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Iwasawa theory of CM elliptic curves at potentially supersingular primes

I will discuss the Iwasawa theory of elliptic curves with complex multiplication having potentially supersingular reduction at a prime $p \geq 5$, under certain additional assumptions. This includes the study of plus and minus Selmer groups of such elliptic curves over the cyclotomic $\mathbb{Z}_p$-extension, a construction of corresponding plus and minus p-adic L-functions coming from elliptic units, and the proof of an Iwasawa main conjecture relating these objects. As an application, one obtains asymptotic growth formulae for the p-primary parts of the Tate–Shafarevich groups. These results generalise those of Kobayashi and Pollack–Rubin in the case of good supersingular reduction. This is joint work with Antonio Lei.