

Boğaziçi MATH COLLOQUIUM

Classifying 7-adic Galois Representations of Elliptic Curves

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Abstract:

We show that the modular curve $X_{E_3}(7)$, associated with $E_3 : y^2 = x^3 - x^2 - 16x + 29$, has exactly four rational points. We find a degree two elliptic quotient over a number field of degree 21, which yields 37-adic height equations vanishing at every rational point. We use these equations and quadratic Chabauty to show that the four known rational points are the only ones. This proves Furio-Lombardo's Conjecture, which completes their classification of 7-adic Galois images for elliptic curves over $\mathbb{Q}$ without complex multiplication.

Date : Wednesday, October 14, 2026

Time: 13:30

Place: TB 130, Boğaziçi University