	6266	1	6266	1	6266	1	5254	1	5254	1	5254	1	5254	1	5254	1	5254	1	5259⋆	1
830	7278	1	6256	1	6256	1	6256	1	5244	1	5244	1	5244	1	5244	1	5244	1	5244	1	5249⋆	1
829	7268	1	6246	1	6246	1	6246	1	5234	1	5234	1	5234	1	5234	1	5234	1	5234	1	5239⋆	1

continued

$m=10$																				
ν	9		8						7											
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
828	7258	1	6236	1	6236	1	6236	1	5224	1	5224	1	5224	1	5224	1	5224	1	5224	1	5229★	1
827	7248	1	6226	1	6226	1	6226	1	5214	1	5214	1	5214	1	5214	1	5214	1	5214	1	5219★	1
826	7238	1	6216	1	6216	1	6216	1	5204	1	5204	1	5204	1	5204	1	5204	1	5204	1	5209★	1
825	7228	1	6206	1	6206	1	6206	1	5194	1	5194	1	5194	1	5194	1	5194	1	5194	1	5199★	1
824	7218	1	6196	1	6196	1	6196	1	5184	1	5184	1	5184	1	5184	1	5184	1	5184	1	5189★	1
823	7208	1	6186	1	6186	1	6186	1	5174	1	5174	1	5174	1	5174	1	5174	1	5174	1	5179★	1
822	7198	1	6176	1	6176	1	6176	1	5164	1	5164	1	5164	1	5164	1	5164	1	5164	1	5169★	1
821	7188	1	6166	1	6166	1	6166	1	5154	1	5154	1	5154	1	5154	1	5154	1	5154	1	5159★	1
820	7178	1	6156	1	6156	1	6156	1	5144	1	5144	1	5144	1	5144	1	5144	1	5144	1	5149★	1
819	7168	1	6146	1	6146	1	6146	1	5134	1	5134	1	5134	1	5134	1	5134	1	5134	1	5139★	1
818	7158	1	6136	1	6136	1	6136	1	5124	1	5124	1	5124	1	5124	1	5124	1	5124	1	5129★	1
817	7148	1	6126	1	6126	1	6126	1	5114	1	5114	1	5114	1	5114	1	5114	1	5114	1	5119★	1
816	7138	1	6116	1	6116	1	6116	1	5104	1	5104	1	5104	1	5104	1	5104	1	5104	1	5109★	1
815	7128	1	6106	1	6106	1	6106	1	5094	1	5094	1	5094	1	5094	1	5094	1	5094	1	5099★	1
814	7118	1	6096	1	6096	1	6096	1	5084	1	5084	1	5084	1	5084	1	5084	1	5084	1	5089★	1
813	7108	1	6086	1	6086	1	6086	1	5074	1	5074	1	5074	1	5074	1	5074	1	5074	1	5079★	1
812	7098	1	6076	1	6076	1	6076	1	5064	1	5064	1	5064	1	5064	1	5064	1	5064	1	5069★	1
811	7088	1	6066	1	6066	1	6066	1	5054	1	5054	1	5054	1	5054	1	5054	1	5054	1	5059★	1
810	7078	1	6056	1	6056	1	6056	1	5044	1	5044	1	5044	1	5044	1	5044	1	5044	1	5049★	1
809	7068	1	6046	1	6046	1	6046	1	5034	1	5034	1	5034	1	5034	1	5034	1	5034	1	5039★	1
808	7058	1	6036	1	6036	1	6036	1	5024	1	5024	1	5024	1	5024	1	5024	1	5024	1	5029★	1
807	7048	1	6026	1	6026	1	6026	1	5014	1	5014	1	5014	1	5014	1	5014	1	5014	1	5019★	1
806	7038	1	6016	1	6016	1	6016	1	5004	1	5004	1	5004	1	5004	1	5004	1	5004	1	5009★	1
805	7028	1	6006	1	6006	1	6006	1	4994	1	4994	1	4994	1	4994	1	4994	1	4994	1	4999★	1
804	7018	1	5996	1	5996	1	5996	1	4984	1	4984	1	4984	1	4984	1	4984	1	4984	1	4989★	1
803	7008	1	5986	1	5986	1	5986	1	4974	1	4974	1	4974	1	4974	1	4974	1	4974	1	4979★	1
802	6998	1	5976	1	5976	1	5976	1	4964	1	4964	1	4964	1	4964	1	4964	1	4964	1	4969★	1
801	6988	1	5966	1	5966	1	5966	1	4954	1	4954	1	4954	1	4954	1	4954	1	4954	1	4959★	1
800	6978	1	5956	1	5956	1	5956	1	4944	1	4944	1	4944	1	4944	1	4944	1	4944	1	4949★	1
799	6968	1	5946	1	5946	1	5946	1	4934	1	4934	1	4934	1	4934	1	4934	1	4934	1	4939★	1
798	6958	1	5936	1	5936	1	5936	1	4924	1	4924	1	4924	1	4924	1	4924	1	4924	1	4929★	1
797	6948	1	5926	1	5926	1	5926	1	4914	1	4914	1	4914	1	4914	1	4914	1	4914	1	4919★	1
796	6938	1	5916	1	5916	1	5916	1	4904	1	4904	1	4904	1	4904	1	4904	1	4904	1	4909★	1
795	6928	1	5906	1	5906	1	5906	1	4894	1	4894	1	4894	1	4894	1	4894	1	4894	1	4899★	1
794	6918	1	5896	1	5896	1	5896	1	4884	1	4884	1	4884	1	4884	1	4884	1	4884	1	4889★	1
793	6908	1	5886	1	5886	1	5886	1	4874	1	4874	1	4874	1	4874	1	4874	1	4874	1	4879★	1
792	6898	1	5876	1	5876	1	5876	1	4864	1	4864	1	4864	1	4864	1	4864	1	4864	1	4869★	1
791	6888	1	5866	1	5869★	265	5866	1	4854	1	4854	1	4854	1	4854	1	4854	1	4854	1	4861★	265
790	6878	1	5856	1	5859★	265	5856	1	4844	1	4844	1	4844	1	4844	1	4844	1	4844	1	4851★	265
789	6868	1	5846	1	5849★	265	5846	1	4834	1	4834	1	4834	1	4834	1	4834	1	4834	1	4841★	265
788	6858	1	5836	1	5839★	265	5836	1	4824	1	4824	1	4824	1	4824	1	4824	1	4824	1	4831★	265
787	6848	1	5826	1	5829★	265	5826	1	4814	1	4814	1	4814	1	4814	1	4814	1	4814	1	4821★	265
786	6838	1	5816	1	5819★	265	5816	1	4804	1	4804	1	4804	1	4804	1	4804	1	4804	1	4811★	265
785	6828	1	5806	1	5809★	265	5806	1	4794	1	4794	1	4794	1	4794	1	4794	1	4794	1	4801★	265
784	6818	1	5796	1	5799★	265	5796	1	4784	1	4784	1	4784	1	4784	1	4784	1	4784	1	4791★	265
783	6808	1	5786	1	5789★	265	5786	1	4774	1	4774	1	4774	1	4774	1	4774	1	4774	1	4781★	265
782	6798	1	5776	1	5779★	265	5776	1	4764	1	4764	1	4764	1	4764	1	4764	1	4764	1	4771★	265
781	6788	1	5766	1	5769★	265	5766	1	4754	1	4754	1	4754	1	4754	1	4754	1	4754	1	4761★	265
780	6778	1	5756	1	5759★	265	5756	1	4744	1	4744	1	4744	1	4744	1	4744	1	4744	1	4751★	265
779	6768	1	5746	1	5749★	265	5746	1	4734	1	4734	1	4734	1	4734	1	4734	1	4734	1	4741★	265
778	6758	1	5736	1	5739★	265	5736	1	4724	1	4724	1	4724	1	4724	1	4724	1	4724	1	4731★	265

continued

$m=10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
777	6748	1	5726	1	5729⋆	265	5726	1	4714	1	4714	1	4714	1	4714	1	4714	1	4714	1	4721⋆	265
776	6738	1	5716	1	5719⋆	265	5716	1	4704	1	4704	1	4704	1	4704	1	4704	1	4704	1	4711⋆	265
775	6728	1	5706	1	5709⋆	265	5706	1	4694	1	4694	1	4694	1	4694	1	4694	1	4694	1	4701⋆	265
774	6718	1	5696	1	5699⋆	265	5696	1	4684	1	4684	1	4684	1	4684	1	4684	1	4684	1	4691⋆	265
773	6708	1	5686	1	5689⋆	265	5686	1	4674	1	4674	1	4674	1	4674	1	4674	1	4674	1	4681⋆	265
772	6698	1	5676	1	5679⋆	265	5676	1	4664	1	4664	1	4664	1	4664	1	4664	1	4664	1	4671⋆	265
771	6688	1	5666	1	5669⋆	265	5666	1	4654	1	4654	1	4654	1	4654	1	4654	1	4654	1	4661⋆	265
770	6678	1	5656	1	5659⋆	265	5656	1	4644	1	4644	1	4644	1	4644	1	4644	1	4644	1	4654⋆	125
769	6668	1	5646	1	5649⋆	265	5646	1	4634	1	4634	1	4634	1	4634	1	4634	1	4634	1	4644⋆	125
768	6658	1	5636	1	5639⋆	265	5636	1	4624	1	4624	1	4624	1	4624	1	4624	1	4624	1	4634⋆	125
767	6648	1	5634	0	5634	0	5634	0	4621	0	4621	0	4621	0	4621	0	4621	0	4621	0	4626⋆	0
766	6638	1	5626	1	5626	1	5626	1	4614	1	4614	1	4621†	0	4614	1	4614	1	4614	1	4624⋆	129
765	6628	1	5616	1	5616	1	5616	1	4604	1	4604	1	4614⋆	1	4604	1	4604	1	4611†	0	4614⋆	129
764	6618	1	5606	1	5606	1	5606	1	4594	1	4594	1	4604⋆	1	4594	1	4594	1	4604⋆	1	4604⋆	129
763	6608	1	5596	1	5596	1	5596	1	4584	1	4584	1	4594†	1	4584	1	4584	1	4594†	1	4596⋆	0
762	6598	1	5586	1	5586	1	5586	1	4574	1	4574	1	4584†	1	4574	1	4574	1	4584†	1	4589⋆	1
761	6588	1	5576	1	5576	1	5576	1	4564	1	4564	1	4574†	1	4564	1	4564	1	4574†	1	4579⋆	1
760	6578	1	5566	1	5566	1	5566	1	4554	1	4554	1	4564†	1	4554	1	4554	1	4564†	1	4569⋆	1
759	6568	1	5556	1	5559⋆	0	5556	1	4546	0	4546	0	4556†	0	4546	0	4546	0	4556†	0	4561⋆	0
758	6558	1	5546	1	5551⋆	1	5546	1	4539	1	4539	1	4549†	1	4539	1	4539	1	4549†	1	4554⋆	1
757	6548	1	5536	1	5541⋆	1	5536	1	4529	1	4529	1	4539†	1	4529	1	4529	1	4539†	1	4544⋆	1
756	6538	1	5526	1	5531⋆	1	5526	1	4519	1	4519	1	4529†	1	4519	1	4519	1	4529†	1	4534⋆	1
755	6528	1	5516	1	5521⋆	1	5516	1	4509	1	4509	1	4519†	1	4509	1	4509	1	4519†	1	4524⋆	1
754	6518	1	5506	1	5511⋆	1	5506	1	4499	1	4499	1	4509†	1	4499	1	4499	1	4509†	1	4514⋆	1
753	6508	1	5496	1	5501⋆	1	5496	1	4489	1	4489	1	4499†	1	4489	1	4489	1	4499†	1	4504⋆	1
752	6498	1	5486	1	5491⋆	1	5486	1	4479	1	4479	1	4489†	1	4479	1	4479	1	4489†	1	4494⋆	1
751	6488	1	5476	1	5481†	1	5484⋆	0	4476	0	4476	0	4486⋆	0	4476	0	4476	0	4486⋆	0	4484†	1
750	6478	1	5466	1	5471†	1	5476⋆	1	4469	1	4469	1	4479⋆	1	4469	1	4469	1	4479⋆	1	4474†	1
749	6468	1	5456	1	5461†	1	5466⋆	1	4459	1	4459	1	4469⋆	1	4459	1	4459	1	4469⋆	1	4464†	1
748	6458	1	5446	1	5451†	1	5456⋆	1	4449	1	4449	1	4459⋆	1	4449	1	4449	1	4459⋆	1	4454†	1
747	6448	1	5436	1	5441†	1	5446⋆	1	4439	1	4439	1	4449⋆	1	4439	1	4439	1	4449⋆	1	4444†	1
746	6438	1	5426	1	5431†	1	5436⋆	1	4429	1	4429	1	4439⋆	1	4429	1	4429	1	4439⋆	1	4434†	1
745	6428	1	5416	1	5421†	1	5426⋆	1	4419	1	4419	1	4429⋆	1	4419	1	4419	1	4429⋆	1	4424†	1
744	6418	1	5406	1	5411†	1	5416⋆	1	4409	1	4409	1	4419⋆	1	4409	1	4409	1	4419⋆	1	4414†	1
743	6408	1	5396	1	5401†	1	5406⋆	1	4399	1	4399	1	4409⋆	1	4399	1	4399	1	4409⋆	1	4404†	1
742	6398	1	5386	1	5391†	1	5396⋆	1	4389	1	4389	1	4399⋆	1	4389	1	4389	1	4399⋆	1	4394†	1
741	6388	1	5376	1	5381†	1	5386⋆	1	4379	1	4379	1	4389⋆	1	4379	1	4379	1	4389⋆	1	4384†	1
740	6378	1	5366	1	5371†	1	5376⋆	1	4369	1	4369	1	4379⋆	1	4369	1	4369	1	4379⋆	1	4374†	1
739	6368	1	5356	1	5361†	1	5366⋆	1	4359	1	4359	1	4369⋆	1	4359	1	4359	1	4369⋆	1	4364†	1
738	6358	1	5346	1	5351†	1	5356⋆	1	4349	1	4349	1	4359⋆	1	4349	1	4349	1	4359⋆	1	4354†	1
737	6348	1	5336	1	5341†	1	5346⋆	1	4339	1	4339	1	4349⋆	1	4339	1	4339	1	4349⋆	1	4344†	1
736	6338	1	5326	1	5331†	1	5336⋆	1	4329	1	4329	1	4339⋆	1	4329	1	4329	1	4339⋆	1	4334†	1
735	6328	1	5316	1	5321†	1	5326⋆	1	4326	0	4326	0	4336⋆	0	4326	0	4326	0	4329†	1	4331†	0
734	6318	1	5306	1	5311†	1	5316⋆	1	4319	1	4319	1	4329⋆	1	4319	1	4319	1	4319	1	4324†	1
733	6308	1	5296	1	5301†	1	5306⋆	1	4309	1	4309	1	4319⋆	1	4309	1	4309	1	4309	1	4314†	1
732	6298	1	5286	1	5291†	1	5296⋆	1	4299	1	4299	1	4309⋆	1	4299	1	4299	1	4299	1	4304†	1
731	6288	1	5276	1	5281†	1	5286⋆	1	4289	1	4289	1	4299⋆	1	4289	1	4289	1	4289	1	4294†	1
730	6278	1	5266	1	5271†	1	5276⋆	1	4279	1	4279	1	4289⋆	1	4279	1	4279	1	4279	1	4284†	1
729	6268	1	5256	1	5261†	1	5266⋆	1	4269	1	4269	1	4279⋆	1	4269	1	4269	1	4269	1	4274†	1
728	6258	1	5246	1	5251†	1	5256⋆	1	4259	1	4259	1	4269⋆	1	4259	1	4259	1	4259	1	4264†	1
727	6248	1	5236	1	5241†	1	5246⋆	1	4249	1	4249	1	4259⋆	1	4249	1	4249	1	4249	1	4254†	1

