



天元數學國際交流中心

Tianyuan Mathematics Research Center

母题，K 理论及其相关问题研讨会

Workshop on motives, K- theory  
and related topics

# 会议手册

## Conference Program

召集人: **Organizers:**

付保华      中国科学院数学与系统科学研究院

胡文传      四川大学

曹晋      北京科技大学

2026 年 9 月 27 日—10 月 3 日

Sep. 27 - Oct. 3, 2026

中国 • 昆明

Kunming, China

# 天元数学国际交流中心简介

天元数学国际交流中心（以下简称“中心”）成立于 2023 年 7 月，由中国科学院、国家自然科学基金委员会、中国数学会、中国科学院数学与系统科学研究院，以及昆明市有关部门共同支持建设的数学与交叉科学交流机构。旨在搭建数学及其跨学科应用领域的学术交流平台，提升我国数学整体研究水平，成为国际一流的数学交流与合作研究中心。

中心位于昆明市宜良县柴石滩水库库区，三面环山、一面临水，环境优美，海拔约 1700 米。距长水国际机场约 90 公里（车程约 1.5 小时），距石林风景区约 30 公里，距九乡风景区约 20 公里。

中心总建筑面积约 6000 平方米，设有大报告厅（可容纳 100 人，配备高清 LED 屏）、中型会议室 1 间、小型会议室 4 间、研讨/工作室 21 间、图书阅览室 1 间、咖啡厅 1 间。专家楼配有 56 间宿舍及自助洗衣房、公共休息区等配套设施。

中心官方网站：<http://tianyuan.amss.ac.cn/>



# **Introduction to Tianyuan Mathematics Research Center (TYMRC)**

The Tianyuan Mathematics Research Center (established in July 2023) is jointly supported by the Chinese Academy of Sciences, the National Natural Science Foundation of China, the Chinese Mathematical Society, the Academy of Mathematics and Systems Science of the Chinese Academy of Sciences, and relevant departments of Kunming City. It aims to build a platform for academic exchange in mathematics and interdisciplinary applications, enhance China's overall mathematical research level, and become a world-class center for mathematical exchange and collaborative research.

It is located in the national-level public welfare forest in the Chaishitan Reservoir area of Yiliang, Kunming, Yunnan Province, surrounded by mountains on three sides and facing water on one side. The center has a total land area of about 27,000 square meters, with three two-story main buildings, namely the Research Building, the Expert Building and the Logistics Building, which can accommodate nearly 200 people for academic activities, and are equipped with a library and reading room, a restaurant and a certain number of offices and guest rooms.

The center has a total construction area of approximately 6,000 square meters. It features a main lecture hall (capacity: 100 people, equipped with an HD LED screen), one medium-sized seminar room, four small meeting rooms, 21 seminar/workshop rooms, one library and reading room, and one café. The Expert Building is equipped with 56 guest rooms, as well as supporting facilities such as a self-service laundry room and a public lounge.

**Official website:** <http://tianyuan.amss.ac.cn/>

# 会议信息

## 一、研讨主题、内容及意义：

自 Grothendieck 奠基以来，母题理论便深度融入代数几何、算术代数几何与代数拓扑的核心架构，成为现代代数几何的统一性基石；而代数 K 理论则通过 Grothendieck - Riemann - Roch 定理、Quillen 高阶 K 群构造、Voevodsky 母题三角化范畴构造等里程碑式工作，与母题理论形成深刻的内在统一。Voevodsky 于上世纪末构造了母题三角化范畴，并利用该理论成功解决了 Milnor 猜想，揭示了母题理论的普适工具性；此后，Brown 利用母题理论解决了母题版本的 Zagier 猜想；近年来，王国桢与徐宙利借助母题同伦论终结了广义庞加莱猜想的最终情形。由此，母题理论已发展为贯通数论、几何与拓扑的交叉研究网络，并持续推动前沿分支的融合创新。

