Representation Theory and Number Theory Workshop

21 December 2017

Program

Room: S17-04-06

10am-10:50am	Jessica Fintzen *(*Michigan, IAS*)*
	Representations of p-adic groups
11:10am – 12.00pm	Dihua Jiang (Minnesota)
	A reciprocal problem related to the Gan-Gross-Prasad conjecture
12.00pm – 2.30pm	**Lunch Break (Scholar Restaurant)**
2.30pm – 3.20pm	Max Gurevich *(*NUS*)*
	Branching laws for non-generic representations
3.30pm – 4.20pm	Jing Feng Lau (SUSS)
	Local descent to GSpin(even) groups
4.40pm – 5.30pm	Tian An Wong (IISER Pune)
	A higher weight Gross-Zagier formula over Shimura curves
6.15pm	**Dinner**

Abstracts

Jessica Fintzen (Michigan, IAS)

Title: Representations of p-adic groups

Abstract: The buildings blocks for representations of p-adic groups are called supercuspidal representations. I will survey what is known about the construction of supercuspidal representations, mention questions that remain mysterious until today, and explain some recent developments.

Dihua Jiang (Minnesota)

Title: A reciprocal problem related to the Gan-Gross-Prasad conjecture

Abstract: The Gan-Gross-Prasad conjecture is to detect the multiplicity in the Branching Law via certain arithmetic invariants like central value of certain L-functions or the sign of local epsilon factors. A problem reciprocal to the Branching Law can be formulated and studied by the twisted automorphic descent method developed by Lei Zhang and myself. In this lecture, I will discuss the progress on this reciprocal problem, based of some work joint with Lei Zhang and joint with Baiying Liu and Bin Xu.

Max Gurevich (NUS)

Title: Branching laws for non-generic representations

Abstract: It has long been known that a restriction of a generic smooth irreducible representation of p-adic GL(n) to its subgroup GL(n-1) contains as quotients all possible generic irreducible representations.

The recently proved local Gan-Gross-Prasad conjectures describe the solution of analogous branching problems for classical groups.
As a next step, using the Langlands functoriality prinicple, these rules hint us on the nature of similar branching laws for non-generic representations of GL(n).

In this talk I will outline a proof of the rule which determines which Arthur-type representations of GL(n-1) appear as quotients of an Arthur-type representation of GL(n).The proof applies novel results on decomposition of parabolic induction provided by Lapid-Minguez, and on representations of quantum affine algebras provided by Hernandez.

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Jing Feng Lau (SUSS)
Title: Local descent to GSpin(even) groups

Abstract: Let n > 1 and \tau be an irreducible unitary supercuspidal representation of GL(2n) over a local non-archimedean field. Assuming the twisted symmetric square L-function of \tau has a pole
at s =0, we construct the local descent of \tau to the corresponding general spin group of even rank (split over the base field, or over a quadratic extension). We show that this local descent is non-trivial, generic, unitary and supercuspidal. Moreover, any generic irreducible supercuspidal
representation of the general spin group which lifts functorially to \tau is contragradient to some constituent of the representation we construct.

Tian An Wong (IISER Pune)
Title: A higher weight Gross-Zagier formula over Shimura curves

Abstract: The celebrated Gross-Zagier formula relates the central derivative of the Rankin-Selberg L-function of a weight 2 modular form twisted by an imaginary quadratic character, to the Néron-Tate height pairing of the Heegner point on the modular curve, associated to the character. This was generalised to modular forms of higher even weight, where the pairing is replaced by the Gillet-Soulé intersection of Heegner cycles on the Kuga-Sato variety over the modular curve. Recent work of X. Yuan, S. Zhang, and W. Zhang removes the Heegner hypothesis required for the Heegner point construction in the weight 2 case, instead using CM points on Shimura varieties. In this talk, I will report on joint work with Yara Elias, extending the method of Yuan-Zhang-Zhang to the higher weight setting. As an application, we apply the Euler system of CM cycles of Y. Elias and C. de Vera-Piquero to bound the rank of the associated Selmer groups, assuming well-known conjectures.