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
726	6238	1	5226	1	5231†	1	5236⋆	1	4239	1	4239	1	4249⋆	1	4239	1	4239	1	4239	1	4244†	1
725	6228	1	5216	1	5221†	1	5226⋆	1	4229	1	4229	1	4239⋆	1	4229	1	4229	1	4229	1	4234†	1
724	6218	1	5206	1	5211†	1	5216⋆	1	4219	1	4219	1	4229⋆	1	4219	1	4219	1	4219	1	4224†	1
723	6208	1	5196	1	5201†	1	5206⋆	1	4209	1	4209	1	4219⋆	1	4209	1	4209	1	4209	1	4214†	1
722	6198	1	5186	1	5191†	1	5196⋆	1	4199	1	4199	1	4209⋆	1	4199	1	4199	1	4199	1	4204†	1
721	6188	1	5176	1	5181†	1	5186⋆	1	4189	1	4189	1	4199⋆	1	4189	1	4189	1	4189	1	4194†	1
720	6178	1	5166	1	5171†	1	5176⋆	1	4179	1	4179	1	4189⋆	1	4179	1	4179	1	4179	1	4184†	1
719	6168	1	5156	1	5161†	1	5166⋆	1	4169	1	4169	1	4179⋆	1	4169	1	4169	1	4169	1	4174†	1
718	6158	1	5146	1	5151†	1	5156⋆	1	4159	1	4159	1	4169⋆	1	4159	1	4159	1	4159	1	4164†	1
717	6148	1	5136	1	5141†	1	5146⋆	1	4149	1	4149	1	4159⋆	1	4149	1	4149	1	4149	1	4154†	1
716	6138	1	5126	1	5131†	1	5136⋆	1	4139	1	4139	1	4149⋆	1	4139	1	4139	1	4139	1	4144†	1
715	6128	1	5116	1	5121†	1	5126⋆	1	4129	1	4129	1	4139⋆	1	4129	1	4129	1	4129	1	4134†	1
714	6118	1	5106	1	5111†	1	5116⋆	1	4119	1	4119	1	4129⋆	1	4119	1	4119	1	4119	1	4124†	1
713	6108	1	5096	1	5101†	1	5106⋆	1	4109	1	4109	1	4119⋆	1	4109	1	4109	1	4109	1	4114†	1
712	6098	1	5086	1	5091†	1	5096⋆	1	4099	1	4099	1	4109⋆	1	4099	1	4099	1	4099	1	4104†	1
711	6088	1	5076	1	5081†	1	5086⋆	1	4089	1	4089	1	4099⋆	1	4089	1	4089	1	4089	1	4094†	1
710	6078	1	5066	1	5071†	1	5076⋆	1	4079	1	4079	1	4089⋆	1	4079	1	4079	1	4079	1	4084†	1
709	6068	1	5056	1	5061†	1	5066⋆	1	4069	1	4069	1	4079⋆	1	4069	1	4069	1	4069	1	4074†	1
708	6058	1	5046	1	5051†	1	5056⋆	1	4059	1	4059	1	4069⋆	1	4059	1	4059	1	4059	1	4064†	1
707	6048	1	5036	1	5041†	1	5046⋆	1	4049	1	4049	1	4059⋆	1	4049	1	4049	1	4049	1	4054†	1
706	6038	1	5026	1	5031†	1	5036⋆	1	4039	1	4039	1	4049⋆	1	4039	1	4039	1	4039	1	4044†	1
705	6028	1	5016	1	5021†	1	5026⋆	1	4029	1	4029	1	4039⋆	1	4029	1	4029	1	4029	1	4034†	1
704	6018	1	5006	1	5011†	1	5016⋆	1	4019	1	4019	1	4029⋆	1	4019	1	4019	1	4019	1	4024†	1
703	6008	1	4996	1	5001†	1	5014⋆	0	4016	0	4016	0	4019†	1	4016	0	4016	0	4016	0	4021⋆	0
702	5998	1	4986	1	4991†	1	5006⋆	1	4009	1	4009	1	4009	1	4009	1	4009	1	4009	1	4014⋆	1
701	5988	1	4976	1	4981†	1	4996⋆	1	3999	1	3999	1	3999	1	3999	1	3999	1	3999	1	4011⋆	0
700	5978	1	4966	1	4971†	1	4986⋆	1	3989	1	3989	1	3989	1	3989	1	3989	1	3989	1	4004⋆	1
699	5968	1	4956	1	4961†	1	4984⋆	0	3979	1	3986†	0	3979	1	3979	1	3979	1	3979	1	3994⋆	1
698	5958	1	4946	1	4951†	1	4976⋆	1	3969	1	3979†	1	3969	1	3969	1	3969	1	3969	1	3984⋆	1
697	5948	1	4936	1	4941†	1	4966⋆	1	3959	1	3969†	1	3959	1	3959	1	3959	1	3959	1	3974⋆	1
696	5938	1	4926	1	4931†	1	4956⋆	1	3949	1	3959†	1	3949	1	3949	1	3949	1	3949	1	3964⋆	1
695	5928	1	4916	1	4921†	1	4946⋆	1	3939	1	3949†	1	3939	1	3939	1	3939	1	3939	1	3961⋆	0
694	5918	1	4906	1	4911†	1	4936⋆	1	3929	1	3939†	1	3929	1	3929	1	3929	1	3929	1	3954⋆	1
693	5908	1	4896	1	4901†	1	4926⋆	1	3919	1	3929†	1	3919	1	3919	1	3919	1	3919	1	3946⋆	0
692	5898	1	4886	1	4891†	1	4916⋆	1	3909	1	3919†	1	3909	1	3909	1	3909	1	3909	1	3939⋆	1
691	5888	1	4876	1	4881†	1	4906⋆	1	3899	1	3909†	1	3899	1	3899	1	3899	1	3899	1	3929⋆	1
690	5878	1	4866	1	4871†	1	4896⋆	1	3889	1	3899†	1	3889	1	3889	1	3889	1	3889	1	3919⋆	1
689	5868	1	4856	1	4861†	1	4886⋆	1	3879	1	3889†	1	3879	1	3879	1	3879	1	3879	1	3909⋆	1
688	5858	1	4846	1	4851†	1	4876⋆	1	3869	1	3879†	1	3869	1	3869	1	3869	1	3869	1	3899⋆	1
687	5848	1	4836	1	4841†	1	4874⋆	0	3859	1	3876†	0	3859	1	3859	1	3859	1	3859	1	3889⋆	1
686	5838	1	4826	1	4831†	1	4866⋆	1	3849	1	3869†	1	3849	1	3849	1	3849	1	3849	1	3879⋆	1
685	5828	1	4816	1	4821†	1	4856⋆	1	3839	1	3859†	1	3839	1	3839	1	3839	1	3839	1	3869⋆	1
684	5818	1	4806	1	4811†	1	4846⋆	1	3829	1	3849†	1	3829	1	3829	1	3829	1	3829	1	3859⋆	1
683	5808	1	4796	1	4801†	1	4844⋆	0	3819	1	3846†	0	3819	1	3819	1	3819	1	3819	1	3849⋆	1
682	5798	1	4786	1	4791†	1	4836⋆	0	3809	1	3839⋆	1	3809	1	3809	1	3809	1	3809	1	3839⋆	1
681	5789	683	4776	1	4781†	1	4828⋆	1	3799	1	3831⋆	1	3799	1	3799	1	3799	1	3799	1	3829†	1
680	5779	683	4766	1	4771†	1	4818⋆	1	3789	1	3821⋆	1	3789	1	3789	1	3789	1	3789	1	3819†	1
679	5769	683	4756	1	4761†	1	4808⋆	1	3779	1	3811⋆	1	3779	1	3779	1	3779	1	3779	1	3809†	1
678	5759	683	4746	1	4751†	1	4798⋆	1	3769	1	3801⋆	1	3769	1	3769	1	3769	1	3769	1	3799†	1
677	5749	683	4736	1	4741†	1	4788⋆	1	3759	1	3791⋆	1	3759	1	3759	1	3759	1	3759	1	3789†	1
676	5739	683	4726	1	4731†	1	4778⋆	1	3749	1	3781⋆	1	3749	1	3749	1	3749	1	3749	1	3779†	1

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
675	5729	683	4716	1	4721†	1	4768⋆	1	3739	1	3771⋆	1	3739	1	3739	1	3739	1	3739	1	3769†	1
674	5719	683	4706	1	4711†	1	4758⋆	1	3729	1	3761⋆	1	3729	1	3729	1	3729	1	3729	1	3759†	1
673	5709	683	4696	1	4701†	1	4748⋆	1	3719	1	3751⋆	1	3719	1	3719	1	3719	1	3719	1	3749†	1
672	5699	683	4686	1	4691†	1	4738⋆	1	3709	1	3741⋆	1	3709	1	3709	1	3709	1	3709	1	3739†	1
671	5689	683	4676	1	4681†	1	4728⋆	1	3699	1	3731⋆	1	3699	1	3699	1	3699	1	3699	1	3729†	1
670	5679	683	4666	1	4671†	1	4718⋆	1	3689	1	3721⋆	1	3689	1	3689	1	3689	1	3689	1	3719†	1
669	5669	683	4656	1	4661†	1	4708⋆	1	3679	1	3711⋆	1	3679	1	3679	1	3679	1	3679	1	3709†	1
668	5659	683	4646	1	4651†	1	4698⋆	1	3669	1	3701⋆	1	3669	1	3669	1	3669	1	3669	1	3699†	1
667	5649	683	4636	1	4641†	1	4688⋆	1	3659	1	3691⋆	1	3659	1	3659	1	3659	1	3659	1	3689†	1
666	5639	683	4626	1	4631†	1	4678⋆	1	3649	1	3681⋆	1	3649	1	3649	1	3649	1	3649	1	3679†	1
665	5629	683	4616	1	4621†	1	4668⋆	1	3639	1	3671⋆	1	3639	1	3639	1	3639	1	3639	1	3669†	1
664	5619	683	4606	1	4611†	1	4658⋆	1	3629	1	3661⋆	1	3629	1	3629	1	3629	1	3629	1	3659†	1
663	5609	683	4596	1	4601†	1	4648⋆	1	3619	1	3651⋆	1	3619	1	3619	1	3619	1	3619	1	3649†	1
662	5599	683	4586	1	4591†	1	4638⋆	1	3609	1	3641⋆	1	3609	1	3609	1	3609	1	3609	1	3639†	1
661	5589	683	4576	1	4581†	1	4628⋆	1	3599	1	3631⋆	1	3599	1	3599	1	3599	1	3599	1	3629†	1
660	5579	683	4566	1	4571†	1	4618⋆	1	3589	1	3621⋆	1	3589	1	3589	1	3589	1	3589	1	3619†	1
659	5569	683	4556	1	4561†	1	4608⋆	1	3579	1	3611⋆	1	3579	1	3579	1	3579	1	3579	1	3609†	1
658	5559	683	4546	1	4551†	1	4598⋆	1	3569	1	3601⋆	1	3569	1	3569	1	3569	1	3569	1	3599†	1
657	5549	683	4536	1	4541†	1	4588⋆	1	3559	1	3591⋆	1	3559	1	3559	1	3559	1	3559	1	3589†	1
656	5539	683	4526	1	4531†	1	4578⋆	1	3549	1	3581⋆	1	3549	1	3549	1	3549	1	3549	1	3579†	1
655	5529	683	4516	1	4521†	1	4568⋆	1	3539	1	3571⋆	1	3539	1	3539	1	3539	1	3539	1	3569†	1
654	5519	683	4506	1	4511†	1	4558⋆	1	3529	1	3561⋆	1	3529	1	3529	1	3529	1	3529	1	3559†	1
653	5509	683	4496	1	4501†	1	4548⋆	1	3519	1	3551⋆	1	3519	1	3519	1	3519	1	3519	1	3549†	1
652	5499	683	4486	1	4491†	1	4538⋆	1	3509	1	3541⋆	1	3509	1	3509	1	3509	1	3509	1	3539†	1
651	5489	683	4476	1	4481†	1	4528⋆	1	3499	1	3531⋆	1	3499	1	3499	1	3499	1	3499	1	3529†	1
650	5479	683	4466	1	4471†	1	4518⋆	1	3489	1	3521⋆	1	3489	1	3489	1	3489	1	3489	1	3519†	1
649	5469	683	4456	1	4461†	1	4508⋆	1	3479	1	3511⋆	1	3479	1	3479	1	3479	1	3479	1	3509†	1
648	5459	683	4446	1	4451†	1	4498⋆	1	3469	1	3501⋆	1	3469	1	3469	1	3469	1	3469	1	3499†	1
647	5449	683	4436	1	4441†	1	4488⋆	1	3459	1	3491⋆	1	3459	1	3459	1	3459	1	3459	1	3489†	1
646	5439	683	4426	1	4431†	1	4478⋆	1	3449	1	3481⋆	1	3449	1	3449	1	3449	1	3449	1	3479†	1
645	5429	683	4416	1	4421†	1	4468⋆	1	3439	1	3471⋆	1	3439	1	3439	1	3439	1	3439	1	3469†	1
644	5419	683	4406	1	4411†	1	4458⋆	1	3429	1	3461⋆	1	3429	1	3429	1	3429	1	3429	1	3459†	1
643	5409	683	4396	1	4401†	1	4448⋆	1	3419	1	3451⋆	1	3419	1	3419	1	3419	1	3419	1	3449†	1
642	5399	683	4386	1	4391†	1	4438⋆	1	3409	1	3441⋆	1	3409	1	3409	1	3409	1	3409	1	3439†	1
641	5389	683	4376	1	4381†	1	4428⋆	1	3399	1	3431⋆	1	3399	1	3399	1	3399	1	3399	1	3429†	1
640	5379	683	4366	1	4371†	1	4418⋆	1	3389	1	3421⋆	1	3389	1	3389	1	3389	1	3389	1	3419†	1
639	5369	683	4356	1	4361†	1	4408⋆	1	3386	0	3418⋆	0	3386	0	3386	0	3386	0	3386	0	3416†	0
638	5359	683	4346	1	4351†	1	4398⋆	1	3379	1	3411⋆	1	3379	1	3379	1	3386†	0	3379	1	3409†	1
637	5349	683	4336	1	4341†	1	4388⋆	1	3369	1	3401⋆	1	3369	1	3376†	0	3379†	1	3369	1	3399†	1
636	5339	683	4326	1	4331†	1	4378⋆	1	3359	1	3391⋆	1	3359	1	3369†	1	3369†	1	3359	1	3389†	1
635	5329	683	4316	1	4321†	1	4368⋆	1	3349	1	3381†	1	3349	1	3359†	1	3359†	1	3349	1	3386⋆	0
634	5319	683	4306	1	4311†	1	4358⋆	1	3339	1	3371†	1	3339	1	3349†	1	3349†	1	3339	1	3379⋆	1
633	5309	683	4296	1	4301†	1	4348⋆	1	3329	1	3361†	1	3329	1	3339†	1	3339†	1	3329	1	3369⋆	1
632	5299	683	4286	1	4291†	1	4338⋆	1	3319	1	3351†	1	3319	1	3329†	1	3329†	1	3319	1	3359⋆	1
631	5289	683	4276	1	4281†	1	4328⋆	1	3309	1	3341†	1	3309	1	3319†	1	3319†	1	3309	1	3356⋆	0
630	5279	683	4266	1	4271†	1	4318⋆	1	3299	1	3331†	1	3299	1	3309†	1	3309†	1	3299	1	3349⋆	1
629	5269	683	4256	1	4261†	1	4308⋆	1	3289	1	3321†	1	3289	1	3299†	1	3299†	1	3289	1	3339⋆	1
628	5259	683	4246	1	4251†	1	4298⋆	1	3279	1	3311†	1	3279	1	3289†	1	3289†	1	3279	1	3329⋆	1
627	5249	683	4236	1	4241†	1	4288⋆	1	3269	1	3301†	1	3269	1	3279†	1	3279†	1	3269	1	3321⋆	0
626	5239	683	4226	1	4231†	1	4278⋆	1	3259	1	3291†	1	3259	1	3269†	1	3269†	1	3259	1	3314⋆	1
625	5229	683	4216	1	4221†	1	4268⋆	1	3249	1	3281†	1	3249	1	3259†	1	3259†	1	3249	1	3304⋆	1

