Abelian varieties & Galois actions

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Collegium Minus Adam Mickiewicz University Poznań, Poland

ABSTRACTS

Speaker : David Zywina

Title : A radical characterization of abelian varieties

Abstract : A famous theorem of Faltings says that an abelian variety A over a number field K is determined, up to isogeny, by its Frobenius polynomials $P_{A,\mathfrak{p}}(x)$ for almost all primes \mathfrak{p} . We will discuss analogous results with weaker conditions. For example, an abelian variety A/K is determined, up to isogeny, by the cardinality $|A(\mathbb{F}_{\mathfrak{p}})| = P_{A,\mathfrak{p}}(1)$ for almost all \mathfrak{p} . We will also discuss recent work of Theodore Hui which shows that the simple quotients of A, over an explicit extension L of K, are determined by the radical of $|A(\mathbb{F}_{\mathfrak{p}})|$ for almost all \mathfrak{p} ; this extends results of Hall, Perucca and Ratazzi.