TITLE: Explicitly computing information about Shafarevich-Tate groups of elliptic curves using L-functions, Euler Systems, and Iwasawa theory

ABSTRACT: I will give a survey of theoretical and computational results toward the following problem: given a specific elliptic curve over $\mathbf{Q}$, compute the exact order and structure of its Shafarevich-Tate group in practice. I view this problem as a motivating question for organizing both theoretical and algorithmic investigations into the arithmetic of elliptic curves and the Birch and Swinnerton-Dyer conjecture.