Abstract

Let

$$H = \sum_{\mathcal{N},\chi} \mathcal{M}_{\frac{1}{2}}(\mathcal{N}, \chi)$$

be the space of Hilbert modular forms of half integral weight of all levels $\mathcal{N}$ and characters χ.

We denote by $\varphi_{\mathcal{N}} : \mathcal{O}_F \to \mathbf{C}$ a periodic function of period $\mathcal{N}$.

Let Θ be the $\mathbf{C}$-linear space of the functions $f : \mathcal{H} \times \mathcal{H} \to \mathbf{C}$,

$$f(z) = \sum_{t} \sum_{\xi \in \mathcal{O}_F} \varphi_{\mathcal{N}_t}(\xi) exp(t\pi i(\xi^2 z_1 + \xi'^2 z_2))$$

where, for each f, $t \in \mathcal{O}_F$ runs through a finite subset of totally positive integers of F.

Main Theorem.

$$H = \Theta$$

Using this theorem, for some fixed F's, an explicit basis can be found. Some examples are given in Chapter4.