Leibniz Universität Hannover

Oberseminar
Zahlentheorie und Arithmetische Geometrie

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"Galois representations attached to abelian varieties: effective aspects"

Let A be an abelian variety defined over a number field K. To A/K one can canonically attach a family (ρ_ℓ) of ℓ-adic Galois representations, which have long been known to carry significant arithmetic information. Under various combinations of hypotheses concerning the dimension and the endomorphism algebra of A, results of Serre, Pink, Ribet, Chi and others show that - for every ℓ - the image G_ℓ of ρ_ℓ is open in $\mathrm{MT}(A)(\mathbb{Z}_\ell)$, where $\mathrm{MT}(A)$ is the Mumford-Tate group of A. This gives a description of G_ℓ "up to finite index", and in many cases one even knows that the equality $G_\ell = \mathrm{MT}(A)(\mathbb{Z}_\ell)$ holds for all sufficiently large primes ℓ.

In this talk I will consider the problem of making such results *effective*, giving for example an explicit value $B(A/K)$ - expressed as a simple function of A and K - such that the equality $G_\ell = \mathrm{MT}(A)(\mathbb{Z}_\ell)$ holds for all $\ell > B(A/K)$. I will describe some applications and sketch a proof in the prototypical case of abelian surfaces; if time permits, I will also try to outline the additional difficulties that arise for abelian varieties of higher dimension.

Donnerstag 27.10.2016
12:00 Uhr, Raum g117

Hauptgebäude der Leibniz Universität Hannover

Alle Interessierten sind herzlich eingeladen.

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