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Arithmetic properties of the Frobenius traces defined by a rational abelian variety

Let A be an abelian variety over the rationals. Under suitable hypotheses, we formulate a conjecture about the asymptotic behaviour of the Frobenius traces $a_{1,p}$ of A reduced modulo varying primes p. This generalizes a well-known conjecture of S. Lang and H. Trotter from 1976 about elliptic curves. We prove upper bounds for the counting function $\#\{p \leq x : a_{1,p} = t\}$ and we investigate the normal order of the number of prime factors of $a_{1,p}$. This is joint work with Alina Carmen Cojocaru, Rachel Davis and Alice Silverberg.