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Thesis Abstract

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The Conjecture of Birch and Swinnerton-Dyer relates an analytic invariant of an elliptic curve – the value of the L -function, to an algebraic invariant of the curve – the order of the Tate–Šafarevič group. Gross has refined the Birch–Swinnerton-Dyer Conjecture in the case where the endomorphism ring \mathcal{O} is the full ring of integers \mathcal{O}_K . It is this version which interests us here. Gross’ Conjecture has been reformulated, by Fontaine and Perrin-Riou, in the language of derived categories and determinants of perfect complexes. Burns and Flach then realized that this immediately leads to a refined conjecture for elliptic curves with complex multiplication by a nonmaximal order. The conjecture is now expressed as a statement concerning a generator of the image of a map of 1-dimensional modules. We prove this conjecture of Burns and Flach.