

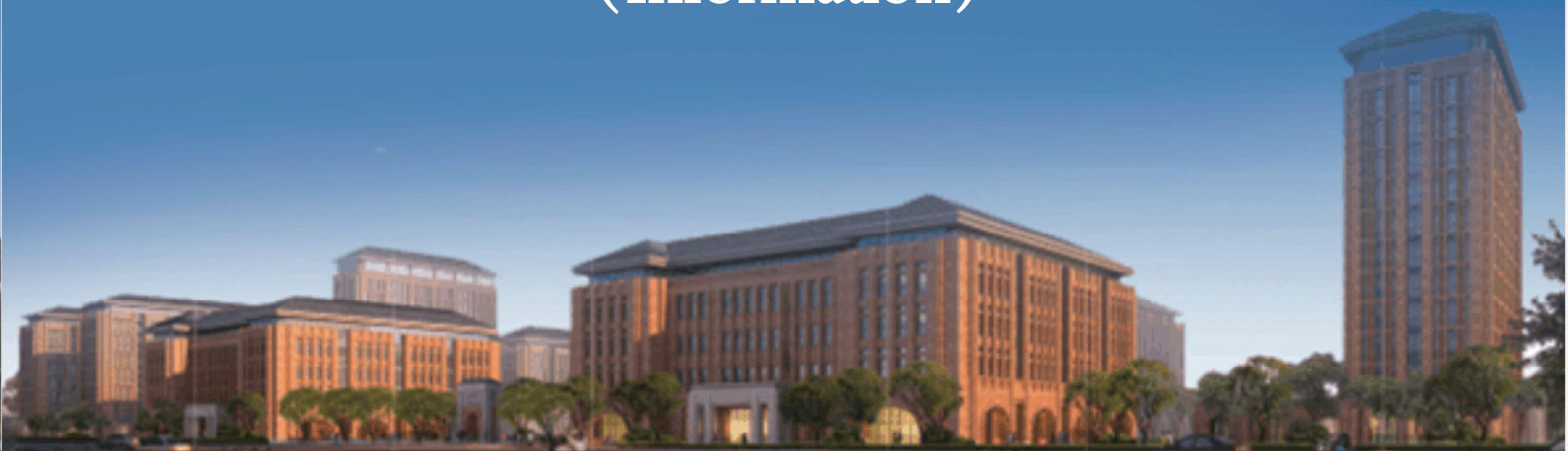


浙江大学 数学科学学院
School of Mathematical Sciences
Zhejiang University

Symposium on Number Theory and Representation Theory

会议手册

(Information)



Symposium on Number Theory and Representation Theory

May 14 - May 16, 2021 Zhejiang University
Hangzhou, China

Invited Speakers:

Kei Yuen Chan	Shanghai Center for Mathematical Sciences
Sarah Dijols	Yau Mathematical Sciences Center
Bingrong Huang	Shandong University
Ning Li	Beijing International Center for Mathematical Research
Wen Wei Li	Beijing International Center for Mathematical Research
Jiajun Ma	Shanghai Jiao Tong University
Zhifeng Peng	Soochow University
Qinghua Pi	Shandong University , Weihai
Xiaolei Wan	Beijing International Center for Mathematical Research
Liuquan Wang	Wuhan University
Ping Xi	Xi'an Jiaotong University
Bin Xu	Yau Mathematical Sciences Center
Jun Yu	Beijing International Center for Mathematical Research

Organizers:

刘东文(maliu@zju.edu.cn)、齐治(zhi.qi@zju.edu.cn)、高帆(gaofan@zju.edu.cn)

Time:

9:00-11:40am, 2:00-5:40pm, May 14-May 16

Venue:

Sir Run Run Shaw Science Building 211, Yuquan Campus, Zhejiang University,
Hangzhou (浙江大学邵逸夫科学馆211)



School of Mathematical Sciences
Zhejiang University, Hangzhou, China

Meeting on 14-16 May 2021

(Starting From the afternoon of May 13, the participants can check in at the reservation hotel)

