

冰城 2024 算术几何冬季研讨会

会议手册

哈尔滨工业大学 数学研究院

2024 年 12 月 28 日-12 月 29 日

会议信息

会议日期:

2024 年 12 月 28 日-12 月 29 日

会议地点:

哈尔滨工业大学明德楼 B201-1 报告厅

会议组织联系人:

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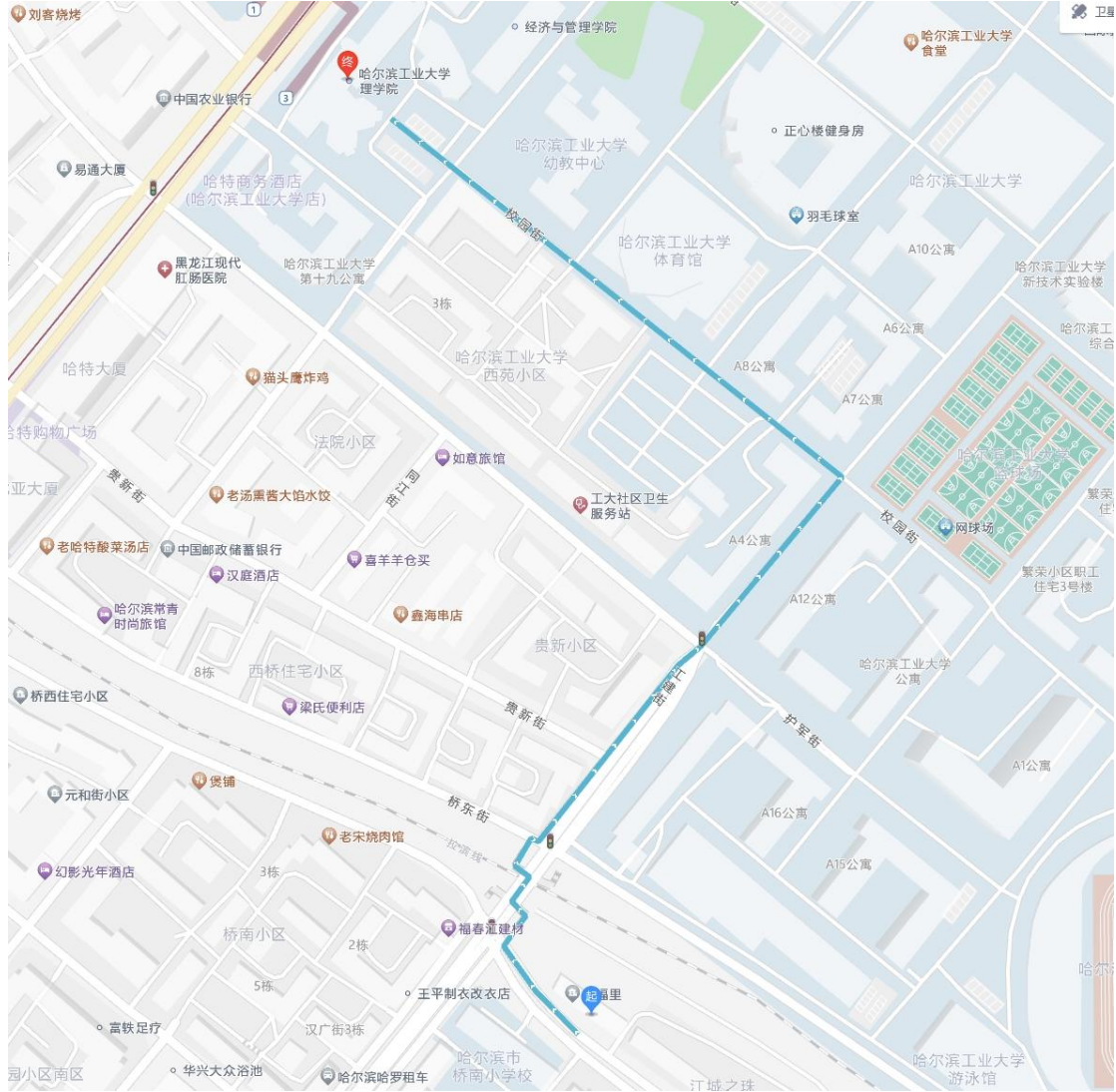
住宿信息

酒店名称：藝霏酒店(哈尔滨工业大学店)