continued

$m = 10$																						
ν	9		8						7													
$S^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
624	5219	683	4206	1	4211†	1	4258⋆	1	3239	1	3271†	1	3239	1	3249†	1	3249†	1	3239	1	3294⋆	1
623	5209	683	4196	1	4201†	1	4248⋆	1	3229	1	3261†	1	3229	1	3239†	1	3239†	1	3236†	0	3284⋆	1
622	5199	683	4186	1	4191†	1	4238⋆	1	3219	1	3251†	1	3219	1	3229†	1	3229†	1	3229†	1	3274⋆	1
621	5189	683	4176	1	4181†	1	4228⋆	1	3209	1	3241†	1	3209	1	3219†	1	3219†	1	3219†	1	3264⋆	1
620	5179	683	4166	1	4171†	1	4218⋆	1	3199	1	3231†	1	3199	1	3209†	1	3209†	1	3209†	1	3254⋆	1
619	5169	683	4156	1	4161†	1	4208⋆	1	3189	1	3221†	1	3189	1	3199†	1	3199†	1	3199†	1	3244⋆	1
618	5159	683	4146	1	4151†	1	4198⋆	1	3179	1	3211†	1	3179	1	3189†	1	3189†	1	3189†	1	3234⋆	1
617	5149	683	4136	1	4141†	1	4188⋆	1	3169	1	3201†	1	3169	1	3179†	1	3179†	1	3179†	1	3224⋆	1
616	5139	683	4126	1	4131†	1	4178⋆	1	3159	1	3191†	1	3159	1	3169†	1	3169†	1	3169†	1	3214⋆	1
615	5129	683	4116	1	4121†	1	4168⋆	1	3149	1	3181†	1	3149	1	3159†	1	3159†	1	3159†	1	3204⋆	1
614	5119	683	4106	1	4111†	1	4158⋆	1	3139	1	3171†	1	3139	1	3149†	1	3149†	1	3149†	1	3194⋆	1
613	5109	683	4096	1	4101†	1	4148⋆	1	3129	1	3161†	1	3129	1	3139†	1	3139†	1	3139†	1	3184⋆	1
612	5099	683	4086	1	4091†	1	4138⋆	1	3119	1	3151†	1	3119	1	3129†	1	3129†	1	3129†	1	3174⋆	1
611	5089	683	4076	1	4081†	1	4128⋆	1	3109	1	3141†	1	3109	1	3119†	1	3119†	1	3119†	1	3164⋆	1
610	5079	683	4066	1	4071†	1	4118⋆	1	3099	1	3131†	1	3099	1	3109†	1	3109†	1	3109†	1	3154⋆	1
609	5069	683	4056	1	4061†	1	4108⋆	1	3089	1	3121†	1	3089	1	3099†	1	3099†	1	3099†	1	3144⋆	1
608	5059	683	4046	1	4051†	1	4098⋆	1	3079	1	3111†	1	3079	1	3089†	1	3089†	1	3089†	1	3134⋆	1
607	5049	683	4036	1	4041†	1	4088⋆	1	3069	1	3101†	1	3076†	0	3079†	1	3079†	1	3079†	1	3124⋆	1
606	5039	683	4026	1	4031†	1	4078⋆	1	3059	1	3091†	1	3069†	1	3069†	1	3069†	1	3069†	1	3114⋆	1
605	5029	683	4016	1	4021†	1	4068⋆	1	3049	1	3081†	1	3059†	1	3059†	1	3059†	1	3059†	1	3104⋆	1
604	5019	683	4006	1	4011†	1	4058⋆	1	3039	1	3071†	1	3049†	1	3049†	1	3049†	1	3049†	1	3094⋆	1
603	5009	683	3996	1	4001†	1	4048⋆	1	3029	1	3061†	1	3039†	1	3039†	1	3039†	1	3039†	1	3084⋆	1
602	4999	683	3986	1	3991†	1	4038⋆	1	3019	1	3051†	1	3029†	1	3029†	1	3029†	1	3029†	1	3074⋆	1
601	4989	683	3976	1	3981†	1	4028⋆	1	3009	1	3041†	1	3019†	1	3019†	1	3019†	1	3019†	1	3064⋆	1
600	4979	683	3966	1	3971†	1	4018⋆	1	2999	1	3031†	1	3009†	1	3009†	1	3009†	1	3009†	1	3054⋆	1
599	4969	683	3956	1	3961†	1	4008⋆	1	2989	1	3021†	1	2999†	1	2999†	1	2999†	1	2999†	1	3044⋆	1
598	4959	683	3946	1	3951†	1	3998⋆	1	2979	1	3011†	1	2989†	1	2989†	1	2989†	1	2989†	1	3034⋆	1
597	4949	683	3936	1	3941†	1	3988⋆	1	2969	1	3001†	1	2979†	1	2979†	1	2979†	1	2979†	1	3024⋆	1
596	4939	683	3926	1	3931†	1	3978⋆	1	2959	1	2991†	1	2969†	1	2969†	1	2969†	1	2969†	1	3014⋆	1
595	4929	683	3916	1	3921†	1	3968⋆	1	2949	1	2981†	1	2959†	1	2959†	1	2959†	1	2959†	1	3004⋆	1
594	4919	683	3906	1	3911†	1	3958⋆	1	2939	1	2971†	1	2949†	1	2949†	1	2949†	1	2949†	1	2994⋆	1
593	4909	683	3896	1	3901†	1	3948⋆	1	2929	1	2961†	1	2939†	1	2939†	1	2939†	1	2939†	1	2984⋆	1
592	4899	683	3886	1	3891†	1	3938⋆	1	2919	1	2951†	1	2929†	1	2929†	1	2929†	1	2929†	1	2974⋆	1
591	4889	683	3876	1	3881†	1	3928⋆	1	2909	1	2941†	1	2919†	1	2919†	1	2922†	725	2919†	1	2964⋆	1
590	4879	683	3866	1	3871†	1	3918⋆	1	2899	1	2931†	1	2909†	1	2909†	1	2912†	725	2909†	1	2954⋆	1
589	4869	683	3856	1	3861†	1	3908⋆	1	2889	1	2921†	1	2899†	1	2899†	1	2907†	727	2899†	1	2944⋆	1
588	4859	683	3846	1	3851†	1	3898⋆	1	2879	1	2911†	1	2889†	1	2889†	1	2897†	727	2889†	1	2934⋆	1
587	4849	683	3836	1	3841†	1	3888⋆	1	2869	1	2901†	1	2879†	1	2879†	1	2887†	727	2879†	1	2924⋆	1
586	4839	683	3826	1	3831†	1	3878⋆	1	2859	1	2891†	1	2869†	1	2869†	1	2877†	727	2869†	1	2914⋆	1
585	4829	683	3816	1	3821†	1	3868⋆	1	2857	731	2881†	1	2859†	1	2859†	1	2877†	731	2859†	1	2904⋆	1
584	4819	683	3806	1	3811†	1	3858⋆	1	2847	731	2871†	1	2849†	1	2849†	1	2867†	731	2849†	1	2894⋆	1
583	4809	683	3796	1	3801†	1	3848⋆	1	2837	731	2861†	1	2839†	1	2839†	1	2857†	731	2839†	1	2884⋆	1
582	4799	683	3786	1	3791†	1	3838⋆	1	2827	731	2851†	1	2829†	1	2829†	1	2847†	731	2829†	1	2874⋆	1
581	4789	683	3776	1	3781†	1	3828⋆	1	2817	731	2841†	1	2819†	1	2819†	1	2837†	731	2819†	1	2864⋆	1
580	4779	683	3766	1	3771†	1	3818⋆	1	2807	731	2831†	1	2809†	1	2809†	1	2827†	731	2809†	1	2854⋆	1
579	4769	683	3756	1	3761†	1	3808⋆	1	2797	731	2821†	1	2799†	1	2799†	1	2817†	731	2799†	1	2844⋆	1
578	4759	683	3746	1	3751†	1	3798⋆	1	2787	731	2811†	1	2789†	1	2789†	1	2807†	731	2789†	1	2834⋆	1
577	4749	683	3736	1	3741†	1	3788⋆	1	2777	731	2801†	1	2779†	1	2779†	1	2797†	731	2779†	1	2824⋆	1
576	4739	683	3726	1	3731†	1	3778⋆	1	2767	731	2791†	1	2769†	1	2769†	1	2787†	731	2769†	1	2814⋆	1
575	4729	683	3716	1	3721†	1	3768⋆	1	2757	731	2781†	1	2759†	1	2759†	1	2777†	731	2759†	1	2804⋆	1
574	4719	683	3706	1	3711†	1	3758⋆	1	2747	731	2771†	1	2749†	1	2749†	1	2767†	731	2749†	1	2794⋆	1

continued

$m=10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
573	4709	683	3696	1	3701†	1	3748⋆	1	2737	727	2761†	1	2739†	1	2739†	1	2757†	731	2739†	1	2784⋆	1
572	4699	683	3686	1	3691†	1	3738⋆	1	2727	727	2751†	1	2729†	1	2729†	1	2747†	731	2729†	1	2774⋆	1
571	4689	683	3676	1	3681†	1	3728⋆	1	2717	727	2741†	1	2719†	1	2719†	1	2737†	731	2719†	1	2764⋆	1
570	4679	683	3666	1	3671†	1	3718⋆	1	2707	727	2731†	1	2709†	1	2709†	1	2727†	731	2709†	1	2754⋆	1
569	4669	683	3656	1	3661†	1	3708⋆	1	2707	731	2727†	731	2707	731	2707	731	2717†	731	2707	731	2744⋆	1
568	4659	683	3646	1	3651†	1	3698⋆	1	2697	731	2717†	731	2697	731	2697	731	2707†	731	2697	731	2734⋆	1
567	4649	683	3636	1	3641†	1	3688⋆	1	2687	731	2707†	731	2687	731	2687	731	2697†	731	2687	731	2724⋆	1
566	4639	683	3626	1	3631†	1	3678⋆	1	2677	731	2697†	731	2677	731	2677	731	2687†	731	2677	731	2714⋆	1
565	4629	683	3616	1	3621†	1	3668⋆	1	2667	731	2687†	731	2667	731	2667	731	2677†	731	2667	731	2704⋆	1
564	4619	683	3606	1	3611†	1	3658⋆	1	2657	731	2677†	731	2657	731	2657	731	2667†	731	2657	731	2694⋆	1
563	4609	683	3596	1	3601†	1	3648⋆	1	2647	731	2667†	731	2647	731	2647	731	2657†	731	2647	731	2684⋆	1
562	4599	683	3586	1	3591†	1	3638⋆	1	2637	731	2657†	731	2637	731	2637	731	2647†	731	2637	731	2674⋆	1
561	4589	683	3576	1	3581†	1	3628⋆	1	2627	731	2647†	731	2627	731	2627	731	2637†	731	2627	731	2664⋆	1
560	4579	683	3566	1	3571†	1	3618⋆	1	2617	731	2637†	731	2617	731	2617	731	2627†	731	2617	731	2654⋆	1
559	4569	683	3556	1	3561†	1	3608⋆	1	2607	731	2627†	731	2607	731	2607	731	2617†	731	2607	731	2644⋆	1
558	4559	683	3546	1	3551†	1	3598⋆	1	2597	731	2617†	731	2597	731	2597	731	2607†	731	2597	731	2634⋆	1
557	4549	683	3536	1	3541†	1	3588⋆	1	2587	731	2607†	731	2587	731	2587	731	2597†	731	2587	731	2624⋆	1
556	4539	683	3526	1	3531†	1	3578⋆	1	2577	731	2597†	731	2577	731	2577	731	2587†	731	2577	731	2614⋆	1
555	4529	683	3516	1	3521†	1	3568⋆	1	2567	731	2587†	731	2567	731	2567	731	2577†	731	2567	731	2604⋆	1
554	4519	683	3506	1	3511†	1	3558⋆	1	2557	731	2577†	731	2557	731	2557	731	2567†	731	2557	731	2594⋆	1
553	4509	683	3498	683	3503†	683	3548⋆	1	2557	747	2577†	747	2557	747	2557	747	2557	731	2557	747	2587⋆	747
552	4499	683	3488	683	3493†	683	3538⋆	1	2547	747	2567†	747	2547	747	2547	747	2547	731	2547	747	2577⋆	747
551	4489	683	3478	683	3483†	683	3528⋆	1	2537	747	2557†	747	2537	747	2537	747	2537	731	2537	747	2567⋆	747
550	4479	683	3468	683	3473†	683	3518⋆	1	2527	747	2547†	747	2527	747	2527	747	2527	731	2527	747	2557⋆	747
549	4469	683	3458	683	3463†	683	3508⋆	1	2517	747	2537†	747	2517	747	2517	747	2517	731	2517	747	2547⋆	747
548	4459	683	3448	683	3453†	683	3498⋆	1	2507	747	2527†	747	2507	747	2507	747	2507	731	2507	747	2537⋆	747
547	4449	683	3444	613	3449†	613	3488⋆	1	2497	747	2517†	747	2497	747	2497	747	2497	731	2497	747	2527⋆	747
546	4439	683	3434	613	3439†	613	3478⋆	1	2487	747	2507†	747	2487	747	2487	747	2487	731	2487	747	2517⋆	747
545	4429	683	3424	613	3429†	613	3468⋆	1	2477	747	2497†	747	2477	747	2477	747	2477	731	2477	747	2507⋆	747
544	4419	683	3414	613	3419†	613	3458⋆	1	2467	747	2487†	747	2467	747	2467	747	2467	731	2467	747	2497⋆	747
543	4409	683	3404	613	3409†	613	3448⋆	1	2457	747	2477†	747	2457	747	2457	747	2457	731	2457	747	2487⋆	747
542	4399	683	3394	613	3399†	613	3438⋆	1	2447	747	2467†	747	2447	747	2447	747	2447	731	2447	747	2477⋆	747
541	4389	683	3384	613	3389†	613	3428⋆	1	2437	747	2457†	747	2437	747	2437	747	2437	731	2437	747	2467⋆	747
540	4379	683	3374	613	3379†	613	3418⋆	1	2427	747	2447†	747	2427	747	2427	747	2427	731	2427	747	2457⋆	747
539	4369	683	3364	613	3369†	613	3408⋆	1	2417	747	2437†	747	2417	747	2417	747	2417	731	2417	747	2447⋆	747
538	4359	683	3354	613	3359†	613	3398⋆	1	2407	747	2427†	747	2407	747	2407	747	2407	731	2407	747	2437⋆	747
537	4349	683	3344	613	3349†	613	3388⋆	1	2397	747	2417†	747	2397	747	2397	747	2397	731	2397	747	2427⋆	747
536	4339	683	3334	613	3339†	613	3378⋆	1	2387	747	2407†	747	2387	747	2387	747	2387	731	2387	747	2417⋆	747
535	4329	683	3324	613	3329†	613	3368⋆	1	2377	747	2397†	747	2377	747	2377	747	2377	731	2377	747	2407⋆	747
534	4319	683	3314	613	3319†	613	3358⋆	1	2367	747	2387†	747	2367	747	2367	747	2367	731	2367	747	2397⋆	747
533	4309	683	3304	613	3309†	613	3348⋆	1	2357	747	2377†	747	2357	747	2357	747	2357	731	2357	747	2387⋆	747
532	4299	683	3294	613	3299†	613	3338⋆	1	2347	747	2367†	747	2347	747	2347	747	2347	731	2347	747	2377⋆	747
531	4289	683	3284	613	3289†	613	3328⋆	1	2337	747	2357†	747	2337	747	2337	747	2337	731	2337	747	2367⋆	747
530	4279	683	3274	613	3279†	613	3318⋆	1	2327	747	2347†	747	2327	747	2327	747	2327	731	2327	747	2357⋆	747
529	4269	683	3264	613	3269†	613	3308⋆	1	2317	747	2337†	747	2317	747	2317	747	2317	731	2317	731	2347⋆	727
528	4259	683	3254	613	3259†	613	3298⋆	1	2307	747	2327†	747	2307	747	2307	747	2307	731	2307	731	2337⋆	726
527	4252	529	3244	613	3249†	613	3288⋆	1	2297	747	2317†	747	2297	747	2297	747	2297	731	2297	731	2332⋆	727
526	4242	529	3234	613	3239†	613	3278⋆	1	2287	747	2307†	747	2287	747	2287	731	2287	731	2287	731	2322⋆	727
525	4232	529	3224	613	3229†	613	3268⋆	1	2277	747	2297†	747	2277	747	2277	731	2277	731	2277	731	2312⋆	727
524	4222	529	3214	613	3219†	613	3258⋆	1	2267	747	2287†	747	2267	747	2267	731	2267	731	2267	731	2302⋆	727
523	4212	529	3204	613	3209†	613	3248⋆	1	2257	747	2277†	747	2257	747	2257	731	2257	731	2257	731	2292⋆	727