	2021/5/14	2021/5/15	2021/5/16
9:00-9:20	Sign in		
9:20-10:20	Bingrong Huang	Qinghua Pi	Zhifeng Peng
10:20-10:40	Tea Break		
10:40-11:40	Ning Li	Sarah Dijols	Ping Xi
11:40-12:00	Lunch and noon break		Tea Break
12:00-13:00			Xiaolei Wan
13:00-14:00			Lunch
14:00-15:00	Bin Xu	Liuquan Wang	
15:00-15:20	Tea Break	Tea Break	
15:20-16:20	Wen Wei Li	Kei Yuen Chan	
16:20-16:40	Tea Break	Tea Break	
16:40-17:40	Jun Yu	Jiajun Ma	
18:00	Dinner	Banquet	

Title and Abstract

Time: 9:00-11:40am, 2:00-5:40pm, May 14-May 16

Venue: Sir Run Run Shaw Science Building 211, Yuquan Campus, Zhejiang University

Speaker: Bingrong Huang (黄炳荣)

Affiliation: Shandong University

Title: Quantum variance for automorphic forms

Abstract: In this talk, we will present results on the quantum variances for Eisenstein series and for dihedral Maass forms on modular surfaces. The resulting quadratic forms are compared with the classical variance (Ratner) and the quantum variance for cusp forms (Luo-Sarnak). They coincide after inserting certain subtle arithmetic factors, including the central values of certain L-functions. (Based on joint work with Stephen Lester.)

Speaker: Ning Li (李宁)

Affiliation: Beijing International Center for Mathematical Research

Title: Degenerate principal series representations and nilpotent invariants

Abstract: In this talk, we will discuss two geometric invariants: wave front cycles and associated cycles, attached to irreducible constituents of degenerate principal series representations of $Sp(2n, R)$. The main strategy is to combine the explicit description of these constituents obtained by Lee and Zhu and the machinery of “theta lift” of nilpotent orbits via moment maps.

Speaker: Bin Xu (徐斌)

Affiliation: Yau Mathematical Sciences Center

Title: Functoriality of endoscopic transfer for general symplectic and even orthogonal groups

Abstract: Langlands’ functoriality conjecture reveals a deep connection of automorphic representations among different reductive groups. Most known cases of functoriality fit into the theory of endoscopy, which concerns a group G and its endoscopic groups. We study the endoscopic theory for G being a quasisplit general symplectic or even orthogonal group over a number field, and prove the functoriality of endoscopic transfer for tempered automorphic representations of these groups under some technical assumption.

Speaker: Wen Wei Li (李文威)

Affiliation: Beijing International Center for Mathematical Research

Title: Full stable trace formula for the group $Mp(2n)$

Abstract: The metaplectic covering $Mp(2n)$ of $Sp(2n)$ plays a pivotal role in various aspects of representation theory and arithmetics. In order to harness the full power of Arthur's methods in this setting, we need a stable trace formula for $Mp(2n)$. Thus far, only the elliptic terms have been stabilized. In this talk, I will report an ongoing work on the full stabilization, which will hopefully grant access to the whole genuine discrete automorphic spectrum of $Mp(2n)$, for general n . This is based on the techniques of Arthur and Mœglin-Waldspurger, who worked with linear reductive groups or their twisted analogues.

Speaker: Jun Yu (余君)

Affiliation: Beijing International Center for Mathematical Research

Title: Restriction of unitary representations of $Spin(N,1)$ to parabolic subgroups

Abstract: The orbit method predicts a relation between restrictions of irreducible unitary representations and projections of corresponding coadjoint orbits. In this talk we will discuss branching laws for unitary representations of $Spin(N,1)$ restricted to parabolic subgroups and the corresponding orbit geometry. In particular, we confirm Duflo's conjecture in this setting. This is a joint work with Gang Liu (Lorraine) and Yoshiki Oshima (Osaka).

Speaker: Qinghua Pi (皮庆华)

Affiliation: Shandong University, Weihai

Title: Some results on automorphic forms of cubic level

Abstract: With the methods of the relative trace formula and the classification of simple supercuspidal representations, we establish some Fourier formulas for automorphic new forms for GL_2 of cubic level. As applications, we prove some results on the non-vanishing of modular L-values, the weighted Weyl's law and the bias of root numbers. This talk is based on the joint works with Yingnan Wang, Lei Zhang and Zhi Qi.

