Main Conjectures for elliptic curves and weight-two modular forms

Abstract:

Iwasawa theory is a bridge between algebraic and analytic invariants attached to an arithmetic object, for a given prime p. When this arithmetic object is an elliptic curve or a modular form, the primes come in two flavors – ordinary and supersingular. When p is ordinary, the theory has historically been relatively well behaved. When p is supersingular, there are several difficulties, and we explain how to address the difficulties involved in the case of elliptic curves, culminating in the proof of the Main Conjecture. If time permits, we will sketch joint work in progress with Castella, Ciperiani, and Skinner concerning main conjecture for weight-two modular forms.