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
522	4202	529	3194	613	3199†	613	3238⋆	1	2247	747	2267†	747	2247	747	2247	731	2247	731	2247	731	2282⋆	727
521	4192	529	3184	613	3189†	613	3228⋆	1	2237	747	2257†	747	2237	731	2237	731	2237	731	2237	731	2272⋆	727
520	4182	529	3174	613	3179†	613	3218⋆	1	2227	747	2247†	747	2227	731	2227	731	2227	731	2227	731	2262⋆	727
519	4172	529	3164	553	3169†	553	3208⋆	1	2217	747	2237†	747	2217	731	2217	731	2217	731	2217	731	2252⋆	727
518	4162	529	3154	553	3159†	553	3198⋆	1	2207	747	2227†	747	2207	731	2207	731	2207	731	2207	731	2242⋆	727
517	4152	529	3144	553	3149†	553	3188⋆	1	2197	747	2217†	747	2197	731	2197	731	2197	731	2197	731	2232⋆	727
516	4142	529	3134	553	3139†	553	3178⋆	1	2187	747	2207†	747	2187	731	2187	731	2187	731	2187	731	2222⋆	727
515	4132	529	3124	553	3129†	553	3168⋆	1	2177	747	2197†	747	2177	731	2177	731	2177	731	2177	731	2212⋆	727
514	4122	529	3114	553	3119†	553	3158⋆	1	2167	747	2187†	747	2167	731	2167	731	2167	731	2167	731	2202⋆	727
513	4112	529	3104	553	3109†	553	3148⋆	1	2157	747	2177†	747	2157	731	2157	731	2157	731	2167†	747	2192⋆	727
512	4102	529	3094	553	3099†	553	3138⋆	1	2147	747	2167†	747	2147	731	2147	731	2147	731	2157†	747	2182⋆	727
511	4097	0	3084	0	3089†	0	3136⋆	0	2144	256	2164†	256	2144	255	2144	256	2144	256	2147†	747	2177⋆	725
510	4088	1	3084	0	3089†	0	3136⋆	0	2144	257	2164†	257	2144	256	2144	257	2144	257	2144	257	2177⋆	726
509	4078	1	3084	0	3089†	0	3128⋆	1	2134	257	2154†	257	2144†	257	2134	257	2134	257	2134	256	2172⋆	727
508	4068	1	3076	1	3081†	1	3118⋆	1	2124	257	2148†	0	2144†	258	2126†	0	2126†	0	2134†	257	2171⋆	0
507	4058	1	3074	0	3079†	0	3116⋆	0	2116	0	2148†	0	2134†	258	2126†	0	2126†	0	2126†	0	2171⋆	0
506	4048	1	3066	1	3071†	1	3116⋆	0	2116	0	2148†	0	2126†	0	2126†	0	2119†	1	2126†	0	2171⋆	0
505	4038	1	3056	1	3061†	1	3108⋆	1	2116	0	2148†	0	2119†	1	2126†	0	2116	0	2126†	0	2171⋆	0
504	4028	1	3046	1	3051†	1	3098⋆	1	2109	1	2141†	1	2109	1	2119†	1	2109	1	2119†	1	2164⋆	1
503	4018	1	3044	0	3049†	0	3088⋆	1	2106	0	2138†	0	2106	0	2116†	0	2106	0	2116†	0	2161⋆	0
502	4008	1	3036	1	3041†	1	3078⋆	1	2106	0	2138†	0	2106	0	2109†	1	2106	0	2116†	0	2161⋆	0
501	3998	1	3026	1	3031†	1	3068⋆	1	2106	0	2131†	1	2106	0	2106	0	2106	0	2116†	0	2161⋆	0
500	3988	1	3016	1	3021†	1	3058⋆	1	2099	1	2121†	1	2099	1	2099	1	2106†	0	2109†	1	2154⋆	1
499	3978	1	3006	1	3011†	1	3048⋆	1	2096	0	2118†	0	2096	0	2096	0	2106†	0	2099†	1	2151⋆	0
498	3968	1	2996	1	3001†	1	3038⋆	1	2089	1	2111†	1	2096†	0	2089	1	2099†	1	2089	1	2144⋆	1
497	3958	1	2986	1	2991†	1	3028⋆	1	2079	1	2101†	1	2089†	1	2079	1	2089†	1	2079	1	2134⋆	1
496	3948	1	2976	1	2981†	1	3018⋆	1	2069	1	2091†	1	2079†	1	2069	1	2079†	1	2069	1	2124⋆	1
495	3942	0	2974	0	2974	0	3016⋆	0	2066	0	2088†	0	2076†	0	2066	0	2076†	0	2066	0	2116⋆	0
494	3933	1	2966	1	2966	1	3016⋆	0	2066	0	2088†	0	2076†	0	2066	0	2076†	0	2066	0	2109⋆	1
493	3923	1	2956	1	2956	1	3008⋆	1	2066	0	2088†	0	2076†	0	2066	0	2076†	0	2066	0	2099⋆	1
492	3913	1	2946	1	2946	1	2998⋆	1	2059	1	2081†	1	2069†	1	2066†	0	2069†	1	2059	1	2089⋆	1
491	3903	1	2936	1	2936	1	2996⋆	0	2056	0	2078†	0	2066†	0	2066†	0	2066†	0	2056	0	2079⋆	1
490	3893	1	2926	1	2926	1	2996⋆	0	2049	1	2078⋆	0	2059†	1	2059†	1	2059†	1	2049	1	2069†	1
489	3884	683	2916	1	2916	1	2988⋆	1	2039	1	2071⋆	1	2049†	1	2049†	1	2056†	0	2039	1	2059†	1
488	3874	683	2906	1	2906	1	2978⋆	1	2029	1	2061⋆	1	2039†	1	2039†	1	2049†	1	2029	1	2049†	1
487	3864	683	2896	1	2896	1	2968⋆	1	2026	0	2058⋆	0	2036†	0	2036†	0	2046†	0	2026	0	2039†	1
486	3854	683	2886	1	2886	1	2958⋆	1	2019	1	2051⋆	1	2029†	1	2029†	1	2039†	1	2026†	0	2029†	1
485	3844	683	2876	1	2876	1	2948⋆	1	2009	1	2041⋆	1	2026†	0	2019†	1	2029†	1	2019†	1	2019†	1
484	3834	683	2866	1	2866	1	2938⋆	1	1999	1	2031⋆	1	2019†	1	2009†	1	2019†	1	2009†	1	2009†	1
483	3824	683	2856	1	2856	1	2928⋆	1	1989	1	2021⋆	1	2009†	1	1999†	1	2009†	1	1999†	1	1999†	1
482	3814	683	2846	1	2846	1	2918⋆	1	1979	1	2011⋆	1	1999†	1	1989†	1	1999†	1	1989†	1	1989†	1
481	3804	683	2836	1	2836	1	2908⋆	1	1969	1	2001⋆	1	1989†	1	1979†	1	1989†	1	1979†	1	1979†	1
480	3794	683	2826	1	2826	1	2898⋆	1	1959	1	1991⋆	1	1979†	1	1969†	1	1979†	1	1969†	1	1969†	1
479	3792	0	2824	0	2824	0	2896⋆	0	1956	0	1988⋆	0	1976†	0	1966†	0	1976†	0	1966†	0	1966†	0
478	3783	1	2824	0	2824	0	2896⋆	0	1956	0	1988⋆	0	1976†	0	1966†	0	1976†	0	1966†	0	1966†	0
477	3773	1	2816	1	2816	1	2888⋆	1	1956	0	1981⋆	1	1976†	0	1966†	0	1976†	0	1966†	0	1966†	0
476	3763	1	2806	1	2806	1	2878⋆	1	1949	1	1971⋆	1	1969†	1	1959†	1	1969†	1	1959†	1	1966†	0
475	3753	1	2796	1	2796	1	2868⋆	1	1946	0	1968⋆	0	1966†	0	1956†	0	1966†	0	1956†	0	1966†	0
474	3743	1	2786	1	2786	1	2858⋆	1	1939	1	1961†	1	1959†	1	1949†	1	1959†	1	1949†	1	1966⋆	0
473	3733	1	2776	1	2776	1	2848⋆	1	1929	1	1951†	1	1949†	1	1946†	0	1949†	1	1939†	1	1959⋆	1
472	3723	1	2766	1	2766	1	2838⋆	1	1919	1	1941†	1	1939†	1	1939†	1	1939†	1	1929†	1	1949⋆	1

