Title: Generalizations of the Signed Selmer Groups for Cyclotomic \mathbb{Z}_{p} -Extensions

Abstract: Let E/K be an elliptic curve and p a rational prime. Also let K_{∞}/K be the cyclotomic \mathbb{Z}_p -extension of K and $\Lambda(\Gamma)$ the Iwasawa module of this infinite extension. A famous conjecture by Mazur states that the p-primary component of the Selmer group of E is $\Lambda(\Gamma)$ -cotorsion when E has good ordinary reduction at all primes of K lying over p. This conjecture was proven in the case $K = \mathbb{Q}$ by Kato, but it is known to be false when E has supersingular reduction type. To salvage this result, Kobayashi introduced the signed Selmer groups, which impose stronger local conditions than their classical counterpart.

In this presentation, I will give a summary of the history and known results concerning the signed Selmer groups, then suggest a way of generalizing their construction so they may be applied for elliptic curves defined over a wider variety of base fields K.