
BORYS KADETS, University of Georgia
Improving Weil bounds for abelian varieties

Weil bounds for an abelian variety A over \mathbb{F}_q give the following estimates $(\sqrt{q} - 1)^{2 \dim A} \leq |A(\mathbb{F}_q)| \leq (\sqrt{q} + 1)^{2 \dim A}$. I will talk about a simple approach to improving these bounds for high-dimensional simple abelian varieties over small fields. For example, when $q = 2, 3, 4$ the lower Weil bound is vacuous. This method gives $|A(\mathbb{F}_3)| \geq 1.359^{\dim A}$ and $|A(\mathbb{F}_4)| \geq 2.275^{\dim A}$ for all but finitely many simple abelian varieties A . In contrast, for $q = 2$ an infinite family of simple abelian varieties with only one point is known.