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Plectic Stark-Heegner points

Heegner points play a pivotal role in our understanding of the arithmetic of modular elliptic curves. They control the Mordell-Weil group of elliptic curves of rank 1, and they arise as CM points on Shimura curves. The work of Bertolini, Darmon and their schools has shown that p-adic methods can be successfully employed to generalize the definition of Heegner points to quadratic extensions that are not necessarily CM. Notably, Guitart, Masdeu and Sengun have defined and numerically computed Stark-Heegner (SH) points in great generality. Their computations strongly support the belief that SH points completely control the Mordell-Weil group of elliptic curves of rank 1.

In this talk I will report on joint works with Gehrmann, Guitart and Masdeu where we propose and numerically compute plectic generalizations of SH points. Inspired by Nekovar and Scholl's conjectures, we expect our points to control Mordell-Weil groups of higher rank elliptic curves.