continued

$m=10$																				
ν	9		8						7											
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
471	3713	1	2764	0	2764	0	2828⋆	1	1916	0	1938†	0	1936†	0	1936†	0	1936†	0	1926†	0	1946⋆	0
470	3703	1	2756	1	2756	1	2818⋆	1	1909	1	1931†	1	1929†	1	1929†	1	1929†	1	1919†	1	1946⋆	0
469	3693	1	2746	1	2746	1	2808⋆	1	1899	1	1921†	1	1919†	1	1919†	1	1919†	1	1909†	1	1939⋆	1
468	3683	1	2736	1	2736	1	2798⋆	1	1889	1	1911†	1	1909†	1	1909†	1	1909†	1	1899†	1	1929⋆	1
467	3673	1	2726	1	2726	1	2788⋆	1	1879	1	1901†	1	1899†	1	1899†	1	1906†	0	1889†	1	1919⋆	1
466	3663	1	2716	1	2716	1	2778⋆	1	1869	1	1891†	1	1889†	1	1889†	1	1899†	1	1879†	1	1909⋆	1
465	3653	1	2706	1	2706	1	2768⋆	1	1859	1	1881†	1	1879†	1	1879†	1	1889†	1	1869†	1	1899⋆	1
464	3643	1	2696	1	2696	1	2758⋆	1	1849	1	1871†	1	1869†	1	1869†	1	1879†	1	1859†	1	1889⋆	1
463	3633	1	2694	0	2694	0	2748⋆	1	1846	0	1868†	0	1866†	0	1866†	0	1876†	0	1856†	0	1886⋆	0
462	3623	1	2686	1	2689†	0	2738⋆	1	1841	0	1863†	0	1861†	0	1861†	0	1871†	0	1851†	0	1881⋆	0
461	3613	1	2676	1	2681†	1	2728⋆	1	1834	1	1856†	1	1854†	1	1854†	1	1864†	1	1851†	0	1874⋆	1
460	3603	1	2666	1	2671†	1	2718⋆	1	1824	1	1846†	1	1844†	1	1844†	1	1854†	1	1844†	1	1864⋆	1
459	3593	1	2656	1	2661†	1	2708⋆	1	1814	1	1836†	1	1841†	0	1834†	1	1844†	1	1834†	1	1854⋆	1
458	3583	1	2646	1	2651†	1	2698⋆	1	1804	1	1826†	1	1834†	1	1824†	1	1834†	1	1824†	1	1844⋆	1
457	3573	1	2636	1	2641†	1	2688⋆	1	1794	1	1816†	1	1824†	1	1814†	1	1824†	1	1814†	1	1834⋆	1
456	3563	1	2626	1	2631†	1	2678⋆	1	1784	1	1806†	1	1814†	1	1804†	1	1814†	1	1804†	1	1824⋆	1
455	3553	1	2616	1	2621†	1	2668⋆	1	1781	0	1803†	0	1811†	0	1801†	0	1811†	0	1801†	0	1814⋆	1
454	3543	1	2606	1	2611†	1	2658⋆	1	1774	1	1796†	1	1804⋆	1	1794†	1	1804⋆	1	1794†	1	1804⋆	1
453	3533	1	2596	1	2601†	1	2648⋆	1	1764	1	1786†	1	1794⋆	1	1784†	1	1794⋆	1	1784†	1	1794⋆	1
452	3523	1	2586	1	2591†	1	2638⋆	1	1754	1	1776†	1	1784⋆	1	1774†	1	1784⋆	1	1774†	1	1784⋆	1
451	3513	1	2576	1	2581†	1	2628⋆	1	1744	1	1766†	1	1774⋆	1	1764†	1	1774⋆	1	1764†	1	1774⋆	1
450	3503	1	2566	1	2571†	1	2618⋆	1	1734	1	1756†	1	1764⋆	1	1754†	1	1764⋆	1	1754†	1	1764⋆	1
449	3493	1	2556	1	2561†	1	2608⋆	1	1724	1	1746†	1	1754⋆	1	1744†	1	1754⋆	1	1744†	1	1754⋆	1
448	3483	1	2546	1	2551†	1	2598⋆	1	1714	1	1736†	1	1744⋆	1	1734†	1	1744⋆	1	1734†	1	1744⋆	1
447	3482	0	2544	0	2549†	0	2596⋆	0	1711	0	1733†	0	1741⋆	0	1731†	0	1741⋆	0	1731†	0	1741⋆	0
446	3473	1	2544	0	2549†	0	2596⋆	0	1711	0	1733†	0	1741⋆	0	1731†	0	1741⋆	0	1731†	0	1741⋆	0
445	3463	1	2544	0	2549†	0	2588⋆	1	1711	0	1733†	0	1741⋆	0	1731†	0	1741⋆	0	1731†	0	1741⋆	0
444	3453	1	2536	1	2541†	1	2578⋆	1	1711	0	1733†	0	1741⋆	0	1731†	0	1741⋆	0	1731†	0	1741⋆	0
443	3443	1	2534	0	2539†	0	2576⋆	0	1711	0	1733†	0	1741⋆	0	1731†	0	1741⋆	0	1731†	0	1741⋆	0
442	3433	1	2526	1	2531†	1	2576⋆	0	1711	0	1733†	0	1741⋆	0	1731†	0	1734†	1	1731†	0	1741⋆	0
441	3423	1	2516	1	2521†	1	2568⋆	1	1711	0	1733†	0	1734†	1	1731†	0	1731†	0	1731†	0	1741⋆	0
440	3413	1	2506	1	2511†	1	2558⋆	1	1704	1	1726†	1	1724†	1	1724†	1	1724†	1	1724†	1	1734⋆	1
439	3412	0	2504	0	2509†	0	2556⋆	0	1701	0	1723†	0	1721†	0	1721†	0	1721†	0	1721†	0	1731⋆	0
438	3403	1	2496	1	2501†	1	2548⋆	1	1694	1	1716†	1	1714†	1	1714†	1	1714†	1	1714†	1	1724⋆	1
437	3393	1	2486	1	2491†	1	2538⋆	1	1684	1	1706†	1	1704†	1	1704†	1	1704†	1	1704†	1	1721⋆	0
436	3383	1	2476	1	2481†	1	2528⋆	1	1674	1	1696†	1	1694†	1	1694†	1	1694†	1	1694†	1	1714⋆	1
435	3373	1	2466	1	2471†	1	2518⋆	1	1671	0	1693†	0	1691†	0	1691†	0	1691†	0	1691†	0	1711⋆	0
434	3363	1	2456	1	2461†	1	2508⋆	1	1664	1	1686†	1	1684†	1	1684†	1	1684†	1	1684†	1	1704⋆	1
433	3353	1	2446	1	2451†	1	2498⋆	1	1654	1	1676†	1	1674†	1	1674†	1	1674†	1	1674†	1	1694⋆	1
432	3343	1	2436	1	2441†	1	2488⋆	1	1644	1	1666†	1	1664†	1	1664†	1	1664†	1	1664†	1	1684⋆	1
431	3333	1	2434	0	2439†	0	2486⋆	0	1641	0	1663†	0	1661†	0	1661†	0	1661†	0	1661†	0	1681⋆	0
430	3323	1	2426	1	2431†	1	2486⋆	0	1641	0	1663†	0	1661†	0	1661†	0	1661†	0	1654†	1	1681⋆	0
429	3313	1	2416	1	2424†	0	2478⋆	1	1636	0	1658†	0	1656†	0	1656†	0	1656†	0	1646†	0	1676⋆	0
428	3303	1	2406	1	2416†	1	2468⋆	1	1629	1	1651†	1	1649†	1	1649†	1	1649†	1	1639†	1	1669⋆	1
427	3293	1	2396	1	2406†	1	2466⋆	0	1626	0	1648†	0	1646†	0	1646†	0	1646†	0	1636†	0	1659⋆	1
426	3283	1	2386	1	2396†	1	2466⋆	0	1619	1	1648†	0	1639†	1	1639†	1	1639†	1	1629†	1	1649⋆	1
425	3273	1	2376	1	2386†	1	2458⋆	1	1609	1	1641⋆	1	1629†	1	1629†	1	1629†	1	1619†	1	1639†	1
424	3263	1	2366	1	2376†	1	2448⋆	1	1599	1	1631⋆	1	1619†	1	1619†	1	1619†	1	1609†	1	1629†	1
423	3253	1	2356	1	2366†	1	2446⋆	0	1596	0	1628⋆	0	1616†	0	1616†	0	1616†	0	1606†	0	1619†	1
422	3243	1	2346	1	2356†	1	2438⋆	1	1589	1	1621⋆	1	1609†	1	1609†	1	1609†	1	1599†	1	1609†	1
421	3233	1	2336	1	2346†	1	2428⋆	1	1579	1	1611⋆	1	1599†	1	1599†	1	1599†	1	1589†	1	1599†	1

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
420	3223	1	2326	1	2336†	1	2418⋆	1	1569	1	1601⋆	1	1589†	1	1589†	1	1589†	1	1579†	1	1589†	1
419	3213	1	2316	1	2326†	1	2408⋆	1	1559	1	1591⋆	1	1579†	1	1579†	1	1586†	0	1569†	1	1579†	1
418	3203	1	2306	1	2316†	1	2398⋆	1	1549	1	1581⋆	1	1569†	1	1569†	1	1579†	1	1559†	1	1569†	1
417	3193	1	2296	1	2306†	1	2388⋆	1	1539	1	1571⋆	1	1559†	1	1559†	1	1569†	1	1549†	1	1559†	1
416	3183	1	2286	1	2296†	1	2378⋆	1	1529	1	1561⋆	1	1549†	1	1549†	1	1559†	1	1539†	1	1549†	1
415	3173	1	2284	0	2294†	0	2376⋆	0	1526	0	1558⋆	0	1546†	0	1546†	0	1556†	0	1536†	0	1546†	0
414	3163	1	2276	1	2286†	1	2376⋆	0	1526	0	1558⋆	0	1546†	0	1546†	0	1556†	0	1529†	1	1546†	0
413	3153	1	2266	1	2284†	0	2368⋆	1	1526	0	1558⋆	0	1546†	0	1546†	0	1556†	0	1526	0	1546†	0
412	3143	1	2256	1	2276†	1	2358⋆	1	1519	1	1551⋆	1	1539†	1	1539†	1	1549†	1	1519	1	1546†	0
411	3133	1	2254	0	2274†	0	2356⋆	0	1516	0	1548⋆	0	1536†	0	1536†	0	1546†	0	1516	0	1546†	0
410	3123	1	2246	1	2266†	1	2356⋆	0	1509	1	1548⋆	0	1529†	1	1529†	1	1539†	1	1509	1	1539†	1
409	3114	683	2236	1	2256†	1	2348⋆	1	1499	1	1541⋆	1	1519†	1	1519†	1	1529†	1	1499	1	1529†	1
408	3104	683	2226	1	2246†	1	2338⋆	1	1489	1	1531⋆	1	1509†	1	1509†	1	1519†	1	1489	1	1519†	1
407	3094	683	2216	1	2236†	1	2328⋆	1	1486	0	1528⋆	0	1506†	0	1499†	1	1516†	0	1486	0	1516†	0
406	3084	683	2206	1	2226†	1	2318⋆	1	1479	1	1521⋆	1	1499†	1	1489†	1	1509†	1	1479	1	1516†	0
405	3074	683	2196	1	2216†	1	2308⋆	1	1469	1	1511⋆	1	1489†	1	1479†	1	1499†	1	1469	1	1509†	1
404	3064	683	2186	1	2206†	1	2298⋆	1	1459	1	1501⋆	1	1479†	1	1469†	1	1489†	1	1459	1	1499†	1
403	3054	683	2176	1	2196†	1	2288⋆	1	1449	1	1491⋆	1	1476†	0	1459†	1	1479†	1	1449	1	1489†	1
402	3044	683	2166	1	2186†	1	2278⋆	1	1439	1	1481⋆	1	1469†	1	1449†	1	1469†	1	1439	1	1479†	1
401	3034	683	2156	1	2176†	1	2268⋆	1	1429	1	1471⋆	1	1459†	1	1439†	1	1459†	1	1429	1	1469†	1
400	3024	683	2146	1	2166†	1	2258⋆	1	1419	1	1461⋆	1	1449†	1	1429†	1	1449†	1	1419	1	1459†	1
399	3014	683	2136	1	2156†	1	2248⋆	1	1416	0	1458⋆	0	1446†	0	1419†	1	1446†	0	1416	0	1456†	0
398	3004	683	2126	1	2146†	1	2238⋆	1	1409	1	1451†	1	1439†	1	1409	1	1439†	1	1409	1	1456⋆	0
397	2994	683	2116	1	2136†	1	2228⋆	1	1399	1	1441†	1	1429†	1	1399	1	1429†	1	1399	1	1456⋆	0
396	2984	683	2106	1	2126†	1	2218⋆	1	1389	1	1431†	1	1419†	1	1389	1	1419†	1	1389	1	1451⋆	0
395	2977	661	2096	1	2119†	661	2208⋆	1	1379	1	1421†	1	1409†	1	1379	1	1409†	1	1379	1	1446⋆	661
394	2967	661	2086	1	2109†	661	2198⋆	1	1369	1	1411†	1	1399†	1	1369	1	1399†	1	1369	1	1436⋆	661
393	2957	661	2076	1	2099†	661	2188⋆	1	1359	1	1401†	1	1389†	1	1359	1	1389†	1	1359	1	1426⋆	661
392	2947	661	2066	1	2089†	661	2178⋆	1	1349	1	1391†	1	1379†	1	1349	1	1379†	1	1349	1	1416⋆	661
391	2937	661	2056	1	2079†	661	2168⋆	1	1339	1	1381†	1	1369†	1	1339	1	1369†	1	1339	1	1406⋆	661
390	2927	661	2046	1	2069†	661	2158⋆	1	1329	1	1371†	1	1359†	1	1329	1	1359†	1	1329	1	1396⋆	661
389	2917	661	2038	683	2059†	661	2148⋆	1	1319	1	1362†	683	1349†	1	1319	1	1349†	1	1319	1	1386⋆	661
388	2907	661	2028	683	2049†	661	2138⋆	1	1309	1	1352†	683	1339†	1	1309	1	1339†	1	1309	1	1376⋆	661
387	2897	661	2018	683	2039†	661	2128⋆	1	1299	1	1342†	683	1329†	1	1299	1	1329†	1	1299	1	1366⋆	661
386	2887	661	2008	683	2029†	661	2118⋆	1	1289	1	1332†	683	1319†	1	1289	1	1319†	1	1289	1	1356⋆	661
385	2877	661	1998	683	2019†	661	2108⋆	1	1282	683	1322†	683	1312†	683	1282	683	1312†	683	1282	683	1347⋆	683
384	2867	661	1988	683	2009†	661	2098⋆	1	1272	683	1312†	683	1302†	683	1272	683	1302†	683	1272	683	1337⋆	683
383	2862	0	1984	0	2004†	0	2096⋆	0	1266	0	1308†	0	1296†	0	1266	0	1296†	0	1266	0	1331⋆	0
382	2853	1	1984	0	2004†	0	2096⋆	0	1266	0	1308†	0	1296†	0	1266	0	1296†	0	1266	0	1331⋆	0
381	2844	683	1984	0	2004†	0	2088⋆	1	1266	0	1308†	0	1296†	0	1266	0	1296†	0	1266	0	1331⋆	0
380	2834	683	1976	1	1996†	1	2078⋆	1	1266	0	1308†	0	1296†	0	1266	0	1296†	0	1266	0	1331⋆	0
379	2832	0	1974	0	1994†	0	2076⋆	0	1266	0	1308†	0	1296†	0	1266	0	1296†	0	1266	0	1331⋆	0
378	2823	1	1966	1	1986†	1	2076⋆	0	1266	0	1308†	0	1296†	0	1266	0	1289†	1	1266	0	1331⋆	0
377	2814	683	1956	1	1976†	1	2068⋆	1	1266	0	1308†	0	1289†	1	1266	0	1286†	0	1266	0	1331⋆	0
376	2804	683	1946	1	1966†	1	2058⋆	1	1259	1	1301†	1	1279†	1	1259	1	1279†	1	1259	1	1324⋆	1
375	2802	0	1944	0	1964†	0	2056⋆	0	1256	0	1298†	0	1276†	0	1256	0	1276†	0	1256	0	1321⋆	0
374	2793	1	1944	0	1964†	0	2056⋆	0	1256	0	1298†	0	1276†	0	1256	0	1276†	0	1256	0	1321⋆	0
373	2783	1	1938	683	1956†	1	2048⋆	1	1256	0	1292†	683	1276†	0	1256	0	1276†	0	1256	0	1321⋆	0
372	2773	1	1928	683	1946†	1	2038⋆	1	1249	1	1282†	683	1269†	1	1249	1	1276†	0	1249	1	1314⋆	1
371	2763	1	1924	0	1944†	0	2028⋆	1	1246	0	1278†	0	1266†	0	1246	0	1276†	0	1246	0	1311⋆	0
370	2753	1	1916	1	1936†	1	2018⋆	1	1239	1	1271†	1	1266†	0	1239	1	1269†	1	1239	1	1304⋆	1