酒店地址：哈尔滨市南岗区一匡街 55 号

联系电话：0451-86711777

来校路线：**步行路线供参考，因天气寒冷，提供接驳班车**



交通信息

酒店到达方式：

- 1、由哈尔滨太平机场到达厅行李提取出口附近 3 号门，乘出租车前往酒店，费用约 100-110 元，**不收取高速费**；
- 2、由哈尔滨太平机场到达厅 7 号门，乘网约车前往酒店，**不收取高速费**；
- 3、由哈尔滨太平机场到达厅乘机场大巴进入市区，再搭乘出租车/网约车前往酒店，总费用约 40 元；
- 4、由哈尔滨西站乘地铁 3 号线至医大二院，转乘 1 号线至西大桥站，由 3 出口出站，之后步行约 1.5 公里；
- 5、由哈尔滨市各火车站乘出租车、网约车前往酒店，费用约 25 元；
- 6、请搭乘航班来哈尔滨的老师留意下机方式，如搭乘**摆渡车**，**请将最厚的衣服带上飞机**。

日程安排

12月28日	报告
08:30-08:50	签到
08:50-09:40	报告人: 王宇鹏, 北京国际数学研究中心 题目: Prismatic crystals and p-adic Riemann-Hilbert correspondence
09:40-10:00	茶歇
10:00-10:50	报告人: 胡永泉, 中国科学院数学与系统科学研究院 题目: Finite length results for the mod p cohomology of GL_2
11:00-11:50	报告人: 张磊, 中山大学(珠海) 题目: The Pro-étale Fundamental Group
11:50-13:50	午餐
13:50-14:40	报告人: 赵以庚, 西湖大学 题目: On Swan classes for constructible étale sheaves
14:50-15:40	报告人: 阳恩林, 北京大学 题目: Cohomological Milnor formula for constructible étale sheaves
15:40-17:30	自由讨论
17:30	晚餐

12月29日	报告
09:10-10:00	报告人: 曲三太, 中国科学技术大学 题目: Irrationality of degenerations of Fano varieties
10:00-10:30	茶歇
10:30-11:20	报告人: 胡昊宇, 南京大学 题目: Estimate of Betti numbers for étale sheaves
11:20-13:00	午餐
13:00	自由讨论

报告摘要

12月28日上午

王宇鹏, 北京国际数学中心

Title: Prismatic crystals and p -adic Riemann-Hilbert correspondence

Abstract: The prismatic theory was introduced by Bhatt--Scholze and developed by Drinfeld, Bhatt--Scholze and Bhatt--Lurie, which is a "universal" p -adic cohomological theory and has lots of applications to number theory, arithmetic geometry, algebraic topology, and etc.. In this talk, I will talk about its relationship with p -adic Riemann--Hilbert correspondence. This is based on a joint work with Hui Gao and Yu Min.

胡永泉, 中国科学院数学与系统科学研究院

Title: Finite length results for the mod p cohomology of GL_2

Abstract: In the mod p Langlands program for GL_2 , it is important to study the Hecke eigenspace of mod p cohomology of Shimura curves. Inspired by the work of Breuil--Paskunas, it is conjectured that such representations have finite length and a special shape. In this talk, I will explain the proof of the (expected) upper bound of the length under some reasonable hypotheses. This is joint work with Breuil, Herzig, Morra and Schraen.

张磊, 中山大学 (珠海)

Title: The Pro-étale Fundamental Group

Abstract: B. Bhatt and P. Scholze introduced the notion of the pro-étale fundamental group for a topologically Noetherian scheme X in their celebrated work "The pro-étale cohomology for schemes". This is a topological group that classifies the geometric covers of X . Under the Yoneda embedding, the geometric covers are identified with sheaves of sets which are locally constant sheaves for the pro-étale topology. In particular, the finite étale covers are geometric. Therefore, the pro-étale fundamental group refines Grothendieck's étale fundamental group which classifies only finite étale covers. In this talk, we will introduce some comparison theorems about the pro-étale fundamental group in the complex analytic and the p -adic settings. The techniques we are using here are h -descent of the étale site and dévissage.

12月28日下午

赵以庚, 西湖大学

Title: On Swan classes for constructible étale sheaves

Abstract: For a constructible étale sheaf on a variety over a positive characteristic field, Swan class as a 0-cycle measures its ramification. Using different approaches, Kato-Saito and Saito present two types of such a class. In this talk, we introduce a new cohomological version and discuss its functorial properties. This is a joint work with Enlin Yang.

