Non-abelian congruences between Hasse-Weil L-values – D. Delbourgo

Let E be an elliptic curve over the rationals. There are now a host of conjectures predicting the existence of analytic p-adic L-series in non-abelian Iwasawa theory. In down-to-earth terms, the existence will follow if one can prove certain explicit K_1-congruences between the abelian incarnations of the L-function.

In joint work with T. Ward, we prove some K_1-congruences for Lie extensions of the form $\mathbb{Q}\big(\sqrt[p^\infty]{1}, \sqrt[p^\infty]{\Delta}\big)/\mathbb{Q}$ where Δ is coprime to p and the conductor of E. These congruences can sometimes be used to imply non-vanishing of the L-function over the finite layers in the non-abelian extension. If we have time, we'll discuss how the μ-invariant of the (abelian) automorphic p-adic L's grows up this tower.