continued

$m = 10$

ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
369	2743	1	1906	1	1926†	1	2008⋆	1	1229	1	1262†	683	1259†	1	1229	1	1259†	1	1229	1	1294⋆	1
368	2733	1	1896	1	1916†	1	1998⋆	1	1219	1	1252†	683	1249†	1	1219	1	1249†	1	1219	1	1284⋆	1
367	2732	0	1894	0	1914†	0	1996⋆	0	1216	0	1248†	0	1246†	0	1216	0	1246†	0	1216	0	1281⋆	0
366	2723	1	1894	0	1914†	0	1996⋆	0	1216	0	1248†	0	1246†	0	1216	0	1246†	0	1216	0	1281⋆	0
365	2713	1	1894	0	1914†	0	1988⋆	1	1216	0	1248†	0	1246†	0	1216	0	1246†	0	1216	0	1281⋆	0
364	2703	1	1886	1	1906†	1	1978⋆	1	1216	0	1248†	0	1246†	0	1216	0	1246†	0	1216	0	1281⋆	0
363	2697	0	1884	0	1899†	0	1976⋆	0	1216	0	1248†	0	1246†	0	1216	0	1246†	0	1216	0	1276⋆	0
362	2688	1	1876	1	1891†	1	1976⋆	0	1209	1	1248†	0	1239†	1	1209	1	1239†	1	1209	1	1269⋆	1
361	2678	1	1866	1	1881†	1	1968⋆	1	1199	1	1241†	1	1229†	1	1199	1	1236†	0	1199	1	1259⋆	1
360	2668	1	1856	1	1871†	1	1958⋆	1	1189	1	1231†	1	1219†	1	1189	1	1229†	1	1189	1	1249⋆	1
359	2658	1	1854	0	1861†	1	1956⋆	0	1186	0	1228†	0	1216†	0	1186	0	1226†	0	1186	0	1239⋆	1
358	2648	1	1846	1	1851†	1	1956⋆	0	1186	0	1228†	0	1216†	0	1186	0	1226†	0	1186	0	1229⋆	1
357	2639	683	1836	1	1841†	1	1948⋆	1	1179	1	1222⋆	683	1216†	0	1179	1	1219†	1	1179	1	1219†	1
356	2629	683	1826	1	1831†	1	1938⋆	1	1169	1	1212⋆	683	1209†	1	1169	1	1209†	1	1169	1	1209†	1
355	2619	683	1816	1	1821†	1	1928⋆	1	1166	0	1208⋆	0	1206†	0	1166	0	1206†	0	1166	0	1199†	1
354	2609	683	1806	1	1811†	1	1918⋆	1	1159	1	1201⋆	1	1199†	1	1159	1	1199†	1	1159	1	1189†	1
353	2599	683	1798	683	1803†	683	1908⋆	1	1149	1	1192⋆	683	1189†	1	1149	1	1189†	1	1149	1	1179†	1
352	2589	683	1788	683	1793†	683	1898⋆	1	1139	1	1182⋆	683	1179†	1	1139	1	1179†	1	1139	1	1169†	1
351	2587	0	1784	0	1789†	0	1896⋆	0	1136	0	1178⋆	0	1176†	0	1136	0	1176†	0	1136	0	1166†	0
350	2578	1	1784	0	1789†	0	1896⋆	0	1136	0	1178⋆	0	1176†	0	1136	0	1176†	0	1136	0	1166†	0
349	2569	683	1784	0	1789†	0	1888⋆	1	1136	0	1178⋆	0	1176†	0	1136	0	1176†	0	1136	0	1166†	0
348	2559	683	1776	1	1781†	1	1878⋆	1	1136	0	1178⋆	0	1176†	0	1136	0	1176†	0	1136	0	1166†	0
347	2557	0	1774	0	1779†	0	1876⋆	0	1136	0	1178⋆	0	1176†	0	1136	0	1176†	0	1136	0	1166†	0
346	2548	1	1766	1	1771†	1	1876⋆	0	1136	0	1178⋆	0	1176†	0	1136	0	1169†	1	1136	0	1166†	0
345	2539	683	1756	1	1761†	1	1868⋆	1	1136	0	1178⋆	0	1169†	1	1136	0	1166†	0	1136	0	1166†	0
344	2529	683	1746	1	1751†	1	1858⋆	1	1129	1	1171⋆	1	1159†	1	1129	1	1159†	1	1129	1	1159†	1
343	2527	0	1744	0	1749†	0	1856⋆	0	1126	0	1168⋆	0	1156†	0	1126	0	1156†	0	1126	0	1156†	0
342	2518	1	1744	0	1749†	0	1856⋆	0	1126	0	1168⋆	0	1156†	0	1126	0	1156†	0	1126	0	1156†	0
341	2509	0	1738	0	1743†	0	1848⋆	0	1122	0	1162⋆	0	1152†	0	1122	0	1152†	0	1122	0	1152†	0
340	2500	1	1730	1	1735†	1	1840⋆	1	1115	1	1155⋆	1	1145†	1	1115	1	1145†	1	1115	1	1145†	1
339	2490	1	1720	1	1725†	1	1830⋆	1	1105	1	1145⋆	1	1135†	1	1105	1	1135†	1	1105	1	1135†	1
338	2480	1	1710	1	1715†	1	1820⋆	1	1095	1	1135⋆	1	1125†	1	1095	1	1125†	1	1095	1	1125†	1
337	2470	1	1700	1	1705†	1	1810⋆	1	1085	1	1125⋆	1	1115†	1	1085	1	1115†	1	1085	1	1115†	1
336	2460	1	1690	1	1695†	1	1800⋆	1	1075	1	1115⋆	1	1105†	1	1075	1	1105†	1	1075	1	1105†	1
335	2450	1	1680	1	1685†	1	1790⋆	1	1072	0	1105⋆	1	1102†	0	1072	0	1102†	0	1072	0	1102†	0
334	2440	1	1670	1	1675†	1	1780⋆	1	1065	1	1095†	1	1095†	1	1065	1	1095†	1	1065	1	1102⋆	0
333	2430	1	1660	1	1665†	1	1770⋆	1	1062	0	1085†	1	1092†	0	1062	0	1092†	0	1062	0	1102⋆	0
332	2420	1	1650	1	1655†	1	1760⋆	1	1055	1	1075†	1	1085†	1	1055	1	1085†	1	1055	1	1095⋆	1
331	2410	1	1640	1	1645†	1	1750⋆	1	1052	0	1065†	1	1082†	0	1052	0	1082†	0	1052	0	1092⋆	0
330	2400	1	1630	1	1635†	1	1740⋆	1	1045	1	1055†	1	1075†	1	1045	1	1075†	1	1045	1	1087⋆	0
329	2390	1	1620	1	1625†	1	1730⋆	1	1035	1	1045†	1	1065†	1	1035	1	1065†	1	1035	1	1080⋆	1
328	2380	1	1610	1	1615†	1	1720⋆	1	1025	1	1035†	1	1055†	1	1025	1	1055†	1	1025	1	1070⋆	1
327	2370	1	1600	1	1605†	1	1710⋆	1	1015	1	1025†	1	1045†	1	1015	1	1052†	0	1015	1	1060⋆	1
326	2360	1	1590	1	1595†	1	1700⋆	1	1005	1	1015†	1	1035†	1	1005	1	1045†	1	1005	1	1050⋆	1
325	2350	1	1580	1	1585†	1	1690⋆	1	995	1	1005†	1	1025†	1	995	1	1042⋆	0	995	1	1040†	1
324	2340	1	1570	1	1575†	1	1680⋆	1	985	1	995†	1	1015†	1	985	1	1035⋆	1	985	1	1030†	1
323	2330	1	1560	1	1565†	1	1670⋆	1	975	1	985†	1	1005†	1	975	1	1025⋆	1	975	1	1020†	1
322	2320	1	1550	1	1555†	1	1660⋆	1	965	1	975†	1	995†	1	965	1	1015⋆	1	965	1	1010†	1
321	2310	1	1540	1	1545†	1	1650⋆	1	955	1	965†	1	985†	1	955	1	1005⋆	1	955	1	1000†	1
320	2300	1	1530	1	1535†	1	1640⋆	1	945	1	955†	1	975†	1	945	1	995⋆	1	945	1	990†	1
319	2290	1	1528	0	1533†	0	1630⋆	1	942	0	952†	0	972†	0	942	0	992⋆	0	942	0	987†	0

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
318	2280	1	1520	1	1525†	1	1620⋆	1	942	0	952†	0	965†	1	942	0	992⋆	0	942	0	987†	0
317	2270	1	1518	0	1523†	0	1610⋆	1	942	0	952†	0	962†	0	942	0	992⋆	0	942	0	987†	0
316	2260	1	1510	1	1515†	1	1600⋆	1	935	1	945†	1	955†	1	935	1	985⋆	1	942†	0	980†	1
315	2250	1	1508	0	1513†	0	1590⋆	1	932	0	942†	0	952†	0	932	0	982⋆	0	942†	0	977†	0
314	2240	1	1500	1	1505†	1	1580⋆	1	925	1	935†	1	945†	1	925	1	975†	1	935†	1	977⋆	0
313	2230	1	1490	1	1503†	0	1570⋆	1	922	0	932†	0	942†	0	922	0	972†	0	932†	0	977⋆	0
312	2220	1	1480	1	1495†	1	1560⋆	1	915	1	925†	1	935†	1	915	1	965†	1	925†	1	970⋆	1
311	2210	1	1478	0	1493†	0	1550⋆	1	912	0	922†	0	932†	0	912	0	962†	0	922†	0	967⋆	0
310	2200	1	1470	1	1485†	1	1540⋆	1	912	0	922†	0	925†	1	912	0	962†	0	922†	0	967⋆	0
309	2190	1	1468	0	1483†	0	1530⋆	1	912	0	922†	0	922†	0	912	0	962†	0	922†	0	967⋆	0
308	2180	1	1460	1	1475†	1	1520⋆	1	905	1	915†	1	915†	1	905	1	955†	1	915†	1	960⋆	1
307	2170	1	1450	1	1465†	1	1510⋆	1	902	0	905†	1	912†	0	902	0	952†	0	912†	0	957⋆	0
306	2160	1	1440	1	1455†	1	1500⋆	1	895	1	895	1	905†	1	895	1	945†	1	905†	1	950⋆	1
305	2150	1	1430	1	1445†	1	1490⋆	1	885	1	885	1	895†	1	885	1	935†	1	895†	1	947⋆	0
304	2140	1	1420	1	1435†	1	1480⋆	1	875	1	875	1	885†	1	875	1	925†	1	885†	1	940⋆	1
303	2130	1	1418	0	1433†	0	1470⋆	1	872	0	872	0	882†	0	872	0	922†	0	882†	0	937⋆	0
302	2120	1	1410	1	1425†	1	1460⋆	1	872	0	872	0	875†	1	872	0	922†	0	882†	0	937⋆	0
301	2110	1	1408	0	1423†	0	1450⋆	1	872	0	872	0	872	0	872	0	922†	0	882†	0	937⋆	0
300	2100	1	1400	1	1415†	1	1440⋆	1	865	1	865	1	865	1	865	1	915†	1	882†	0	930⋆	1
299	2090	1	1398	0	1413†	0	1430⋆	1	862	0	862	0	862	0	862	0	912†	0	882†	0	927⋆	0
298	2080	1	1390	1	1405†	1	1420⋆	1	855	1	855	1	855	1	855	1	905†	1	875†	1	927⋆	0
297	2070	1	1380	1	1398†	0	1410⋆	1	847	0	847	0	847	0	847	0	897†	0	867†	0	922⋆	0
296	2060	1	1370	1	1390†	1	1400⋆	1	840	1	840	1	840	1	840	1	890†	1	860†	1	915⋆	1
295	2050	1	1360	1	1380†	1	1390⋆	1	837	0	837	0	837	0	837	0	887†	0	857†	0	905⋆	1
294	2040	1	1350	1	1370†	1	1380⋆	1	830	1	830	1	830	1	830	1	880†	1	850†	1	895⋆	1
293	2030	1	1340	1	1360†	1	1370⋆	1	827	0	827	0	827	0	827	0	877†	0	847†	0	885⋆	1
292	2020	1	1330	1	1350†	1	1360⋆	1	820	1	820	1	820	1	820	1	870†	1	840†	1	875⋆	1
291	2010	1	1320	1	1340†	1	1350⋆	1	810	1	810	1	810	1	810	1	860†	1	830†	1	865⋆	1
290	2000	1	1310	1	1330†	1	1340⋆	1	800	1	800	1	800	1	800	1	850†	1	820†	1	855⋆	1
289	1990	1	1300	1	1320†	1	1330⋆	1	790	1	790	1	790	1	790	1	840†	1	810†	1	845⋆	1
288	1980	1	1290	1	1310†	1	1320⋆	1	780	1	780	1	780	1	780	1	830†	1	800†	1	835⋆	1
287	1970	1	1280	1	1300†	1	1310⋆	1	777	0	777	0	777	0	777	0	820†	1	797†	0	832⋆	0
286	1960	1	1270	1	1290†	1	1300⋆	1	770	1	770	1	770	1	777†	0	810†	1	790†	1	825⋆	1
285	1950	1	1260	1	1280†	1	1290⋆	1	767	0	767	0	767	0	777†	0	800†	1	787†	0	822⋆	0
284	1940	1	1250	1	1270†	1	1280⋆	1	760	1	760	1	760	1	770†	1	790†	1	780†	1	815⋆	1
283	1930	1	1240	1	1260†	1	1270⋆	1	757	0	757	0	757	0	767†	0	780†	1	777†	0	812⋆	0
282	1920	1	1230	1	1250†	1	1260⋆	1	750	1	750	1	750	1	767†	0	770†	1	770†	1	805⋆	1
281	1910	1	1220	1	1240†	1	1250⋆	1	740	1	740	1	740	1	760†	1	760†	1	760†	1	802⋆	0
280	1900	1	1210	1	1230†	1	1240⋆	1	730	1	730	1	730	1	750†	1	750†	1	750†	1	795⋆	1
279	1890	1	1200	1	1220†	1	1230⋆	1	727	0	727	0	727	0	747†	0	740†	1	747†	0	792⋆	0
278	1880	1	1190	1	1210†	1	1220⋆	1	720	1	720	1	720	1	747†	0	730†	1	740†	1	785⋆	1
277	1870	1	1180	1	1200†	1	1210⋆	1	717	0	717	0	717	0	747†	0	720†	1	737†	0	782⋆	0
276	1860	1	1170	1	1190†	1	1200⋆	1	710	1	710	1	710	1	740†	1	710	1	730†	1	775⋆	1
275	1850	1	1160	1	1180†	1	1190⋆	1	700	1	700	1	700	1	730†	1	700	1	727†	0	765⋆	1
274	1840	1	1150	1	1170†	1	1180⋆	1	690	1	690	1	690	1	720†	1	690	1	720†	1	755⋆	1
273	1830	1	1148	887	1168†	887	1170⋆	1	680	1	680	1	680	1	710†	1	680	1	710†	1	745⋆	1
272	1820	1	1138	887	1158†	887	1160⋆	1	670	1	670	1	670	1	700†	1	670	1	700†	1	735⋆	1
271	1810	1	1128	887	1148†	887	1150⋆	1	660	1	660	1	660	1	690†	1	660	1	690†	1	725⋆	1
270	1800	1	1118	887	1138†	887	1140⋆	1	650	1	650	1	650	1	680†	1	650	1	680†	1	715⋆	1
269	1790	1	1108	887	1128†	887	1130⋆	1	640	1	640	1	640	1	670†	1	640	1	670†	1	705⋆	1
268	1780	1	1098	887	1118†	887	1120⋆	1	630	1	630	1	630	1	660†	1	630	1	660†	1	695⋆	1