Speaker: Sarah Dijols

Affiliation: Yau Mathematical Sciences Center

Title: The completed L-function for G_2

Abstract: This talk is based on a joint work (recently submitted) where we obtain the functional equation of the completed L function for modular forms on G_2 . The first part of the talk will cover the Rankin-Selberg method, and explain the adaptations needed to treat the case of G_2 .

Speaker: Liuquan Wang (王六权)

Affiliation: Wuhan University

Title: Representations of mock theta functions

Abstract: Motivated by the works of Liu, we provide a unified approach to find Appell-Lerch series and Hecke-type series representations for mock theta functions. We establish a number of parameterized identities with two parameters a and b . Specializing the choices of (a, b) , we not only give various known and new representations for the mock theta functions of orders 2, 3, 5, 6 and 8, but also present many other interesting identities. We find that some mock theta functions of different orders are related to each other, in the sense that their representations can be deduced from the same (a, b) -parameterized identity. Furthermore, we introduce the concept of false Appell-Lerch series. We then express the Appell-Lerch series, false Appell-Lerch series and Hecke-type series in this work using the building blocks $m(x, q, z)$ and $f_{a,b,c}(x, y, q)$ introduced by Hickerson and Mortenson, as well as $\bar{m}(x, q, z)$ and $\bar{f}_{a,b,c}(x, y, q)$ introduced in this paper. We also show the equivalences of our new representations for several mock theta functions and the known representations. This talk is based on a joint work with Dandan Chen.

Speaker: Kei Yuen Chan (陈佳源)

Affiliation: Shanghai Center for Mathematical Sciences

Title: Ext-vanishing phenomenon in branching laws of classical groups

Abstract: Ext-vanishing is useful in the study of cohomology of representations. A classical example of Ext-vanishing is that there are no higher extensions between two discrete series of a reductive groups over local fields. In the context of branching laws of classical groups, D. Prasad predicts higher Ext-vanishing between tempered representations (or more generally generic representations). In this talk, I shall explain various examples of Ext-vanishing, including conjectures, old and new results. Results are centered around general linear groups, in which a main tool-- left-right derivatives will also be explained if time permits.

Speaker: Jiajun Ma (马家骏)

Affiliation: Shanghai Jiao Tong University

Title: Special unipotent representations of real classical groups and theta correspondence.

Abstract: Special unipotent representations of a real reductive group are certain irreducible admissible representations attached to the nilpotent orbits of its dual group. Barbasch and Vogan established the theory of special unipotent representations for complex reductive groups (construction, unitarizability, etc.) in the '80s.

In this talk, I will discuss the recent joint work with Dan Barbasch, Binyong Sun, and Chengbo Zhu on the classification and unitarity of special unipotent representations of the real classical groups (real symplectic groups, real orthogonal groups, and the metaplectic groups).

Speaker: Zhifeng Peng (彭志峰)

Affiliation: Soochow University

Title: The representation classification of the exceptional group G_2

Abstract:

In 2002, Assume the fundamental lemma, Arthur given a stabilization of the trace formula by the endoscopic theory.

In 2008, Ngo proved the fundamental lemma.

In 2013, Arthur classified the automorphic representations of classic groups by the twisted trace formula of $GL(n)$ and the standard trace formula of classic groups, when the twisted trace formula holds.

In 2014, Waldspurger built the twisted trace formula for the reductive groups. Our goal is to give the endoscopic classification of automorphic representations of exceptional group G_2 by the twisted trace formula of $PGSO(8)$, and the standard trace formula of G_2 .

In this talk, we will introduce the basic objects and background.

Speaker: Ping Xi (郗平)

Affiliation: Xi'an Jiaotong University

Title: Lang--Trotter conjecture for CM elliptic curves

Abstract: For any elliptic curve E over \mathbf{Q} and any non-zero integer r , the Lang--Trotter conjecture has predicted the asymptotic behaviours of the number of good primes $p \leq x$, denoted by $\Pi_{E,r}(x)$, such that the Frobenius trace of E at p is equal to the given integer r . Quite recently, we are able to prove an estimate for $\Pi_{E,r}(x)$ which confirms the upper bound part of the conjecture for CM elliptic curves. Moreover, intimate connections of this conjecture and Hardy--Littlewood conjecture can also be established to characterize the shape of the Lang--Trotter constant in $\Pi_{E,r}(x)$. This is based on the joint work with Daqing Wan (in progress).

