"The Chabauty–Kim method for the trice punctured line made explicit"

Part 1: Prof. Dr. Stefan Wewers (Leibniz Universität Hannover)
Part 2: Dr. Ishai Dan–Cohen (Leibniz Universität Hannover)

Let $X = \mathbb{P}^1 \setminus \{0, 1, \infty\}$, and let $\mathcal{S}$ denote a finite set of prime numbers. In an article of 2005, Minhyong Kim gave a new proof of Siegel’s theorem for $X$: the set $X(\mathbb{Z}[\mathcal{S}^{-1}])$ of $\mathcal{S}$-integral points of $X$ is finite. The proof relies on a ‘nonabelian’ version of the classical Chabauty method. At its heart is a modular interpretation of unipotent $p$-adic Hodge theory, given by a tower of morphisms $h_n$ between certain $\mathbb{Q}_p$-varieties. We set out to obtain a better understanding of $h_2$. Its mysterious piece is a polynomial in $2|\mathcal{S}|$ variables. Our main theorem states that this polynomial is quadratic, and gives a procedure for writing its coefficients in terms of $p$-adic logarithms and dilogarithms.

This is a two-part talk, shared between the two authors. In the first talk, we review the theorems of Siegel and Faltings and the classical Chabauty method. We’ll also try to give a glimpse of Kim’s version of the latter. In the second talk we state and explain the proof of our main result.

Part 1: Montag, 12.12.11 ab 14:30 Uhr, Raum a410
Part 2: Montag, 19.12.11 ab 14:30 Uhr, Raum a410

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Alle Interessierten sind herzlich eingeladen.

gez. Prof. Dr. C. Bessenrodt

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