

Workshop on Representation Theory and Automorphic Forms

NUS, June 25-26, 2008

Day 1: June 25 (Wed), 2008

Morning Session

9:30-10:30

Speaker: Hung Yean LOKE (National University of Singapore)

Title: On the minimal representations of Chevalley groups of type D_n and E_n .

11:00-12:00

Speaker: Takuya KONNO (Kyushu University)

Title: Local Gross-Prasad conjecture for $U(2)$

Afternoon Session

3:00-4:00

Speaker: Dihua JIANG (University of Minnesota)

Title: On basic structures of automorphic representations

4:30-5:30

Speaker: Chufeng NIEN (National Cheng Kung University)

Title: Uniqueness of Shalika models

Day 2: June 26 (Thursday), 2008

Morning Session

9:00-10:00

Speaker: Chen-Bo ZHU (National University of Singapore)

Title: Uniqueness of Ginzburg-Rallis models: the Archimedean case

10:00-11:00

Speaker: CheeWhye CHIN (National University of Singapore)

Title: Independence of all of monodromy groups

11:00-12:00

Speaker: Yongchang ZHU (Hong Kong University of Science and Technology)

Title: Automorphic forms of loop groups

Afternoon Session

2:00-3:00

Speaker: Binyong SUN (Chinese Academy of Sciences)

Title: Multiplicity one theorems: the Archimedean case

Abstract of the talks

1. On the minimal representations of Chevalley groups of type D_n and E_n .
(Hung Yean LOKE)

Abstract: Let G be a simply connected Chevalley group of type D_n or E_n over a p -adic field. In this talk, I will give the definition of a minimal representation of G using a formula of Howe and Harish-Chandra. Then I will show that this representation is unique. This is a joint work with Gordan Savin.

2. Local Gross-Prasad conjecture for $U(2)$
(Takuya KONNO)

Abstract: The local Gross-Prasad conjecture predicts the restriction rule of irreducible representations of $SO(n+1)$ to $SO(n)$ in terms of certain ϵ -factors and endoscopy. But we know very little about the effective relation with endoscopy, especially in the non-archimedean case.

As an example of such study, we prove the unitary group analogue of the local Gross-Prasad conjecture for unitary groups in two variables over non-archimedean local fields.

3. On basic structures of automorphic representations
(Dihua JIANG)

Abstract: We start with the multiplicative structure of numbers and the elementary local-global structure of numbers, and then discuss the local-global structure in elementary harmonic analysis and how to use them to study objects in number theory, like the Riemann zeta functions. The modern theory of automorphic forms is a natural extension of these classical theory, which encodes the deep local-global relations for harmonic analysis or representations of reductive algebraic groups over number fields. This becomes the main part of the Langlands program. I will discuss my recent work along these lines of ideas.

4. Uniqueness of Shalika models
(Chufeng NIEN)

Abstract: in this talk, we will introduce Shalika Models and common strategies on showing multiplicity freeness of models for representations over p -adic fields.

5. Uniqueness of Ginzburg-Rallis models: the Archimedean case
(Chen-Bo ZHU)

Abstract: Let $G=GL(3, D)$, where D is a (generalized) quaternion algebra over $K=\mathbb{R}$ or \mathbb{C} . We show that the space of Ginzburg-Rallis functionals of any irreducible Harish-Chandra smooth representation of G is at most one dimensional. This is joint work with Dihua Jiang and Binyong Sun.

6. Independence of all of monodromy groups
(CheeWhye CHIN)

Abstract: Lafforgue's proof of the Langlands Correspondence for $GL(r)$ over function fields can be used to establish certain "independence of ell" conjectures in the theory of ell-adic Galois representations. In my talk, I will discuss the question of independence of ell of monodromy groups. I will explain the motivating origin of this conjecture, what is now known about it, and some new questions which are suggested by the cases that have been settled.

7. Automorphic forms of loop groups
(Yongchang ZHU)

Abstract: We talk about the following recent results related to automorphic forms of loop groups: arithmetic quotient of loop groups and the geometric interpretation; spherical Hecke algebra and Satake transform for p -adic loop groups; loop group analog of Siegel-Weil formula.

8. Multiplicity one theorems: the Archimedean case
(Binyong SUN)

Abstract: Let $G = GL(n+1, K)$, where K is \mathbb{R} or \mathbb{C} , and let G' be the subgroup $GL(n, K)$. We will show that every irreducible admissible representation of G occurs with multiplicity at most one in every irreducible admissible representation of G' . The talk is a preliminary report of some on-going work with Chen-Bo Zhu.