本次研讨会特邀国内从事母题理论、代数 K 理论等相关领域研究的学者，围绕以下前沿议题展开深度交流：代数曲线上母题基本群及其周期的刻画；Chow - Witt 母题的结构与分类；母题理论在椭圆曲线某些算术问题中的应用；母题同伦理论与 Chow 簇的几何性质等。

目前，国内相关学者分布较为分散，研究方向也相对独立。本次会议旨在搭建协同平台，促进学者突破研究壁垒：一方面推动课题互鉴与跨界合作，另一方面整合研究力量，共同推动母题理论与 K 理论在国内的发展。

## 二、活动日程：

报到：2026 年 9 月 27 日

报告：2026 年 9 月 28 日至 10 月 2 日

离会：2026 年 10 月 3 日

地点：天元数学国际交流中心（云南省昆明市宜良县柴石滩水库）

## 三、相关事项：

1. 本次研讨会得到天元数学国际交流中心资助，参会人员的住宿及餐饮由中心承担，其余费用（含往返交通费）由参会人员自理。

2. 中心统一安排往返昆明高铁站/长水机场及昆明市区的接送服务。

请及时登录项目管理系统 (<http://tianyuanpm.amss.ac.cn/>) 登记行程信息。

3. 中心距离医院较远，建议访客适当随时携带一些必备药品。

4. 会议联系人：

姓名（单位）：曹晋（北京科技大学）电话：15810102976；

姓名（单位）：胡文传（四川大学）电话：13980640692

## Conference Information

### I. Seminar Theme, Content, and Significance:

Since Grothendieck laid its foundations, the theory of motives has been deeply integrated into the core architecture of algebraic geometry, arithmetic algebraic geometry, and algebraic topology, becoming a unifying cornerstone of modern algebraic geometry. Algebraic K-theory, through milestone works such as the Grothendieck–Riemann–Roch theorem, Quillen’s construction of higher K-groups, and Voevodsky’s construction of the triangulated category of motives, has formed a profound intrinsic unity with the theory of motives. At the end of the last century, Voevodsky constructed the triangulated category of motives and used it to successfully solve the Milnor conjecture, revealing the universal utility of the theory of motives. Later, Brown used the theory of motives to solve the motivic version of Zagier’s conjecture. In recent years, Guozhen Wang and Zhouli Xu used motivic homotopy theory to settle the final case of the generalized Poincaré conjecture. Thus, the theory of motives has developed into a cross-disciplinary research network connecting number theory, geometry, and topology, and continues to catalyze integration and innovation across frontier branches.

This workshop has invited domestic scholars working in the theory of motives, algebraic K-theory, and related fields to engage in in-depth exchanges on the following frontier topics: the characterization of motivic fundamental groups on algebraic curves and their periods; the structure and classification of Chow–

Witt motives; applications of the theory of motives to certain arithmetic problems for elliptic curves; and motivic homotopy theory and the geometric properties of Chow varieties, among others.

At present, relevant scholars in China are scattered and their research directions are relatively independent. This conference aims to build a collaborative platform and help scholars break through research barriers: on the one hand, by promoting mutual learning among research topics and cross-disciplinary cooperation; on the other hand, by consolidating research strength to jointly advance the domestic development of the theory of motives and K-theory.

## **II、 Program Schedule:**

**Check-in:** Sep. 27, 2026

**Talks:** Sep. 28 – Oct. 2, 2026

**Departure:** Oct. 3, 2026

**Venue:** Tianyuan Mathematics Research Center (Chishitan Reservoir, Yiliang County, Kunming, Yunnan Province)

## **III、 Practical Information:**

1. This seminar is financially supported by the TYMRC. Accommodation and meals for participants will be covered by the Center. All other expenses (including round-trip transportation) shall be borne by the participants themselves.
2. The Center will arrange shuttle services to/from the following locations: Kunming High-Speed Railway Station, Kunming Changshui International Airport, and downtown Kunming. Participants are kindly requested to log in to the project management system (<http://tianyuanpm.amss.ac.cn/>) in a timely manner to register their travel information.
3. As the Center is located at a considerable distance from the nearest hospital, participants are advised to bring an adequate supply of essential personal medications.
4. Conference Contact:  
Name (Affiliation): Jin Cao (USTB)      Phone Number: 15810102976  
Name (Affiliation): Wenchuan Hu (SCU) Phone Number: 13980640692

