



Arithmetic on Modular Curves

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Book Condition: New. Publisher/Verlag: Springer, Basel | One of the most intriguing problems of modern number theory is to relate the arithmetic of abelian varieties to the special values of associated L-functions. A very precise conjecture has been formulated for elliptic curves by Birch and Swinnerton-Dyer and generalized to abelian varieties by Tate. The numerical evidence is quite encouraging. A weakened form of the conjectures has been verified for CM elliptic curves by Coates and Wiles, and recently strengthened by K. Rubin. But a general proof of the conjectures seems still to be a long way off. A few years ago, B. Mazur [26] proved a weak analog of these conjectures. Let N be prime, and be a weight two newform for $\Gamma_0(N)$. For a primitive Dirichlet character χ of conductor prime to N , let $L(\chi, f, X)$ denote the algebraic part of $L(f, \chi, X)$ (see below). Mazur showed in [26] that the residue class of $L(\chi, f, X)$ modulo the "Eisenstein" ideal gives information about the arithmetic of $X_0(N)$. There are two aspects to his work: congruence formulae for the values $L(\chi, f, X)$, and a descent argument. Mazur's congruence formulae were...



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