阳恩林, 北京大学

Title: Cohomological Milnor formula for constructible étale sheaves

Abstract: In this talk, we will sketch the construction of non-acyclicity classes for constructible étale sheaves on (not necessarily smooth) varieties, which is defined in a recent joint work with Yigeng Zhao. This cohomological class is supported on the non-locally acyclicity locus. As applications, we show that the Milnor formula and Bloch's conductor formula can be reformulated in terms of the functorial properties of non-acyclicity classes. Based on this formalism, we propose a Milnor type formula for non-isolated singularities.

12月29日上午

曲三太, 中国科学技术大学

Title: Irrationality of degenerations of Fano varieties

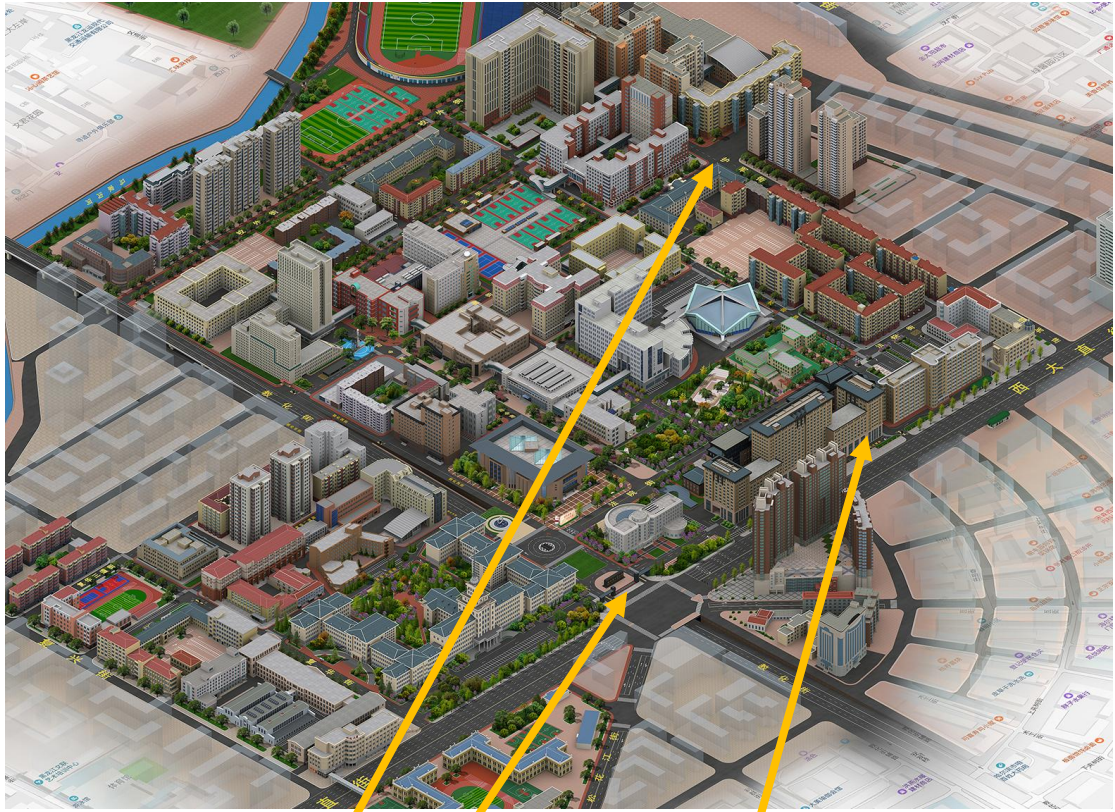
Abstract: In this talk, I will introduce a result about bounding degrees of irrationality of degenerations of klt Fano varieties of arbitrary dimensions. This proves the generically bounded case of a conjecture proposed by C. Birkar and K. Loginov for log Fano fibrations of dimensions greater than three. Our approach depends on a method from logarithmic geometry to modify the klt Fano fibration to a toroidal morphism of toroidal embeddings with bounded general fibres. This is a joint work with Prof. C. Birkar.

胡昊宇, 南京大学

Title: Estimate of Betti numbers for étale sheaves

Abstract: The calculation of Betti numbers of étale sheaves has many applications in number theory. In this talk, we mainly discuss a joint work with Jean-Baptiste Teyssier on the estimation of Betti numbers of étale sheaves on positive characteristic variety. Our upper bound only depends on the variety, the rank of sheaves and the ramification. The main tools are the singular support and the characteristic cycle. If time permits, we discuss some applications of the main result.

校园地图



报告厅位置

学校正门位置

酒店步行前往校园的校门