Fourth one-day workshop in Cardedeu: p-adic arithmetic geometry

Cardedeu (Barcelona)

Friday 5 April 2019

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Schedule

- 9:45-10:45 Riccardo Brasca (Université Paris Diderot), *Hida theory over unitary Shimura varieties without ordinary locus*

  Abstract: We develop Hida theory for Shimura varieties of type A without ordinary locus. In particular we show that the dimension of the space of ordinary forms is bounded independently of the weight and that there is a module of Λ-adic cuspidal ordinary forms which is of finite type over Λ, where Λ is a twisted Iwasawa algebra. This a joint work with Giovanni Rosso.

- 11:00-12:00 Francesca Gatti (Universitat Politècnica de Catalunya), *Special values of the triple product p-adic L-function and non-cristalline Kolyvagin classes.*

  Abstract : I will describe a joint work (in progress) with X. Guitart, M. Masdeu and V. Rotger, where we study the special value of the triple product p-adic L-function $\mathcal{L}_p^g(\mathbf{f},\mathbf{g},\mathbf{h})$ at the point $(2,1,1)$, which lies outside the region of classical interpolation. More precisely, let f,g,h be the

specialisation of the Hida families $\mathbf{f}, \mathbf{g}, \mathbf{h}$ at the weights $2, 1, 1$ respectively. Assume that $L(f \otimes g \otimes h, s) = L(E \otimes \rho, s)$, where E is an elliptic curve over $\mathbb{Q}$ and ρ is an Artin representation. When $L(E \otimes \rho, 1) \neq 0$ and the Selmer group $\mathrm{Sel}_p(E, \rho)$ is trivial, we describe the value $\mathcal{L}_p^g(\mathbf{f}, \mathbf{g}, \mathbf{h})(2, 1, 1)$ in terms of a canonically defined non-cristalline cohomology class in the p-relaxed Selmer group attached to (E, ρ). If g and h are theta series of Hecke characters of an imaginary quadratic field K where p is inert and p divides the conductor of E, we relate this special value to Kolyvagin classes attached to E/K.

- 12:15-13:15 James Newton (King's College London.), *Local-global compatibility and the cohomology of locally symmetric spaces.*

  Abstract : I will discuss joint work with Allen, Calegari, Caraiani, Gee, Helm, Le Hung, Scholze, Taylor and Thorne on potential automorphy for certain compatible systems of Galois representations over CM fields. I will particularly focus on the local-global compatibility results needed to establish our automorphy lifting theorems. The starting point is a result of Caraiani and Scholze on vanishing of the generic part of the cohomology of (non-compact) unitary Shimura varieties below middle degree, and I will explain how this can be used to deduce local-global compatibility results for automorphic representations of GL(n) over CM fields (and, crucially for the applications, variants with torsion coefficients) from known results for automorphic representations of U(n,n).

- 13:30-15:00 Coffee break-Lunch[1]

- 15:00-16:00 Vinayak Vatsal (University of British Columbia) , *Vector-valued differential forms on the p-adic upper half plane.*

  Abstract : This talk will be a survey of work in progress with Carlos Piquero de Vera that aims to generalize the construction of harmonic cocycles on the upper half plane associated to Steinberg representations to the case of depth zero supercuspidal representations.

[1]Lunch and dinner will be covered by ERC's Consolidator Grant BSD (GA: 682152) held by Victor Rotger at UPC