Congruences for critical values of higher
derivatives of twisted Hasse-Weil $L$-functions

Abstract:

Let $E$ be an elliptic curve defined over a number field $k$ and $F$ a finite cyclic extension of $k$ of $p$-power degree for an odd prime $p$. Under certain technical hypotheses, we describe a reinterpretation of the Equivariant Tamagawa Number Conjecture (‘ETNC’) for $E$, $F/k$ and $p$ as an explicit family of $p$-adic congruences involving values of derivatives of the Hasse-Weil $L$-functions of twists of $E$, normalised by completely explicit twisted regulators. This reinterpretation makes the ETNC amenable to numerical verification and furthermore leads to explicit predictions which refine well-known conjectures of Mazur and Tate.

This is a report on joint work with Daniel Macias Castillo

Host: James McKernan

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