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Uniform results for Serre's Theorem for elliptic curves

Let E be an elliptic curve defined over \mathbb{Q} . For a rational prime q , let ρ_q be the mod q Galois representation of E . A classical result of Serre, proven in 1972, asserts that if E is without complex multiplication, then there exists a constant $C(E) > 0$ such that ρ_q is surjective for any $q > C(E)$. Serre asked whether the constant $C(E)$ is absolute (*i.e.*, it does not depend on E). In my presentation I will discuss function field and one-parameter average analogues of Serre's question.

This is joint work with Chris Hall (Univ. of Texas at Austin).