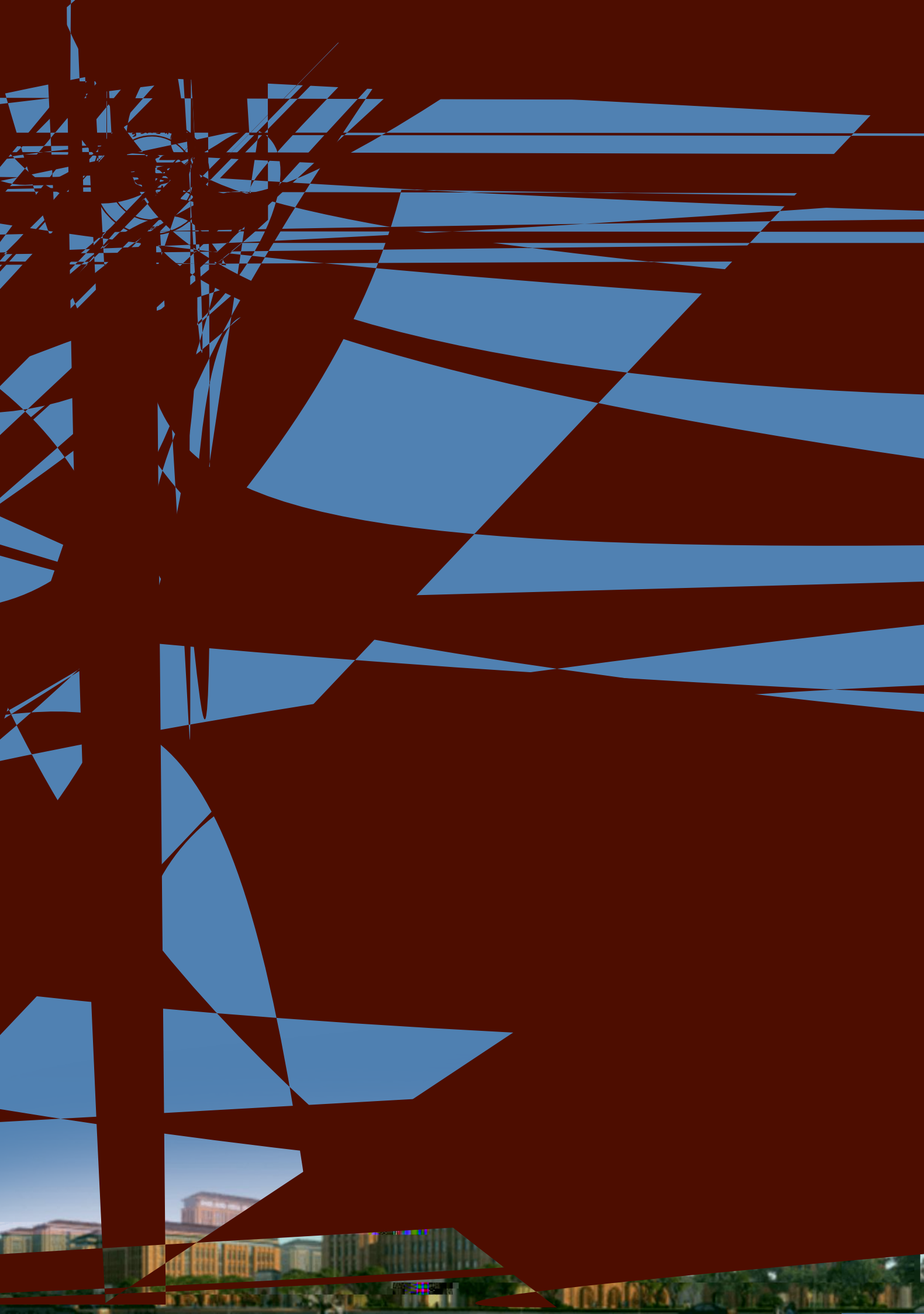

数论与表示论会议,Ⅷ

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数学科学学院，浙江大学，紫金港校区，杭州

Symposium on Number Theory and Representation Theory, , 2024 10 25 27			
	2024/10/25	2024/10/26	2024/10/27
9:00-9:30			
9:30-10:30			
10:30-11:00			

题目及摘要

Singular automorphic products and Lie algebras

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 algberas, motivated by the famous moonstrous moonshine conjecture its proof.

Quadratic forms in prime variables

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.

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

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, Vign ras 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.

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

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.

Formal manifolds

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.

Asai gamma factors over finite fields

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.

p-adic Malcev-Neumann field

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.

The subconvexity problem on higher rank groups

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).

Local harmonic analysis and Euler system

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.

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

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.