会议日程一（Schedule I）

|             |                  |
|-------------|------------------|
| 9 月 27 日    |                  |
| 周日 Sunday   | 报到（Registration） |
| 10 月 3 日    |                  |
| 周六 Saturday | 离会（Departure）    |

|                     |                                       |                                                                                             |              |
|---------------------|---------------------------------------|---------------------------------------------------------------------------------------------|--------------|
| 9 月 28 日（周一 Monday） |                                       |                                                                                             |              |
| 09:00-09:20         | 开幕式及合影 Opening Ceremony & Group Photo |                                                                                             |              |
| 时间<br>Time          | 报告人<br>Speaker                        | 题目<br>Title of talk                                                                         | 主持人<br>Chair |
| 09:20-10:20         | 徐飞<br>Xu Fei                          | Arithmetic purity of strong approximation for toric varieties with constant global sections | 胡文传          |
| 10:20-10:50         | 讨论（Discussion over coffee）            |                                                                                             |              |
| 10:50-11:50         | 阎琪峥<br>Qizheng Yin                    | The cohomology ring of compactified Jacobians: an update                                    | 胡文传          |
| 12:00-13:30         | 午餐（Lunch Break）                       |                                                                                             |              |
| 15:00-16:00         | 唐国平<br>Tang Guoping                   | 曲线的整 $K_2$ 群的自由秩                                                                            | 徐飞           |
| 16:00-16:30         | 讨论（Discussion over coffee）            |                                                                                             |              |
| 16:30-17:30         | 谢恒<br>Xie Heng                        | Hermitian K-theory of quadric hypersurfaces                                                 | 徐飞           |
| 18:00-19:30         | 晚餐（Dinner Break）                      |                                                                                             |              |

## 会议日程二（Schedule II）

| 9月29日（周二 Tuesday） |                            |                                                                                    |              |
|-------------------|----------------------------|------------------------------------------------------------------------------------|--------------|
| 时间<br>Time        | 报告人<br>Speaker             | 题目<br>Title of talk                                                                | 主持人<br>Chair |
| 09:20-10:20       | 秦厚荣<br>Qin Hourong         | The Milnor Group, the Shafarevich–Tate Group, and the Congruent Number Problem     | 唐国平          |
| 10:20-10:50       | 讨论（Discussion over coffee） |                                                                                    |              |
| 10:50-11:50       | 胡勇<br>Hu Yong              | Cohomological invariants of hermitian forms with applications to Galois cohomology | 唐国平          |
| 12:00-13:30       | 午餐（Lunch Break）            |                                                                                    |              |
| 14:30-15:30       | 周杰<br>Zhou Jie             | Hodge-theoretic mirror symmetry for elliptic curves                                | 閻琪峥          |
| 15:30-15:50       | 讨论（Discussion over coffee） |                                                                                    |              |
| 15:50-16:50       | 金方舟<br>Jin Fangzhou        | Weight structures and applications                                                 | 閻琪峥          |
| 17:00-18:00       | 张龙<br>Zhang Long           | Computing the Tame Kernel of $\mathbb{Q}(\sqrt{-491})$ by Generators and Relations | 閻琪峥          |
| 18:00-19:30       | 晚餐（Dinner Break）           |                                                                                    |              |

