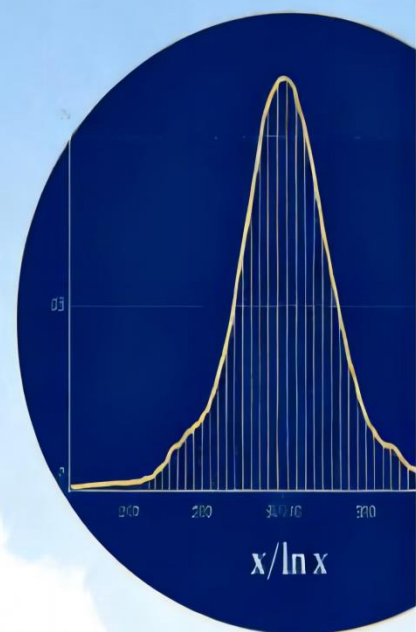


复旦2025数论会议

Fudan Number Theory
Conference 2025

会议手册

$\pi(x) - \frac{x}{\ln x} = o\left(\frac{x}{\ln x}\right)$



2025年11月28-12月1日
复旦大学, 上海

复旦 2025 数论会议

2025 Fudan University Conference on Analytic Number Theory

2025 年 11 月 28 - 12 月 1 日
复旦大学，上海

邀请报告人 Speakers

陈华一	(西湖大学)
方金辉	(南京师范大学)
胡悦科	(清华大学)
黄炳荣	(山东大学)
林永晓	(山东大学)
潘 颢	(南京财经大学)
齐 治	(浙江大学)
吴 涵	(中国科技大学)
张 欣	(香港大学)

组织委员会 Organizing Committee

陈苗芬、秦翊宸、任汝飞、王海宁、王宇鹏、易灵飞、张鼎新

主办单位 Sponsors

复旦大学

联系人 Contact

任汝飞 (rufeir@fudan.edu.cn)

日程安排 Schedule

会议地点：复旦大学光华楼东主楼 1601、2001

Venue: Fudan University, Guanghua East Main Tower 1601 and 2001

11/28	下午
12:00 - 20:00	签到
11/29	上午
9:00-10:00	黄炳荣 Value distribution of Hecke eigenforms
10:00-10:30	茶歇
10:30-11:30	齐 治 Secondary Terms in the Moments of Special Maass L-values
	午餐
11/29	下午
14:00-15:00	方金辉 On representation functions
15:00-15:30	茶歇
15:30-16:30	潘 颖 素数小间隔与遍历回归
16:40-17:40	张 欣 TBA
18:15	晚 宴

11/30	上午
9:00-10:00	陈华一 Relative Brunn-Minkowski inequality and applications to Arakelov geometry
10:00-10:30	茶歇
10:30-11:30	胡悦科 The relative trace formulae and their applications in analytic number theory
	午餐
11/30	下午
14:00-15:00	林永晓 Levinson's method with a short mollifier
15:00-15:30	茶歇
15:30-16:30	吴 涵 Prime geodesic theorem for arithmetic compact surfaces
12/1	全天
9:00 - 16:00	自由讨论&离会

报告题目摘要 Titles & Abstracts

研讨会报告 Seminar Talks
报告人: 黄炳荣 题目: Value distribution of Hecke eigenforms 摘要: In this talk, we investigate the value distribution of Hecke eigenforms in the large weight limit. We begin with an introduction to the quantum unique ergodicity (QUE) theorem and its application to the equidistribution of zeros of Hecke eigenforms. We then focus on their joint value distribution. In particular, we establish asymptotic formulas for certain low-degree mixed moments. Our approach is based on the analytic theory of L-functions.
报告人: 齐治 题目: Secondary Terms in the Moments of Special Maass L-values 摘要: In this talk, I'll show that there are secondary terms in the mean values of Maass special L-values. This curious phenomenon is rare in the moment conjectures and is known only for the cubic moment of quadratic Dirichlet central L-values.
报告人: 方金辉 题目: On representation functions 摘要: For a nonempty set A of integers and an integer n , let $r_A(n)$ be the number of representations of n of the form $n = a + a'$, where $a \leq a'$ and $a, a' \in A$, and $d_A(n)$ be the number of (a, a') with $a, a' \in A$ such that $n = a - a'$. In this talk, we will present a review of our results on representation functions.
报告人: 潘颢 题目: 素数小间隔与遍历回归 摘要: 我们将讨论关于素数小间隔的 Zhang-Maynard-Tao 定理的一个 Khinchin 型的推广。
报告人: 张欣 题目: TBA 摘要: TBA
报告人: 陈华一 题目: Relative Brunn-Minkowski inequality and applications to Arakelov geometry

摘要: Abstract: In this talk, I will explain a relative version of Brunn-Minkowski inequality and its consequence in Arakelov geometry in the form of an inequality of arithmetic intersection numbers.

报告人: 胡悦科

题目: The relative trace formulae and their applications in analytic number theory

摘要: In this talk I will first introduce some basic knowledge about relative trace formulae. Then I will talk about two applications of it to analytic number theory: the cubic moment problem for the L-functions of automorphic representations of $GL(2)$, and subconvexity problem in level aspect for L-functions on $GL(n)$.

报告人: 林永晓

题目: Levinson's method with a short mollifier

摘要: This is joint with Brian Conrey, David Farmer, Chung-Hang Kwan, and Caroline Turnage-Butterbaugh. When studying the zeros of Riemann zeta function at a height T up the critical strip one often multiplies zeta by a Dirichlet polynomial, called a mollifier, of length T^θ before averaging in order to neutralize the irregularities of zeta. Levinson in his 1974 Advances paper famously proved that at least $1/3$ of the zeros of zeta are on the critical line, by using a mollifier of length T^θ with $\theta < 1/2$. Significant efforts in the literature have been devoted to refine and optimize Levinson's mollifier. We prove that Levinson's method, as modified by Conrey, will in fact produce a positive proportion of critical zeros, regardless how short the mollifier is.

报告人: 吴涵

题目: Prime geodesic theorem for arithmetic compact surfaces

摘要: The prime geodesic theorems (PGT) are analogues of the prime number theorem (PNT), in which we count the primitive closed geodesics in $\Gamma \backslash \mathbb{H}$ instead of prime numbers. Here $\Gamma < PSL_2(\mathbb{R})$ is a lattice, and \mathbb{H} is the Poincaré upper half plane. In the setting of co-compact lattices constructed from quaternion algebras, the record is kept by Koyama for full level subgroups at Luo-Sarnak's level $7/10$. Koyama's method is an exploitation of the Jacquet-Langlands correspondences on the spectral side.

We generalize Koyama's $7/10$ bound of the error term in the prime geodesic theorems to the principal congruence subgroups for quaternion algebras. Our method avoids the spectral side of the Jacquet-Langlands correspondences, and relates the counting function directly to those for the principal congruence subgroups of Eichler orders of level less than one.

This is a joint work with three undergraduate students (Chenhao Tang, Jie Yang and Wenyan Yang) during the event of the 2025 summer school entitled "Algebra and Number Theory" held at the Chinese Academy of Sciences.