



浙江大学 数学科学学院  
School of Mathematical Sciences  
Zhejiang University

Symposium on Number Theory and Representation Theory, VIII

数论与表示论会议, VIII

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# Symposium on Number Theory and Representation Theory, VIII

## 数论与表示论会议, VIII

10月25日 - 27日, 浙江大学

### 会议报告:

王好武 武汉大学

赵立璐 中国科学技术大学

崔沛仪 中科院晨兴数学中心

王垂佳 香港中文大学

陈福林 厦门大学

柴劲松 安徽工程大学

王善文 中国人民大学

胡悦科 清华大学

范洋宇 北京理工大学

姚浩东 浙江大学

**时 间:** 25日, 9:30-16:30; 26日, 9:30-16:30; 27日, 9:00-12:00

**地 点:** 浙江大学紫金港校区海纳苑2幢206室

**组织者:** 高帆、刘东文、齐治、石友晟、田昉暘

数学科学学院, 浙江大学, 紫金港校区, 杭州

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Symposium on Number Theory and  
Representation Theory, VIII  
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(2024年10月25日至27日)

	2024/10/25	2024/10/26	2024/10/27
9:00-9:30	签到		
9:30-10:30	王好武	陈福林	范洋宇
10:30-11:00	茶歇		
11:00-12:00	赵立璐	柴劲松	姚浩东
	午餐&午休		
12:00-14:00			
14:00-15:00	崔沛仪	王善文	
15:00-15:30	茶歇		
15:30-16:30	王垂佳	胡悦科	
16:30-17:00	自由讨论		
17:00	晚餐		

# 题目及摘要

时间：2024年10月25日-26日，9:30-17:00；10月27日，9:30-12:00

地点：浙江大学紫金港校区海纳苑2幢206

报告人：王好武（武汉大学）

题目：Singular automorphic products and Lie algebras

摘要：Singular automorphic products are modular forms of minimal weight that have infinite product expansions at cusps. In this talk we will discuss some relations between such functions and Lie algebras in two cases. We first introduce an one-to-one correspondence between Jacobi forms and affine Lie algebras. We then explain some new relations between modular forms on  $O(n,2)$ , Borcherds-Kac-Moody Lie algebras and vertex operator algebras, motivated by the famous moonshine moonshine conjecture its proof.

报告人：赵立璐（中国科学技术大学）

题目：Quadratic forms in prime variables

摘要：In this talk, we give an introduction to a work of Green, who proved that for a large class of quadratic forms in eight variables, there exist zeros in prime coordinates.

报告人：崔沛仪（中科院晨兴数学中心）

题目：Modular  $l$ -Representation Theory and Block Decomposition of  $p$ -adic Groups

摘要：Representation theory is an important branch of mathematics that seeks to understand the structure of groups by representing their elements as linear transformations. With the emergence of the Local Langlands program, the representation theory of  $p$ -adic groups has become one of the most prominent topics in recent almost 50 years. At the end of the last century, Vignéras proposed studying characteristic  $l$  representations (where  $l$  different from  $p$ ) via complex representation theory, also known as modular  $l$ -representations. Although these two kinds of representations share many fundamental properties, recent research has shown that their categorical structures exhibit significant differences. In particular, the  $l$ -modular block decomposition is only known for a few groups. In this talk, we will introduce the  $l$ -modular block decomposition for  $GL_n$  and  $SL_n$ , compare it with complex representations, and discuss predictions for general groups.

报告人：王垂佳（香港中文大学）

题目：Bruhat-Tits theory and distinction of the Steinberg representation for a symmetric pair

摘要：Bruhat-Tits theory provides a geometric tool to study the representation theory of  $p$ -adic groups. In this talk, we will introduce the basic concepts about the Bruhat-Tits building and focus on its applications in studying the distinction problem of the Steinberg representation for a symmetric subgroup. The prototype of our approach is based on Broussous-Courtes's early work in the Galois case. This talk is based on a joint work with Jiandi Zou.

报告人：陈福林（厦门大学）

题 目：Formal manifolds

摘 要：In this talk, I will give a brief introduction to the theory of formal manifolds, which is based on a series of work joint with Binyong Sun and Chuyun Wang.

报告人：柴劲松（安徽工程大学）

题 目：Asai gamma factors over finite fields

摘 要：In this talk, we define Asai gamma factors for cuspidal representation  $\pi$  of  $GL(n, E)$ , where  $E/F$  is a quadratic extension of finite fields. We also obtain a distinction criterion of  $\pi$  in terms of the values of Asai gamma factors.

报告人：王善文（中国人民大学）

题 目：p-adic Malcev-Neumann field

摘 要：In this talk, we will discuss the fundamental question on distinguish roots of a rational polynomial using p-adic Malcev-Neumann field. This talk is based on a series of joint work with Yijun Yuan.

报告人：胡悦科（清华大学）

题 目：The subconvexity problem on higher rank groups

摘 要：The subconvexity bound for the special values of L-functions is a step toward understanding L-functions on the critical line. It was fully solved for automorphic forms on  $GL(1)$  and  $GL(2)$ . Results on higher rank groups on the other hand have been sporadic so far. In this talk we report some recent progress on the subconvexity problem for  $U(n)$  and  $GL(n)$ .

报告人：范洋宇（北京理工大学）

题 目：Local harmonic analysis and Euler system

摘 要：In this talk, we report our new approach to the horizontal Euler system property of theta elements by the relative Satake isomorphism. This is a joint work with L. Cai and S. Lai.

报告人：姚浩东（浙江大学）

题 目：A Kudla-Rapoport formula for exotic smooth models of odd dimension

摘 要：The arithmetic Siegel-Weil formula, proposed by Kudla, aims to express the central derivative of Eisenstein series as generating series of arithmetic intersection numbers of special divisors on certain unitary or orthogonal Shimura varieties. Kudla-Rapoport reduced the nonarchimedean part of the formula to local conjectures on Rapoport-Zink spaces. For ramified unitary case, there are exotic smooth models for RZ spaces. Yifeng Liu and Chao Li settled the local conjecture in the even dimensional case. I will talk about how to establish the local conjecture in the odd dimensional case, by relating it to the even dimension case.