

Time table

11:30	Ben Heuer
14:00	Pol van Hoften
15:15	Giada Grossi
16:45	Guido Kings

The social dinner will take place at 20:00 in Via Durini, 28, 20122 Milano (<https://www.ariccionemilano.it/en/ariccione-terrazza12/>).

Pro-étale vector bundles and the p -adic Simpson correspondence

Ben Heuer

Abstract

I will first explain how various classical problems in p -adic number theory such as Sen theory can be reinterpreted geometrically in terms of vector bundles on Scholze's pro-étale site. I will then explain how such pro-étale vector bundles can be understood systematically by means of " p -adic non-abelian Hodge theory". This is closely related to Faltings' p -adic Simpson correspondence, relating p -adic representations of fundamental groups of p -adic varieties to Higgs bundles. Finally, I will sketch how moduli spaces of pro-étale vector bundles can help understand open questions in Sen theory and the p -adic Simpson correspondence.

A new proof of the Eichler–Shimura congruence relation

Pol van Hoften

Abstract

Associated to a modular form f is a two-dimensional Galois representation whose Frobenius eigenvalues can be expressed in terms of the Fourier coefficients of f , using a formula known as the Eichler–Shimura congruence relation. This relation was proved by Eichler–Shimura and Deligne by analyzing the mod p (bad) reduction of the modular curve of level $\Gamma_0(p)$. In this talk, I will discuss joint work with Patrick Daniels, Dongryul Kim and Mingjia Zhang, where we give a new proof of this congruence relation that happens "entirely on the rigid generic fibre" and works in great generality.

Kolyvagin systems and Selmer group bounds

Giada Grossi

Abstract

Since their origins in the works of Thaine and Kolyvagin, Euler systems have been used to produce bounds on certain Selmer groups (e.g. class groups of totally real fields, Tate-Shafarevic groups of rational elliptic curves, ...). In this talk, I will explain how improving such bounds for twists of the Galois representation studied, combined with some known results in the Iwasawa theory of elliptic curves, leads to the proof of Kolyvagin's conjecture on the non-vanishing of the Heegner point Kolyvagin system (as well as the analogous results for Kato's Euler system).

***p*-adic *L*-functions for algebraic Hecke characters**

Guido Kings

Abstract

(joint with J. Sprang) For ordinary p it is well-known that one can construct a measure interpolating critical values of L -functions of algebraic Hecke characters over a fixed number field L with conductor dividing \mathfrak{f} . In the non-ordinary case, Katz, Boxall, and Schneider-Teitelbaum have obtained for imaginary quadratic fields L a locally analytic distribution on $Gal(L(p_\infty\mathfrak{f})/L)$ interpolating, up to periods and local factors, the L -values $L(\chi, 0)$ for certain ∞ -types of χ . We generalize this result to all number fields and algebraic Hecke characters for primes p of arbitrary split behaviour. The main input is a generalization of the p -adic Fourier-theory of Schneider-Teitelbaum to arbitrary p -divisible groups.