continued

$m=10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
267	1770	1	1088	887	1108$\dagger$	887	1110$\star$	1	620	1	620	1	620	1	650$\dagger$	1	620	1	650$\dagger$	1	685$\star$	1
266	1760	1	1078	887	1098$\dagger$	887	1100$\star$	1	610	1	610	1	610	1	640$\dagger$	1	610	1	640$\dagger$	1	675$\star$	1
265	1750	1	1068	887	1088$\dagger$	887	1090$\star$	1	600	1	600	1	600	1	630$\dagger$	1	600	1	630$\dagger$	1	665$\star$	1
264	1740	1	1058	887	1078$\dagger$	887	1080$\star$	1	590	1	590	1	590	1	620$\dagger$	1	590	1	620$\dagger$	1	655$\star$	1
263	1734	793	1048	887	1068$\dagger$	887	1070$\star$	1	580	1	580	1	580	1	610$\dagger$	1	580	1	610$\dagger$	1	647$\star$	793
262	1724	793	1038	887	1058$\dagger$	887	1060$\star$	1	570	1	570	1	570	1	600$\dagger$	1	570	1	600$\dagger$	1	637$\star$	793
261	1714	793	1028	887	1048$\dagger$	887	1050$\star$	1	562	827	562	827	562	827	592$\dagger$	827	562	827	592$\dagger$	827	627$\star$	793
260	1704	793	1018	887	1038$\dagger$	887	1040$\star$	1	552	827	552	827	552	827	582$\dagger$	827	552	827	582$\dagger$	827	617$\star$	793
259	1694	793	1008	887	1028$\dagger$	887	1030$\star$	1	552	829	552	829	552	829	582$\dagger$	829	552	829	582$\dagger$	829	607$\star$	793
258	1684	793	998	887	1018$\dagger$	887	1020$\star$	1	542	829	542	829	542	829	572$\dagger$	829	542	829	572$\dagger$	829	597$\star$	793
257	1674	793	988	887	1008$\dagger$	887	1010$\star$	1	532	829	532	829	532	829	562$\dagger$	829	532	829	562$\dagger$	829	592$\star$	879
256	1664	793	978	887	998$\dagger$	887	1000$\star$	1	522	829	522	829	522	829	552$\dagger$	829	522	829	552$\dagger$	829	582$\star$	879
255	1659	0	968	0	988$\dagger$	0	998$\star$	0	512	827	512	827	512	827	542$\dagger$	827	512	827	542$\dagger$	827	572$\star$	0
254	1650	1	968	0	988$\dagger$	0	998$\star$	0	507	0	507	0	507	0	537$\dagger$	0	507	0	537$\dagger$	0	572$\star$	0
253	1649	0	968	0	988$\dagger$	0	998$\star$	0	507	0	507	0	507	0	537$\dagger$	0	507	0	537$\dagger$	0	572$\star$	0
252	1640	1	960	1	980$\dagger$	1	990$\star$	1	507	0	507	0	507	0	537$\dagger$	0	507	0	537$\dagger$	0	572$\star$	0
251	1639	0	958	0	978$\dagger$	0	988$\star$	0	507	0	507	0	507	0	537$\dagger$	0	507	0	537$\dagger$	0	572$\star$	0
250	1630	1	958	0	978$\dagger$	0	988$\star$	0	507	0	507	0	507	0	537$\dagger$	0	507	0	537$\dagger$	0	572$\star$	0
249	1620	1	958	0	978$\dagger$	0	988$\star$	0	507	0	507	0	507	0	537$\dagger$	0	507	0	537$\dagger$	0	572$\star$	0
248	1610	1	950	1	970$\dagger$	1	980$\star$	1	500	1	500	1	500	1	530$\dagger$	1	500	1	530$\dagger$	1	565$\star$	1
247	1609	0	948	0	968$\dagger$	0	978$\star$	0	497	0	497	0	497	0	527$\dagger$	0	497	0	527$\dagger$	0	562$\star$	0
246	1600	1	948	0	968$\dagger$	0	978$\star$	0	497	0	497	0	497	0	527$\dagger$	0	497	0	527$\dagger$	0	562$\star$	0
245	1599	0	948	0	968$\dagger$	0	978$\star$	0	497	0	497	0	497	0	527$\dagger$	0	497	0	527$\dagger$	0	562$\star$	0
244	1590	1	940	1	960$\dagger$	1	970$\star$	1	497	0	497	0	497	0	527$\dagger$	0	497	0	527$\dagger$	0	562$\star$	0
243	1580	1	938	0	958$\dagger$	0	960$\star$	1	497	0	497	0	497	0	527$\dagger$	0	497	0	527$\dagger$	0	562$\star$	0
242	1570	1	930	1	950$\star$	1	950$\star$	1	497	0	497	0	497	0	520$\dagger$	1	497	0	527$\dagger$	0	562$\star$	0
241	1560	1	920	1	940$\star$	1	940$\star$	1	497	0	497	0	497	0	517$\dagger$	0	497	0	520$\dagger$	1	562$\star$	0
240	1550	1	910	1	930$\star$	1	930$\star$	1	490	1	490	1	490	1	510$\dagger$	1	490	1	510$\dagger$	1	555$\star$	1
239	1549	0	908	0	928$\star$	0	928$\star$	0	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
238	1540	1	908	0	928$\star$	0	928$\star$	0	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
237	1539	0	908	0	928$\star$	0	928$\star$	0	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
236	1530	1	900	1	920$\star$	1	920$\star$	1	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
235	1529	0	898	0	918$\star$	0	918$\star$	0	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
234	1520	1	898	0	918$\star$	0	918$\star$	0	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
233	1510	1	898	0	918$\star$	0	918$\star$	0	487	0	487	0	487	0	507$\dagger$	0	487	0	507$\dagger$	0	552$\star$	0
232	1500	1	890	1	910$\star$	1	910$\star$	1	480	1	480	1	480	1	500$\dagger$	1	480	1	500$\dagger$	1	545$\star$	1
231	1494	0	888	0	903$\dagger$	0	908$\star$	0	477	0	477	0	477	0	497$\dagger$	0	477	0	497$\dagger$	0	537$\star$	0
230	1485	1	880	1	898$\dagger$	859	908$\star$	0	477	0	477	0	477	0	497$\dagger$	0	477	0	497$\dagger$	0	532$\star$	826
229	1475	1	878	0	888$\dagger$	859	908$\star$	0	477	0	477	0	477	0	497$\dagger$	0	477	0	497$\dagger$	0	522$\star$	826
228	1465	1	870	1	878$\dagger$	859	900$\star$	1	470	1	470	1	470	1	497$\dagger$	0	470	1	490$\dagger$	1	512$\star$	826
227	1455	1	860	1	868$\dagger$	859	890$\star$	1	467	0	467	0	467	0	497$\dagger$	0	467	0	487$\dagger$	0	502$\star$	826
226	1445	1	850	1	858$\dagger$	859	880$\star$	1	460	1	460	1	460	1	490$\dagger$	1	460	1	487$\dagger$	0	492$\star$	826
225	1435	1	840	1	848$\dagger$	859	870$\star$	1	450	1	450	1	450	1	480$\dagger$	1	450	1	480$\dagger$	1	482$\star$	826
224	1425	1	830	1	838$\dagger$	859	860$\star$	1	440	1	440	1	440	1	470$\dagger$	1	440	1	470$\dagger$	1	472$\star$	826
223	1424	0	828	0	833$\dagger$	0	858$\star$	0	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0
222	1415	1	828	0	833$\dagger$	0	858$\star$	0	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0
221	1414	0	828	0	833$\dagger$	0	858$\star$	0	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0
220	1405	1	820	1	825$\dagger$	1	850$\star$	1	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0
219	1404	0	818	0	823$\dagger$	0	848$\star$	0	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0
218	1395	1	818	0	823$\dagger$	0	848$\star$	0	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0
217	1385	1	818	0	823$\dagger$	0	848$\star$	0	437	0	437	0	437	0	467$\star$	0	437	0	467$\star$	0	467$\star$	0

continued

$m=10$																						
ν	9		8						7													
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
216	1375	1	810	1	815†	1	840⋆	1	430	1	430	1	430	1	460⋆	1	430	1	460⋆	1	460⋆	1
215	1374	0	808	0	813†	0	838⋆	0	427	0	427	0	427	0	457⋆	0	427	0	457⋆	0	457⋆	0
214	1365	1	808	0	813†	0	838⋆	0	427	0	427	0	427	0	457⋆	0	427	0	457⋆	0	457⋆	0
213	1364	0	808	0	813†	0	838⋆	0	427	0	427	0	427	0	457⋆	0	427	0	457⋆	0	457⋆	0
212	1355	1	800	1	805†	1	830⋆	1	427	0	427	0	427	0	457⋆	0	427	0	457⋆	0	457⋆	0
211	1345	1	798	0	803†	0	820⋆	1	427	0	427	0	427	0	457⋆	0	427	0	457⋆	0	457⋆	0
210	1335	1	790	1	795†	1	810⋆	1	427	0	427	0	427	0	450†	1	427	0	457⋆	0	457⋆	0
209	1325	1	780	1	785†	1	800⋆	1	427	0	427	0	427	0	447†	0	427	0	450†	1	457⋆	0
208	1315	1	770	1	775†	1	790⋆	1	420	1	420	1	420	1	440†	1	420	1	440†	1	450⋆	1
207	1314	0	768	0	773†	0	788⋆	0	417	0	417	0	417	0	437†	0	417	0	437†	0	447⋆	0
206	1305	1	768	0	773†	0	788⋆	0	417	0	417	0	417	0	437†	0	417	0	437†	0	447⋆	0
205	1304	0	768	0	773†	0	788⋆	0	417	0	417	0	417	0	437†	0	417	0	437†	0	447⋆	0
204	1295	1	760	1	765†	1	780⋆	1	410	1	410	1	410	1	430†	1	410	1	430†	1	447⋆	0
203	1285	1	758	0	763†	0	770⋆	1	407	0	407	0	407	0	427†	0	407	0	427†	0	447⋆	0
202	1275	1	750	1	763⋆	0	760†	1	407	0	407	0	407	0	427†	0	407	0	427†	0	447⋆	0
201	1265	1	740	1	755⋆	1	750†	1	407	0	407	0	407	0	427†	0	407	0	427†	0	447⋆	0
200	1255	1	730	1	745⋆	1	740†	1	400	1	400	1	400	1	420†	1	400	1	420†	1	440⋆	1
199	1245	1	728	0	743⋆	0	730†	1	397	0	397	0	397	0	417†	0	397	0	417†	0	437⋆	0
198	1235	1	720	1	738⋆	0	720	1	392	0	392	0	392	0	412†	0	392	0	412†	0	432⋆	0
197	1229	859	710	1	733⋆	859	710	1	392	0	392	0	392	0	412†	0	392	0	412†	0	427⋆	859
196	1219	859	700	1	723⋆	859	700	1	385	1	385	1	385	1	405†	1	385	1	405†	1	417⋆	859
195	1209	859	690	1	713⋆	859	690	1	382	0	382	0	382	0	402†	0	382	0	402†	0	407⋆	859
194	1199	859	680	1	703⋆	859	680	1	375	1	375	1	375	1	395†	1	375	1	395†	1	397⋆	859
193	1189	859	670	1	693⋆	859	670	1	365	1	365	1	365	1	385†	1	365	1	385†	1	387⋆	859
192	1179	859	660	1	683⋆	859	660	1	355	1	355	1	355	1	375†	1	355	1	375†	1	377⋆	859
191	1174	0	658	0	678⋆	0	658	0	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
190	1165	1	658	0	678⋆	0	658	0	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
189	1164	0	658	0	678⋆	0	658	0	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
188	1155	1	650	1	670⋆	1	650	1	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
187	1154	0	648	0	668⋆	0	648	0	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
186	1145	1	648	0	668⋆	0	648	0	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
185	1135	1	648	0	668⋆	0	648	0	352	0	352	0	352	0	372⋆	0	352	0	372⋆	0	372⋆	0
184	1125	1	640	1	660⋆	1	640	1	345	1	345	1	345	1	365⋆	1	345	1	365⋆	1	365⋆	1
183	1124	0	638	0	658⋆	0	638	0	342	0	342	0	342	0	362⋆	0	342	0	362⋆	0	362⋆	0
182	1115	1	638	0	658⋆	0	638	0	342	0	342	0	342	0	362⋆	0	342	0	362⋆	0	362⋆	0
181	1114	0	638	0	658⋆	0	638	0	342	0	342	0	342	0	362⋆	0	342	0	362⋆	0	362⋆	0
180	1105	1	630	1	650⋆	1	630	1	342	0	342	0	342	0	362⋆	0	342	0	362⋆	0	362⋆	0
179	1104	0	628	0	648⋆	0	628	0	342	0	342	0	342	0	362⋆	0	342	0	362⋆	0	362⋆	0
178	1095	1	620	1	640⋆	1	620	1	342	0	342	0	342	0	355†	1	342	0	362⋆	0	362⋆	0
177	1085	1	610	1	630⋆	1	610	1	342	0	342	0	342	0	352†	0	342	0	355†	1	362⋆	0
176	1075	1	600	1	620⋆	1	600	1	335	1	335	1	335	1	345†	1	335	1	345†	1	355⋆	1
175	1074	0	598	0	618⋆	0	598	0	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
174	1065	1	598	0	618⋆	0	598	0	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
173	1064	0	598	0	618⋆	0	598	0	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
172	1055	1	590	1	610⋆	1	590	1	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
171	1054	0	588	0	608⋆	0	588	0	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
170	1045	1	588	0	608⋆	0	588	0	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
169	1035	1	588	0	608⋆	0	588	0	332	0	332	0	332	0	342†	0	332	0	342†	0	352⋆	0
168	1025	1	580	1	600⋆	1	580	1	325	1	325	1	325	1	335†	1	325	1	335†	1	345⋆	1
167	1024	0	578	0	598⋆	0	578	0	322	0	322	0	322	0	332†	0	322	0	332†	0	342⋆	0
166	1015	1	578	0	598⋆	0	578	0	322	0	322	0	322	0	332†	0	322	0	332†	0	342⋆	0

