

Third one-day workshop in Cardedeu: p -adic L-functions and p -adic families

Cardedeu (Barcelona)

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Schedule

- 9:45-10:45 Stefano Vigni (Università degli Studi di Genova), *Around Kolyvagin's conjecture and the Bloch-Kato formula for modular forms*

Abstract: A few years ago, Wei Zhang proved (under certain assumptions) Kolyvagin's conjecture on the non-triviality of his system of cohomology classes built out of the Euler system of Heegner points on a rational elliptic curve. This led him to a proof of the p -part of the Birch and Swinnerton-Dyer formula in analytic rank one. In this talk I will describe an analogue of Kolyvagin's conjecture for Heegner cycles on Kuga-Sato varieties and state the p -part of the Bloch-Kato formula for higher (even) weight modular forms in analytic rank one. Time permitting, I will briefly sketch our strategy of proof of these results. This is joint work (in progress) with Matteo Longo and Daniele Masoero.

- 11:00-12:00 Chris Williams (Imperial College London), *Factorisation of base-change Bianchi p -adic L -functions*.

Abstract : Let E/\mathbb{Q} be an elliptic curve, and F an imaginary quadratic field. 'Artin formalism' gives us an explicit relation between the L -functions of E considered over \mathbb{Q} and F ; in particular, if χ_F is the quadratic character cutting out F , then we have a factorisation

$$L(E/F, s) = L(E/\mathbb{Q}, s) L(E/\mathbb{Q}, \chi_F, s).$$

In the case where p is a prime of good ordinary reduction that splits in F , it is more or less automatic that there is a similar factorisation for the p -adic L -functions of E over \mathbb{Q} and F , and this factorisation is used in Skinner and Urban's proof of the Iwasawa main conjecture at such a prime. If p is supersingular, however, the simple proof breaks down. In this talk, I will describe joint work with Daniel Barrera where we prove such a factorisation in this case too. More generally, we prove the result for classical modular forms of any weight (and their base-changes to F) with no conditions on p . The proof uses p -adic families of Bianchi modular forms and the Bianchi eigenvariety.

- 12:15-13:15 Lennart Gehrmann (Universitat Duisburg-Essen), *Shalika models and p -adic L -functions*.

Abstract : P -adic L -functions for cohomological cuspidal automorphic representations of $\mathrm{GL}(2n)$ were first constructed by Ash and Ginzburg in the case of trivial coefficients. We will discuss a new, more conceptual construction, which works for arbitrary coefficient systems. This is a generalization of Spieß' work on the $\mathrm{GL}(2)$ -case.

- 13:30-15:00 Coffee break-Lunch¹
- 15:00-16:00 Christian Johansson (University of Cambridge) , *The Bloch–Kato parity conjecture for some Hilbert modular forms*.

Abstract : I will discuss joint work with James Newton, where we prove many new cases of the parity version of the Bloch–Kato conjecture for Hilbert modular forms which are finite slope at all places above p , over a totally real field F in which p is totally split. Following work of Nekovar in the ordinary case and Pottharst–Xiao in the finite slope case, this follows from analytic continuation from the parallel weight two case if one can construct classical non-critical parallel weight 2 points on all connected components of (cuspidal) Hilbert modular eigenvarieties. We do this, extending the method of Liu–Wan–Xiao in the case $F = \mathbb{Q}$.

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