

**Speaker:** Daniel Hast

**Title:** The non-abelian Chabauty method and rational points on curves

**Abstract:** By Faltings' theorem, any curve of genus at least 2 over a number field has only finitely many rational points. Provably computing the set of all rational points remains a major open problem. We will survey recent progress and ongoing work using the Chabauty-Kim method, which uses the fundamental group to construct  $p$ -adic analytic functions that vanish on the set of rational points. In particular, we present a new proof of Faltings' theorem for superelliptic curves over the rational numbers (due to joint work with Jordan Ellenberg), and a conditional generalization of the Chabauty-Kim method to number fields and higher dimensions.