山东大学 SHANDONG UNIVERSITY

山东大学数学学院 School of Mathematics Shandong University

数據科學研究院 Data Science Institute | Shandong University

2023 山大数论 π 日

2023 SDU Number Theory π Day

报告人 (按姓氏拼音排序)

华晟昊	李汝森	孙雨田
王　鑫	温婷婷	谢思哲
徐晨冉	张慧敏	张晴晴

时间: 2023年03月14日　(周二) 12:00–17:00

地点: 山东大学中心校区明德楼 C704

组织者: 黄炳荣、林永晓、华晟昊、李良汛

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会议日程 (3.14)

时间	报告人	题目
12:00-13:00	学术交流、活动开幕	
13:00-14:00	华晟昊	Extreme central L-values of almost prime quadratic twists of elliptic curves
	李汝森	Generalized Alternating Hyperharmonic Numbers
	孙雨田	Hybrid subconvexity bounds for twist of GL(3) $\times$ GL(2) L-functions
14:00-14:15	茶歇	

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会议日程 (3.14)

时间	报告人	题目
14:15-15:15	温婷婷	Manin's conjecture for singular cubic hypersurfaces
	谢思哲	Two Theorems of Birch for solutions of algebraic equations and their developents
15:15-15:45	茶歇	
15:45-16:45	徐晨冉	Sign changes of coefficients of half-integral weight Hecke eigenforms
	张慧敏	On averages of coefficients of L-functions
	张晴晴	Roth-type theorem for quadratic equation in Piatetski-Shapiro primes

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Extreme central L-values of almost prime quadratic twists of elliptic curves

报告人：华晟昊

摘要: We prove the extreme values of L-functions at the central point for almost prime quadratic twists of an elliptic curve. As an application, we get the extreme values for the Tate–Shafarevich groups in the quadratic twist family of an elliptic curve under the Birth–Swinnerton-Dyer conjecture. This is a joint work with Bingrong Huang.

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Generalized Alternating Hyperharmonic Numbers

报告人：李汝森

摘要: We introduced the notion of generalized alternating hyperharmonic numbers and proved that Euler sums of generalized alternating hyperharmonic numbers can be expressed in terms of linear combinations of the classical Euler sums.

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Hybrid subconvexity bounds for twist of GL(3) × GL(2) L-functions

报告人：孙雨田

摘要: We give a hybrid subconvexity bound for twists of GL(3)×GL(2) L-functions in the conductor and t aspects, where the conductor is powers of a prime. This is a joint work with Chenchen Shao.

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Manin's conjecture for singular cubic hypersurfaces

报告人：温婷婷

摘要: Manin's conjecture predicts the quantitative behaviour of rational points on algebraic varieties. For a primitive positive definite quadratic form Q with integer coefficients, the equation $x^3 = Q(y)z$ represents a class of singular cubic hypersurfaces. In this paper, we mainly introduce the distribution of rational points on these hypersurfaces, and describe the ideas, methods, and some results. This is a joint work with Jie Wu and Jianya Liu.

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Two Theorems of Birch for solutions of algebraic equations and their developents

报告人：谢思哲

摘要: Birch's two great theorems, born around 1960, describe solutions of a class of Diophantine equations over $\mathbb{Q}$. It opened up a whole new class of research, and a lot of people made good progress in different aspects based on these two theorems. For example, the solutions of algebraic equations in general number field and the distribution of prime numbers are studied. This talk will give a brief introduction to its developments in recent years.

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Sign changes of coefficients of half-integral weight Hecke eigenforms

报告人：徐晨冉

摘要: Let $\mathfrak{f}$ be a cusp form of half-weight $k+1/2$ and at most quadratic nebentype character whose Fourier coefficients are denoted as $\mathfrak{a}_{\mathfrak{f}}(n)$. We study sign changes of the family $\{\mathfrak{a}_{\mathfrak{f}}(tp^2)\}_{p\in\mathbb{P}}$ where t is a square-free number and p runs through the prime numbers.

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On averages of coefficients of L-functions

报告人：张慧敏

摘要: We give proofs of asymptotic formulas for averages of coefficients of degree 5 and degree 7 L-functions whose coefficients can be factorized. Some results by B. Huang, Y. Lin, Q. Sun, Z. Wang and the speaker in this direction will be discussed.

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Roth-type theorem for quadratic equation in Piatetski-Shapiro primes

报告人：张晴晴

摘要: Let $c_1, \dots, c_s$ be nonzero integers satisfying $c_1 + \cdots + c_s = 0$. We consider the rational quadratic equation $c_1x_1^2+\cdots+c_sx_s^2 = 0$ where x_i are restricted in subset $\mathcal{A}$ of Piatetski-Shapiro primes not exceeding x and corresponding to c. We show that for $c \in (1, \min\{\frac{s}{s-1}, \frac{29}{28}\})$, if the equation has only K-trivial solutions in $\mathcal{A}$, then $|\mathcal{A}| \ll x^{1/c}(\log x)^{-1}(\log\log\log\log x)^{(2-s)/(2c)+\varepsilon}$ holds for $s \geq 7$. This is a joint work with Xiumin Ren and Rui Zhang.