会议日程三（Schedule III）

| 9月30日（周三 Wednesday） |                            |                                                 |              |
|---------------------|----------------------------|-------------------------------------------------|--------------|
| 时间<br>Time          | 报告人<br>Speaker             | 题目<br>Title of talk                             | 主持人<br>Chair |
| 09:20-10:20         | 赖力<br>Lai Li               | Fauzan's proof of the irrationality of zeta(5)  | 曹晋           |
| 10:20-10:50         | 讨论（Discussion over coffee） |                                                 |              |
| 10:50-11:50         | 郭学军<br>Guo Xuejun          | The weak Chinburg conjecture on Mahler measures | 周杰           |
| 12:00-13:30         | 午餐（Lunch Break）            |                                                 |              |
| 15:00-16:00         | 自由讨论 Open Discussion       |                                                 |              |
| 16:00-16:30         | 讨论（Discussion over coffee） |                                                 |              |
| 16:30-17:30         | 自由讨论 Open Discussion       |                                                 |              |
| 18:00-19:30         | 晚餐（Dinner Break）           |                                                 |              |

会议日程四（Schedule IV）

| 10月1日（周四 Thursday） |                            |                                                                               |              |
|--------------------|----------------------------|-------------------------------------------------------------------------------|--------------|
| 时间<br>Time         | 报告人<br>Speaker             | 题目<br>Title of talk                                                           | 主持人<br>Chair |
| 09:20-10:20        | 王好武<br>Wang Haowu          | Singular automorphic products and BKM algebras                                | 郭学军          |
| 10:20-10:50        | 讨论（Discussion over coffee） |                                                                               |              |
| 10:50-11:50        | 刘杭<br>Liu Hang             | K2 of Families of Non-Hyperelliptic Curves of Arbitrary Genus                 | 郭学军          |
| 12:00-13:30        | 午餐（Lunch Break）            |                                                                               |              |
| 15:00-16:00        | 曹阳<br>Cao Yang             | Locally unramified cohomology and Kottwitz exact sequence beyond number field | 余讯           |
| 16:00-16:30        | 讨论（Discussion over coffee） |                                                                               |              |
| 16:30-17:30        | 杨南君<br>Yang Nanjun         | The equivariant Milnor-Witt motive of moduli space of curves                  | 余讯           |
| 18:00-19:30        | 晚餐（Dinner Break）           |                                                                               |              |

会议日程五（Schedule V）

| 10月2日（周五 Friday） |                            |                                                                                  |              |
|------------------|----------------------------|----------------------------------------------------------------------------------|--------------|
| 时间<br>Time       | 报告人<br>Speaker             | 题目<br>Title of talk                                                              | 主持人<br>Chair |
| 09:20-10:20      | 余讯<br>Yu Xun               | Nonrational varieties with unirational parametrizations of coprime degrees       | 王好武          |
| 10:20-10:50      | 讨论（Discussion over coffee） |                                                                                  |              |
| 10:50-11:50      | 陈友明<br>Chen Youming        | Lawson homology groups of Chow varieties                                         | 王好武          |
| 12:00-13:30      | 午餐（Lunch Break）            |                                                                                  |              |
| 13:30-14:30      | 申屠钧超<br>Shentu Junchao     | Geometric Shafarevich boundedness conjecture for families of polarized varieties | 曹阳           |
| 15:00-16:00      | 杨森<br>Yang Sen             | Algebraic K-theory, geometric connectedness and Chow groups                      | 曹阳           |
| 16:00-16:30      | 讨论（Discussion over coffee） |                                                                                  |              |
| 16:30-17:30      | 自由讨论 Open Discussion       |                                                                                  |              |
| 18:00-19:30      | 晚餐（Dinner Break）           |                                                                                  |              |

报告摘要（Report Abstracts）

**报告题目 Title: Arithmetic purity of strong approximation for toric varieties with constant global sections**

Speaker: 徐飞 (首都师范大学)

**报告摘要 Abstract:**

Based on various geometric phenomena, it is conjectured that the strong approximation property should be invariant up to a closed subset of codimension greater than 1. This conjecture has been verified for many cases, particularly for certain complete toric varieties by S. Chen. In this talk, we will extend Chen's result to all complete toric varieties and explain the recent work of SanTERS on Manin's conjecture for integral points on toric varieties. This is joint work with Dasheng Wei and Yi Zhu.

