

2026 滨城算术几何日

函数域上的算术

会议手册

哈尔滨工业大学 数学研究院

2026 年 9 月 19-20 日

会议信息

会议日期:

2026 年 9 月 19-20 日

会议地点:

哈尔滨工业大学一校区，格物楼 315 报告厅

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报告人

丁之元（上海科技大学）

方江学（首都师范大学）

胡创强（中山大学）

邱予嘉（哈尔滨理工大学）

张哲轶（哈尔滨工业大学）

日程安排

9月19日 星期六	
9:20-9:30	注册
9:30-10:30	丁之元
10:30-10:50	茶歇
10:50-11:50	方江学
11:50-14:00	午饭
14:00-15:00	胡创强
15:00-15:30	茶歇
15:30-16:30	邱予嘉
9月20日 星期日	
10:00-11:00	张哲轶
下午	自由讨论

报告题目与摘要

丁之元（上海科技大学）

Title: Construction of certain rational functions on the moduli stack of Drinfeld shtukas

Abstract: We construct certain rational functions (modular units) on the moduli stack of Drinfeld shtukas. The divisors of these rational functions are supported on horospherical divisors of the moduli stack. The key to our construction is a vanishing theorem for shtukas with zeros and poles satisfying certain conditions. Using deformation theory, we calculate the divisors of these rational functions.

方江学（首都师范大学）

Title: Galois representation of Drinfeld modules

Abstract: In this talk, we study the Galois representations attached to products of Drinfeld modules. As an analogue of Serre's classical result on the images of Galois representations associated with products of elliptic curves, we will show that the image of the corresponding product adelic representation is sufficiently large, in the sense that it is commensurable with a subgroup defined by a natural determinant condition. Our approach combines Pink's

minimal model theory for compact subgroups of linear groups over local fields, explicit reciprocity laws for global function fields, and the theory of classical groups of Lie type.

胡创强 (中山大学)

Title: Rank-Two Drinfeld Modules over Elliptic Curve Coordinate Rings: An Explicit Theory

Abstract: We present an explicit theory of rank-two sign-normalized Drinfeld A -modules over the coordinate ring A of an elliptic curve E/F_q . Building on the rank-one shtuka-function framework, we determine the Anderson motive M_{ϕ} on the open locus $P_3 \neq 0$: it is generated by $s_{\phi}, \tau s_{\phi}, \tau^2 s_{\phi}$, subject to a single quadratic τ -relation $C_2 \tau^2 s_{\phi} = C_1 \tau s_{\phi} + C_0 s_{\phi}$ with explicit coefficients. We prove that the modules admitting this normal form are parametrized by the open locus $Y \neq 0$ of a supersingular curve $Y^{q+1} = \pi(X)$,

where π is an explicit polynomial of degree $2q+1$, and that κ is a complete isomorphism invariant. These results provide the first complete explicit description of rank-two Drinfeld modules over a genus-one coordinate ring and suggest new approaches to higher-rank cases.

Joint work with Zhedong Huang and Chan-An Zhao.

邱予嘉（哈尔滨理工大学）

Title: The function field analogue of l-adic Abel-Jacobi map

Abstract: Anderson's abelian t-modules can be considered as function field analogues of abelian varieties. We study the l-adic Abel-Jacobi map for any abelian t-module E over a function field L of positive characteristic. When the Poonen's Mordell-Weil theorem holds for the L -valued points of E , we show that the Abel-Jacobi map is injective and even an isomorphism when L is finite.

张哲轶（哈尔滨工业大学）

Title: Higher Direct Images of Constructible Etale Sheaves from the Kummer Log Flat Topology to the Classical Flat Topology

Abstract: Let S be an fs log scheme. We study the higher direct images of constructible etale sheaves from the Kummer log flat site to the classical flat site. Our approach uses standard Kummer coverings and local Čech computations over strictly henselian schemes. We obtain a local description of the first higher direct image. We also prove that for $\mathbb{Q}$ -constructible sheaves, all positive higher direct images vanish. For torsion-free constructible sheaves of $\mathbb{Z}$ -modules, the first higher direct image vanishes, while the higher direct images in degrees greater than one are reduced to those of the associated torsion coefficients.

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