

BOSTON UNIVERSITY NUMBER THEORY SEMINAR

Shimura curves and new abc bounds

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Monday, November 27 at 4:15 pm
111 Cummington Mall, MCS B21
Tea and cookies in MCS 144 at 4:00 pm

Abstract: Existing unconditional progress on the abc conjecture and Szpiro's conjecture is rather limited and coming from essentially only two approaches: The theory of linear forms in p -adic logarithms, and bounds for the degree of modular parametrizations of elliptic curves by using congruences of modular forms. In this talk I will discuss a new approach as well as some unconditional results that it yields. For a fixed elliptic curve E over the rationals one has several modular parametrizations coming from various Shimura curves X , and our method amounts to using Arakelov theory to bound how these degrees vary as we change the source curve X , keeping E fixed. Unlike linear forms in p -adic logarithms, our method is global and deals with all local contributions at once. Concrete unconditional consequences will be discussed, such as bounding the number of divisors of abc triples polynomially on the radical, bounding the product of the "fudge factors" of elliptic curves polynomially on the conductor, and new lower bounds for truncated counting functions in the context of Vojta's arithmetic conjecture.