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Bounds for the distribution of the Frobenius traces associated to abelian varieties

In 1976, Serge Lang and Hale Trotter conjectured the asymptotic growth of the number $\pi_A(x,t)$ of primes $p < x$ for which the Frobenius trace a_p of a non-CM elliptic curve $A/\mathbb{Q}$ equals an integer t. Even though their conjecture remains open, over the past decades the study of the counting function $\pi_A(x,t)$ has witnessed remarkable advances. We will discuss generalizations of such studies in the setting of an abelian variety $A/\mathbb{Q}$ of arbitrary dimension and we will present non-trivial upper bounds for the corresponding counting function $\pi_A(x,t)$. This is joint work with Tian Wang (University of Illinois at Chicago).