**报告题目 Title: The cohomology ring of compactified Jacobians: an update**

Speaker: 阎琪峥 (北京大学)

**报告摘要 Abstract:**

The cohomological study of compactified Jacobians is crucial for understanding curve singularities. For any integral curve with planar singularities, conjectures of Maulik-Yun, Rennemo, Shende, and Oblomkov-Rasmussen-Shende predict a natural multiplicative bigrading on the cohomology ring of the compactified Jacobian. I will discuss the challenges we are facing, past attempts, and a new approach towards the construction of such a multiplicative bigrading. Based on joint work in progress with DavesH Maulik and Junliang Shen.

**报告题目 Title: 曲线的整  $K_2$  群的自由秩**

Speaker: 唐国平 (中国科学院大学)

**报告摘要 Abstract:**

我们将介绍一些数域上亏格为  $g$  的特殊曲线族的整  $K_2$  群中  $g$  个  $\mathbb{Z}$ -线性无关元, 这里亏格  $g$  不超过 7。

**报告题目 Title: Hermitian K-theory of quadric hypersurfaces**

Speaker: 谢恒 (中山大学)

**报告摘要 Abstract:**

In this talk, we show that Hermitian K-theory of quadric hypersurfaces fit into fibration sequences relating them to the base ring and to Clifford algebras. As an application, we prove that the signature map from the Witt groups of real spheres to their KO-theory is an isomorphism. This result recovers Bott's 8-periodicity from the viewpoint of Witt theory.

**报告题目 Title: The Milnor Group, the Shafarevich – Tate Group, and the Congruent Number Problem**

Speaker: 秦厚荣 (南京大学)

**报告摘要 Abstract:**

We develop a new Shimura lift for weight  $3/2$  modular forms in the study of congruent numbers, allowing us to derive a new criterion for them and, furthermore, to establish a close connection between Milnor K-groups and Shafarevich – Tate groups, thereby linking the Birch – Swinnerton-Dyer conjecture and the Birch – Tate conjecture. Whether there exist infinitely many primes congruent to 1 modulo 8 that are congruent numbers is a well-known open problem; we will discuss this famous problem.

**报告题目 Title: Cohomological invariants of hermitian forms with applications to Galois cohomology**

Speaker: 胡勇 (南方科技大学)

**报告摘要 Abstract:**

For decades, it has been a well developed method to use cohomological invariants to study quadratic forms. Based on classical algebraic constructions, some low degree cohomological invariants for hermitian forms are also known. In this talk, we introduce a uniform way to define cohomological invariants for hermitian forms in all degrees and in arbitrary characteristic, and we show that they can detect hyperbolicity completely. We will also discuss applications of these invariants in Galois cohomology.

**报告题目 Title: Hodge-theoretic mirror symmetry for elliptic curves**

Speaker: 周杰 (清华大学)

**报告摘要 Abstract:**

Mirror symmetry has inspired significant developments in modern geometry, culminating in the philosophy that Gromov – Witten invariants are period integrals. At genus zero, this is established by Givental and Lian – Liu – Yau for appropriate mirror pairs, and is, more conceptually, formulated in terms of variations of polarized Hodge structures. The higher-genus case remains largely open in general. In this talk, I will explain Hodge-theoretic higher-genus mirror symmetry for elliptic curves, building on the works of Bloch – Okounkov and Okounkov – Pandharipande.

