

Rational points on elliptic curves and their p-adic analytic construction

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Abstract

The negative answer to Hilbert's 10th problem tells us that determining whether or not an algebraic variety should carry any rational points is (literally!) impossibly hard. The same problem, even for curves, is difficult: For elliptic curves, this is the subject of the celebrated Birch and Swinnerton-Dyer conjecture
<https://en.wikipedia.org/wiki/Birch_and_Swinnerton-Dyer_conjecture>.

I will survey recent results on this problem, and explain briefly an explicit p-adic analytic construction of rational points of infinite order on elliptic curves of analytic rank one (resolving a conjecture of Perrin-Riou). These final bits of the talk will be a report on joint works with Rob Pollack & Shu Sasaki, and with Denis Benois.