Speaker: Xiaolei Wan (万小磊)

Affiliation: Beijing International Center for Mathematical Research

Title: Sakellaridis--Venkatesh conjecture and theta correspondence

Abstract: In this talk, I will introduce the Sakellaridis-Venkatesh conjecture on the decomposition of global period, and give examples related to this conjecture. More specifically, the case $X = U(2)\backslash SO(5)$. I will determine the Plancherel decompositions of $L^2(X_v)$, where v is a local place. Then I will prove the local relative character identity. In the global setting, I will give the factorization of the global period of $X = U(2)\backslash SO(5)$, where the local functional comes from the local Plancherel decomposition. The example $X = U(2)\backslash SO(5)$ is slightly beyond the SV conjecture but we still have a decomposition of the global period as the sum of two factorizable elements.



浙江大學
ZHEJIANG UNIVERSITY

玉泉校区平面图

PLAN OF YUQUAN CAMPUS



- | | | |
|--|--|--|
| 1 正大门
Main Gate | 9 第十教学楼
Teaching Building 10 | 31 第三教学楼
Teaching Building 3 |
| 2 第十四教学楼
Teaching Building 14 | 10 工控所楼
Institute of Industrial Process Control | 32 生化楼
Biomedical Engineering & Instrument Science Building |
| 3 第十二教学楼
Teaching Building 12 | 11 周亦卿科技楼
Chou Yi Qing Science & Technology Building | 33 第一教学楼
Teaching Building 1 |
| 4 第二教学楼
Teaching Building 2 | 12 第十八教学楼
Teaching Building 18 | 34 第十一教学楼
Teaching Building 11 |
| 5 电机工程实验楼
Electrical Engineering Building | 13 季达三能源楼
Li Dak Sum Energy Building | 35 第十三教学楼
Teaching Building 13 |
| 6 副通楼
Zetong Building | 14 低温楼
Cryogenics Building | 36 游泳池
Swimming Pool |
| 7 第九教学楼
Teaching Building 9 | 15 第四教学楼
Teaching Building 4 | 37 田径楼
Track & Field Stadium |
| 8 曹光彬大楼
Chao Guang Bin Building | 16 第六教学楼
Teaching Building 6 | 38 邵逸夫体育馆
Run Run Shaw Sports Center |
| | 17 液压楼
Hydraulics Building | 39 永谦活动中心
Yongqian Students Center |
| | 18 永谦教学大楼
Yongqian Administration Building | 40 食堂
No.1 Canteen |
| | 19 邵逸夫科学馆
Run Run Shaw Science Building | 41 麗園
Gourmet Garden |
| | 20 欧阳纯真楼
Ouyang Chunzhen Building | 42 三食堂
No.3 Canteen |
| | 21 邵逸夫工商管理楼
Run Run Shaw Business Administration Building | 43 二食堂
No.2 Canteen |
| | 22 第八教学楼
Teaching Building 8 | 44 四食堂
No.4 Canteen |
| | 23 高分子大楼
Polymer Science and Engineering Building | 45 产业办公楼
Office Building for Industrial Group |
| | 24 高科技楼
High-tech Building | 46 校医院
Hospital |
| | 25 图书馆
Library | 47 竺可桢国际教育大楼
Chu Kezhen International Education Building |
| | 26 第七教学楼
Teaching Building 7 | 48 北门
North Gate |
| | 27 热能实验大楼
Thermal Engineering Building | 49 新桥门
Xinqiao Gate |
| | 28 智鼎大楼
Zhiqun Building | 50 小桥门
Xiaoqiao Gate |
| | 29 科工楼
Science and Engineering Building | 51 南门
South Gate |
| | 30 第五教学楼
Teaching Building 5 | 52 生活区
Living Quarters |