**报告题目 Title: Weight structures and applications**

Speaker: 金方舟 (同济大学)

**报告摘要 Abstract:**

Weight structures are a dual notion of t-structures, which are introduced by Bondarko as a counterpart of Deligne's theory of weights in motivic categories. I will discuss constructions of weight structures and applications.

**报告题目 Title: Computing the Tame Kernel of  $\mathbb{Q}(\sqrt{-491})$  by Generators and Relations**

Speaker: 张龙 (青岛大学)

**报告摘要 Abstract:**

Let  $F = \mathbb{Q}(\sqrt{-491})$ , the first unresolved case in the Belabas--Gangl computation of tame kernels of imaginary quadratic fields with  $|\Delta| < 1000$ . Starting from their direct computation, we reproduce the descent and terminal relation calculation and use Lim's later exact sequence to reduce the difficult cyclotomic class-group problem to the determination of the inverse-cyclotomic  $p$ -primary eigenspace of the  $S$ -class group of  $F(\zeta_p)$ , together with the corresponding local splitting term; for  $p = 13$  this closes the computation and gives  $K_2(\mathcal{O}_F) = \langle 2, 4 - \omega \rangle_{12} \simeq \mathbb{Z}/13\mathbb{Z}$ ,  $\omega = (1 + \sqrt{-491})/2$ . This complements the earlier work of Burns, de Jeu, Gangl, Rahm and Yasaki, who determined the order by  $K_3$ - and regulator-based methods, whereas here the original direct  $K_2$  computation is completed and an explicit generator is recovered.

**报告题目 Title: Fauzan's proof of the irrationality of  $\zeta(5)$** 

Speaker: 赖力 (厦门大学)

**报告摘要 Abstract:**

Fauzan recently made a breakthrough, proving that  $\zeta(5)$  is irrational. In this talk, we discuss some of our understanding of Fauzan's work.

**报告题目 Title: The weak Chinburg conjecture on Mahler measures**

Speaker: 郭学军 (南京大学)

**报告摘要 Abstract:**

For every negative fundamental discriminant  $-f$  and every  $k \geq 1$ , we construct a rational function  $R_{\{f, 2k\}}$  and a constant  $r_{\{f, 2k\}}$  such that  $m(R_{\{f, 2k\}}) = r_{\{f, 2k\}} L(\chi_{\{-f\}}, 1-2k)$ , where  $m$  denotes the logarithmic Mahler measure and  $\chi_{\{-f\}}$  is the quadratic Dirichlet character associated with  $-f$ . This proves the weak Chinburg conjecture.

**报告题目 Title: Singular automorphic products and BKM algebras**

Speaker: 王好武 (武汉大学)

**报告摘要 Abstract:**

After proving the moonshine conjecture, Borcherds asked in 1995 whether there exist only finitely many holomorphic automorphic products of singular weight. We show that, up to conjugation, there are exactly 27 such products on lattices of the form  $2U \oplus L$ . The classification proceeds by identifying each product at a standard 1-dimensional cusp with the superdenominator of a BKM superalgebra that carries a graded module structure over an affine Lie superalgebra  $\hat{\mathfrak{g}}$ . The auxiliary algebras  $\hat{\mathfrak{g}}$  are shown to satisfy strong conditions that reduce the possibilities to an initial list of 1372 candidates. An elimination argument leaves exactly 85 algebras  $\hat{\mathfrak{g}}$  that correspond to the 27 products. This classification is closely connected with certain distinguished families of vertex operator superalgebras. Our results provide a systematic framework for extending affine Lie superalgebras to hyperbolic ones with modularity, generalizing the work of Feingold and Frenkel (1983). This talk is based on our recent work arXiv: 2609.15658, joint with Kaiwen Sun and Brandon Williams.

