
PADMAVATHI SRINIVASAN, University of Georgia

Computing nonsurjective primes associated to Galois representations of abelian surfaces

Let A be a principally polarized abelian surface over the rational numbers. Serre proved that there are finitely many primes ℓ for which the Galois action on the ℓ -torsion points of A is not surjective on to the group of symplectic similitudes $\mathrm{GSp}_4(\mathbb{F}_\ell)$. Dieulefait showed that this finite set is effectively computable, conditional on Serre's conjecture (now a theorem of Khare and Wintenberger). I will report on ongoing joint work with Banwait, Brumer, Kim, Klagsbrun, Mayle and Vogt where we implement this algorithm and use it to compute nonsurjective primes for all genus 2 curves in the LMFDB.