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^\perp$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
165	1009	0	578	0	593⋆	0	578	0	322	0	322	0	322	0	332†	0	322	0	332†	0	337⋆	0
164	1000	1	570	1	585⋆	1	570	1	315	1	315	1	315	1	332⋆	0	315	1	325†	1	330†	1
163	990	1	568	0	575⋆	1	568	0	312	0	312	0	312	0	332⋆	0	312	0	322†	0	320†	1
162	980	1	560	1	565⋆	1	560	1	305	1	305	1	305	1	325⋆	1	305	1	322†	0	310†	1
161	970	1	550	1	555⋆	1	550	1	295	1	295	1	295	1	315⋆	1	295	1	315⋆	1	300†	1
160	960	1	540	1	545⋆	1	540	1	285	1	285	1	285	1	305⋆	1	285	1	305⋆	1	290†	1
159	959	0	538	0	543⋆	0	538	0	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
158	950	1	538	0	543⋆	0	538	0	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
157	949	0	538	0	543⋆	0	538	0	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
156	940	1	530	1	535⋆	1	530	1	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
155	939	0	528	0	533⋆	0	528	0	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
154	930	1	528	0	533⋆	0	528	0	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
153	920	1	528	0	533⋆	0	528	0	282	0	282	0	282	0	302⋆	0	282	0	302⋆	0	287†	0
152	910	1	520	1	525⋆	1	520	1	275	1	275	1	275	1	295⋆	1	275	1	295⋆	1	280†	1
151	909	0	518	0	523⋆	0	518	0	272	0	272	0	272	0	292⋆	0	272	0	292⋆	0	277†	0
150	900	1	518	0	523⋆	0	518	0	272	0	272	0	272	0	292⋆	0	272	0	292⋆	0	277†	0
149	899	0	518	0	523⋆	0	518	0	272	0	272	0	272	0	292⋆	0	272	0	292⋆	0	277†	0
148	890	1	510	1	515⋆	1	510	1	272	0	272	0	272	0	292⋆	0	272	0	292⋆	0	277†	0
147	889	0	508	0	513⋆	0	508	0	272	0	272	0	272	0	292⋆	0	272	0	292⋆	0	277†	0
146	880	1	500	1	505⋆	1	500	1	265	1	265	1	265	1	285⋆	1	265	1	285⋆	1	270†	1
145	870	1	490	1	495⋆	1	490	1	262	0	262	0	262	0	282⋆	0	262	0	282⋆	0	267†	0
144	860	1	480	1	485⋆	1	480	1	255	1	255	1	255	1	275⋆	1	255	1	275⋆	1	260†	1
143	850	1	478	0	483⋆	0	478	0	252	0	252	0	252	0	272⋆	0	252	0	272⋆	0	257†	0
142	840	1	470	1	475†	1	478⋆	0	252	0	252	0	252	0	272⋆	0	252	0	265†	1	257†	0
141	830	1	468	0	473†	0	478⋆	0	252	0	252	0	252	0	272⋆	0	252	0	262†	0	257†	0
140	820	1	460	1	465†	1	470⋆	1	245	1	245	1	245	1	265⋆	1	245	1	255†	1	257†	0
139	810	1	458	0	463†	0	468⋆	0	242	0	242	0	242	0	262⋆	0	242	0	252†	0	257†	0
138	800	1	450	1	455†	1	468⋆	0	242	0	242	0	242	0	262⋆	0	242	0	245†	1	257†	0
137	790	1	448	0	453†	0	468⋆	0	242	0	242	0	242	0	262⋆	0	242	0	242	0	257†	0
136	780	1	440	1	445†	1	460⋆	1	235	1	235	1	235	1	255⋆	1	235	1	235	1	250†	1
135	770	1	430	1	435†	1	450⋆	1	232	0	232	0	232	0	245†	1	232	0	232	0	247⋆	0
134	760	1	420	1	425†	1	440⋆	1	225	1	225	1	225	1	235†	1	225	1	225	1	247⋆	0
133	750	1	410	1	415†	1	430⋆	1	222	0	222	0	222	0	225†	1	222	0	222	0	247⋆	0
132	740	1	400	1	405†	1	420⋆	1	215	1	215	1	215	1	215	1	215	1	215	1	242⋆	0
131	734	925	390	1	398†	925	410⋆	1	205	1	205	1	205	1	205	1	205	1	205	1	237⋆	925
130	724	925	380	1	388†	925	400⋆	1	197	958	197	958	197	958	197	958	197	958	197	958	227⋆	925
129	714	925	370	1	378†	925	390⋆	1	197	959	197	959	197	959	197	959	197	959	197	959	217⋆	925
128	704	925	360	1	368†	925	380⋆	1	187	959	187	959	187	959	187	959	187	959	187	959	207⋆	925
127	699	0	358	0	363†	0	378⋆	0	177	959	177	959	177	959	177	959	177	959	177	959	202⋆	0
126	690	1	358	0	363†	0	378⋆	0	172	0	172	0	172	0	172	0	172	0	172	0	202⋆	0
125	689	0	358	0	363†	0	378⋆	0	172	0	172	0	172	0	172	0	172	0	172	0	202⋆	0
124	680	1	350	1	355†	1	370⋆	1	172	0	172	0	172	0	172	0	172	0	172	0	202⋆	0
123	679	0	348	0	353†	0	368⋆	0	172	0	172	0	172	0	172	0	172	0	172	0	202⋆	0
122	670	1	348	0	353†	0	368⋆	0	172	0	172	0	172	0	172	0	172	0	172	0	202⋆	0
121	669	0	348	0	353†	0	368⋆	0	172	0	172	0	172	0	172	0	172	0	172	0	202⋆	0
120	660	1	340	1	345†	1	360⋆	1	165	1	165	1	165	1	165	1	165	1	165	1	195⋆	1
119	659	0	338	0	343†	0	358⋆	0	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0
118	650	1	338	0	343†	0	358⋆	0	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0
117	649	0	338	0	343†	0	358⋆	0	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0
116	640	1	330	1	335†	1	350⋆	1	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0
115	639	0	328	0	333†	0	348⋆	0	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
114	630	1	328	0	333†	0	348⋆	0	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0
113	620	1	328	0	333†	0	340⋆	1	162	0	162	0	162	0	162	0	162	0	162	0	192⋆	0
112	610	1	320	1	325†	1	330⋆	1	155	1	155	1	155	1	155	1	155	1	155	1	185⋆	1
111	609	0	318	0	323†	0	328⋆	0	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
110	600	1	318	0	323†	0	328⋆	0	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
109	599	0	318	0	323†	0	328⋆	0	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
108	590	1	310	1	315†	1	320⋆	1	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
107	589	0	308	0	313†	0	318⋆	0	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
106	580	1	308	0	313†	0	318⋆	0	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
105	579	0	308	0	313†	0	318⋆	0	152	0	152	0	152	0	152	0	152	0	152	0	182⋆	0
104	570	1	300	1	305†	1	310⋆	1	145	1	145	1	145	1	145	1	145	1	145	1	175⋆	1
103	569	0	298	0	303†	0	308⋆	0	142	0	142	0	142	0	142	0	142	0	142	0	172⋆	0
102	560	1	298	0	303†	0	308⋆	0	142	0	142	0	142	0	142	0	142	0	142	0	172⋆	0
101	559	0	298	0	303†	0	308⋆	0	142	0	142	0	142	0	142	0	142	0	142	0	172⋆	0
100	550	1	290	1	295†	1	300⋆	1	142	0	142	0	142	0	142	0	142	0	142	0	172⋆	0
99	544	0	288	0	288	0	298⋆	0	142	0	142	0	142	0	142	0	142	0	142	0	167⋆	0
98	535	1	280	1	283†	958	298⋆	0	142	0	142	0	142	0	142	0	142	0	142	0	162⋆	958
97	525	1	270	1	273†	958	290⋆	1	142	0	142	0	142	0	142	0	142	0	142	0	152⋆	958
96	515	1	260	1	263†	958	280⋆	1	135	1	135	1	135	1	135	1	135	1	135	1	142⋆	958
95	514	0	258	0	258	0	278⋆	0	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
94	505	1	258	0	258	0	278⋆	0	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
93	504	0	258	0	258	0	278⋆	0	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
92	495	1	250	1	250	1	270⋆	1	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
91	494	0	248	0	248	0	268⋆	0	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
90	485	1	248	0	248	0	268⋆	0	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
89	484	0	248	0	248	0	268⋆	0	132	0	132	0	132	0	132	0	132	0	132	0	137⋆	0
88	475	1	240	1	240	1	260⋆	1	125	1	125	1	125	1	125	1	125	1	125	1	130⋆	1
87	474	0	238	0	238	0	258⋆	0	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
86	465	1	238	0	238	0	258⋆	0	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
85	464	0	238	0	238	0	258⋆	0	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
84	455	1	230	1	230	1	250⋆	1	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
83	454	0	228	0	228	0	248⋆	0	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
82	445	1	228	0	228	0	248⋆	0	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
81	435	1	228	0	228	0	240⋆	1	122	0	122	0	122	0	122	0	122	0	122	0	127⋆	0
80	425	1	220	1	220	1	230⋆	1	115	1	115	1	115	1	115	1	115	1	115	1	120⋆	1
79	424	0	218	0	218	0	228⋆	0	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
78	415	1	218	0	218	0	228⋆	0	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
77	414	0	218	0	218	0	228⋆	0	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
76	405	1	210	1	210	1	220⋆	1	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
75	404	0	208	0	208	0	218⋆	0	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
74	395	1	208	0	208	0	218⋆	0	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
73	394	0	208	0	208	0	218⋆	0	112	0	112	0	112	0	112	0	112	0	112	0	117⋆	0
72	385	1	200	1	200	1	210⋆	1	105	1	105	1	105	1	105	1	105	1	105	1	110⋆	1
71	384	0	198	0	198	0	208⋆	0	102	0	102	0	102	0	102	0	102	0	102	0	107⋆	0
70	375	1	198	0	198	0	208⋆	0	102	0	102	0	102	0	102	0	102	0	102	0	107⋆	0
69	374	0	198	0	198	0	208⋆	0	102	0	102	0	102	0	102	0	102	0	102	0	107⋆	0
68	365	1	190	1	190	1	200⋆	1	95	1	95	1	95	1	95	1	95	1	95	1	107⋆	0
67	355	1	188	0	188	0	190⋆	1	92	0	92	0	92	0	92	0	92	0	92	0	107⋆	0
66	345	1	180	1	183⋆	0	180	1	87	0	87	0	87	0	87	0	87	0	87	0	102⋆	0
65	339	991	170	1	178⋆	991	170	1	87	0	87	0	87	0	87	0	87	0	87	0	97⋆	991
64	329	991	160	1	168⋆	991	160	1	80	1	80	1	80	1	80	1	80	1	80	1	87⋆	991

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
63	324	0	158	0	163⋆	0	158	0	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
62	315	1	158	0	163⋆	0	158	0	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
61	314	0	158	0	163⋆	0	158	0	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
60	305	1	150	1	155⋆	1	150	1	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
59	304	0	148	0	153⋆	0	148	0	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
58	295	1	148	0	153⋆	0	148	0	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
57	294	0	148	0	153⋆	0	148	0	77	0	77	0	77	0	77	0	77	0	77	0	82⋆	0
56	285	1	140	1	145⋆	1	140	1	70	1	70	1	70	1	70	1	70	1	70	1	75⋆	1
55	284	0	138	0	143⋆	0	138	0	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
54	275	1	138	0	143⋆	0	138	0	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
53	274	0	138	0	143⋆	0	138	0	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
52	265	1	130	1	135⋆	1	130	1	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
51	264	0	128	0	133⋆	0	128	0	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
50	255	1	128	0	133⋆	0	128	0	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
49	254	0	128	0	133⋆	0	128	0	67	0	67	0	67	0	67	0	67	0	67	0	72⋆	0
48	245	1	120	1	125⋆	1	120	1	60	1	60	1	60	1	60	1	60	1	60	1	65⋆	1
47	244	0	118	0	123⋆	0	118	0	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
46	235	1	118	0	123⋆	0	118	0	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
45	234	0	118	0	123⋆	0	118	0	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
44	225	1	110	1	115⋆	1	110	1	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
43	224	0	108	0	113⋆	0	108	0	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
42	215	1	108	0	113⋆	0	108	0	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
41	214	0	108	0	113⋆	0	108	0	57	0	57	0	57	0	57	0	57	0	57	0	62⋆	0
40	205	1	100	1	105⋆	1	100	1	50	1	50	1	50	1	50	1	50	1	50	1	55⋆	1
39	204	0	98	0	103⋆	0	98	0	47	0	47	0	47	0	47	0	47	0	47	0	52⋆	0
38	195	1	98	0	103⋆	0	98	0	47	0	47	0	47	0	47	0	47	0	47	0	52⋆	0
37	194	0	98	0	103⋆	0	98	0	47	0	47	0	47	0	47	0	47	0	47	0	52⋆	0
36	185	1	90	1	95⋆	1	90	1	47	0	47	0	47	0	47	0	47	0	47	0	52⋆	0
35	184	0	88	0	93⋆	0	88	0	47	0	47	0	47	0	47	0	47	0	47	0	52⋆	0
34	175	1	88	0	93⋆	0	88	0	47	0	47	0	47	0	47	0	47	0	47	0	52⋆	0
33	169	0	88	0	88	0	88	0	47	0	47	0	47	0	47	0	47	0	47	0	47	0
32	160	1	80	1	80	1	80	1	40	1	40	1	40	1	40	1	40	1	40	1	40	1
31	159	0	78	0	78	0	78	0	37	0	37	0	37	0	37	0	37	0	37	0	37	0
30	150	1	78	0	78	0	78	0	37	0	37	0	37	0	37	0	37	0	37	0	37	0
29	149	0	78	0	78	0	78	0	37	0	37	0	37	0	37	0	37	0	37	0	37	0
28	140	1	70	1	70	1	70	1	37	0	37	0	37	0	37	0	37	0	37	0	37	0
27	139	0	68	0	68	0	68	0	37	0	37	0	37	0	37	0	37	0	37	0	37	0
26	130	1	68	0	68	0	68	0	37	0	37	0	37	0	37	0	37	0	37	0	37	0
25	129	0	68	0	68	0	68	0	37	0	37	0	37	0	37	0	37	0	37	0	37	0
24	120	1	60	1	60	1	60	1	30	1	30	1	30	1	30	1	30	1	30	1	30	1
23	119	0	58	0	58	0	58	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0
22	110	1	58	0	58	0	58	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0
21	109	0	58	0	58	0	58	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0
20	100	1	50	1	50	1	50	1	27	0	27	0	27	0	27	0	27	0	27	0	27	0
19	99	0	48	0	48	0	48	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0
18	90	1	48	0	48	0	48	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0
17	89	0	48	0	48	0	48	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0
16	80	1	40	1	40	1	40	1	20	1	20	1	20	1	20	1	20	1	20	1	20	1
15	79	0	38	0	38	0	38	0	17	0	17	0	17	0	17	0	17	0	17	0	17	0
14	70	1	38	0	38	0	38	0	17	0	17	0	17	0	17	0	17	0	17	0	17	0
13	69	0	38	0	38	0	38	0	17	0	17	0	17	0	17	0	17	0	17	0	17	0

continued

$m = 10$																						
ν	9		8						7													
$\mathcal{S}^{\perp}$	$\mathbb{G}_0$		$\mathbb{G}_0$		$\mathbb{G}_{11}$		$\mathbb{G}_{19}$		$\mathbb{G}_0$		$\mathbb{G}_{23}$		$\mathbb{G}_{557}$		$\mathbb{G}_{559}$		$\mathbb{G}_{614}$		$\mathbb{G}_{621}$		$\mathbb{G}_{632}$	
k_0	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S	K	J_S
12	60	1	30	1	30	1	30	1	17	0	17	0	17	0	17	0	17	0	17	0	17	0
11	59	0	28	0	28	0	28	0	17	0	17	0	17	0	17	0	17	0	17	0	17	0
10	50	1	28	0	28	0	28	0	17	0	17	0	17	0	17	0	17	0	17	0	17	0
9	49	0	28	0	28	0	28	0	17	0	17	0	17	0	17	0	17	0	17	0	17	0
8	40	1	20	1	20	1	20	1	10	1	10	1	10	1	10	1	10	1	10	1	10	1
7	39	0	18	0	18	0	18	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0
6	30	1	18	0	18	0	18	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0
5	29	0	18	0	18	0	18	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0
4	20	1	10	1	10	1	10	1	7	0	7	0	7	0	7	0	7	0	7	0	7	0
3	19	0	8	0	8	0	8	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0
2	10	1	8	0	8	0	8	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0
1	9	0	8	0	8	0	8	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0