**报告题目 Title: K2 of Families of Non-Hyperelliptic Curves of Arbitrary Genus**

Speaker: 刘杭 (深圳大学)

**报告摘要 Abstract:**

We give an integrality criterion for a tame Steinberg symbol  $\{f, g\}$  on a curve over a number field using tempered polynomials. As an application, for the triangle and rectangle symbols on the families of curves studied by the speaker and de Jeu, we obtain an exact integrality criterion in terms of the parameter. We show non-hyperellipticity for smooth affine members of the families, and present numerical tests of Beilinson's conjecture in genus three, four and five.

**报告题目 Title: Locally unramified cohomology and Kottwitz exact sequence beyond number field**

Speaker: 曹阳 (山东大学)

**报告摘要 Abstract:**

(joint work with Ting-Yu Lee) The classical Kottwitz exact sequence studies the local-global principle for Galois cohomology with coefficients in connected linear algebraic groups over number fields. In this talk, we consider this local-global problem over general global fields, including Laurent function fields and  $p$ -adic function fields. We will show that a new phenomenon occurs, and introduce a new cohomological obstruction given by locally unramified cohomology.

**报告题目 Title: The equivariant Milnor-Witt motive of moduli space of curves**

Speaker: 杨南君 (北京雁栖湖应用数学研究院)

**报告摘要 Abstract:**

Grothendieck's Chow motives make every Weil cohomology factor through them. Extending to smooth nonprojective varieties gives Voevodsky's mixed motives. Around 2020, Milnor-Witt motives refined this, encoding quadratic field data and approaching the motivic stable homotopy category. In this talk, we decompose the equivariant Milnor-Witt motive of the moduli space of elliptic curves with two marked points. Combining this with Lorenzo-Mantovani, we determine its Chow-Witt ring.

**报告题目 Title: Nonrational varieties with unirational parametrizations of coprime degrees**

Speaker: 余讯 (天津大学)

**报告摘要 Abstract:**

We show that there exists a 2-dimensional family of smooth cubic threefolds admitting unirational parametrizations of coprime degrees. This together with Clemens--Griffiths' work solves the long standing open problem whether there exists a nonrational variety with unirational parametrizations of coprime degrees. Our proof uses a new approach, called the Noether--Cremona method, for determining the rationality of quotients of hypersurfaces. This is a joint work with Song Yang and Zigang Zhu.

**报告题目 Title: Lawson homology groups of Chow varieties**

Speaker: 陈友明 (重庆理工大学)

**报告摘要 Abstract:**

Let  $C_{\{p,d\}}(P^n)$  denote the Chow variety of effective  $p$ -cycles of degree  $d$  in the complex projective space  $P^n$ . In this talk, the rational Lawson homology groups  $L_q H_k(C_{\{p,d\}}(P^n))_{\mathbb{Q}}$  for  $0 \leq q \leq k \leq 2d$  will be computed. Furthermore, the stability of Lawson homology groups of Chow varieties under natural embeddings and algebraic suspension maps within a specified range will be established. This is joint work with Prof. Wenchuan Hu.

**报告题目 Title: Geometric Shafarevich boundedness conjecture for families of polarized varieties**

Speaker: 申屠均超 (中国科学技术大学)

**报告摘要 Abstract:**

Faltings proved the Mordell conjecture: curves of genus  $\geq 2$  over a number field have finitely many rational points, via the Shafarevich conjecture. Its higher-dimensional analogue asks whether polarized families over a complex base have finitely many deformation types. I will present recent progress on Shafarevich boundedness for moduli of stable minimal models, including KSB stable pairs, yielding a uniform Mordell conjecture for open curves over function fields.

**报告题目 Title: Algebraic K-theory, geometric connectedness and Chow groups**

Speaker: 杨森 (滁州学院)

**报告摘要 Abstract:**

Bloch et al applied algebraic K-theory to study the structures of Chow groups. When the ground field is a number field, Bloch established the pro-representability of the second Chow group. We use K-theory and geometric connectedness to extend Bloch's result to arbitrary fields of characteristic zero. This proves the pro-representability of the second Chow group in generality, without any additional assumption on the ground field.