MARC MASDEU, Universitat Autònoma de Barcelona
Quaternionic rigid meromorphic cocycles

Rigid meromorphic cocycles were introduced by Darmon and Vonk as a conjectural p-adic extension of the theory of singular moduli to real quadratic base fields. They are certain cohomology classes of $\mathrm{SL}_2(\mathbb{Z}[1/p])$ which can be evaluated at real quadratic irrationalities and the values thus obtained are conjectured to lie in algebraic extensions of the base field.

I will present joint work with X.Guitart and X.Xarles, in which we generalize (and somewhat simplify) this construction to the setting where $\mathrm{SL}_2(\mathbb{Z}[1/p])$ is replaced by an order in an indefinite quaternion algebra over a totally real number field F. These quaternionic cohomology classes can be evaluated at elements in almost totally complex extensions K of F, and we conjecture that the corresponding values lie in algebraic extensions of K. I will show some new numerical evidence for this conjecture, along with some interesting questions allowed by this flexibility.