K-稳定性研讨会

Workshop on K-Stability

会议程序册

Conference Handbook

中国 上海 华东师范大学

East China Normal University, Shanghai, China

2026 年 1 月 4 日 – 1 月 8 日

January 4 – January 8, 2026

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1 Organizations and Acknowledgments

Organizing Units

School of Mathematical Sciences, East China Normal University

Conference Organizers

Rong Du	(East China Normal University)
Jun Lu	(East China Normal University)
Xin Lu	(East China Normal University)
Sheng Meng	(East China Normal University)
Lu Qi	(East China Normal University)
Shengli Tan	(East China Normal University)
Tong Zhang	(East China Normal University)

Sponsored by

National Key R & D Program of China
National Natural Science Foundation of China
Key Laboratory of MEA (Ministry of Education)
Shanghai Key Laboratory of PMMP
School of Mathematical Sciences, East China Normal University

2 Conference Guide

2.1 Accommodation

1 月 4 日 14:00 起报到。

报到与住宿地点：上海市闵行区吴泾镇永德路 659 弄桔子水晶酒店（闵行紫竹园华师大店）。

Check-in will begin at 14:00 on January 4th.

Check-in and accommodation: Orange Crystal Hotel (Zizhu Garden East China Normal University), Lane 659, Yongde Road, Wujing Town, Minhang District, Shanghai.

2.2 Conference Location

华东师范大学闵行校区数学楼 102 报告厅。

Mathematics Building 102 Lecture Hall, Minhang Campus, East China Normal University.

重要提示：请注意，西门（莲花南路 5005 号）因施工关闭。请从其它校门入校。

Important Note: Please note that the West Gate (No. 5005 Lianhua South Road) is closed for construction. Please use other campus gates.

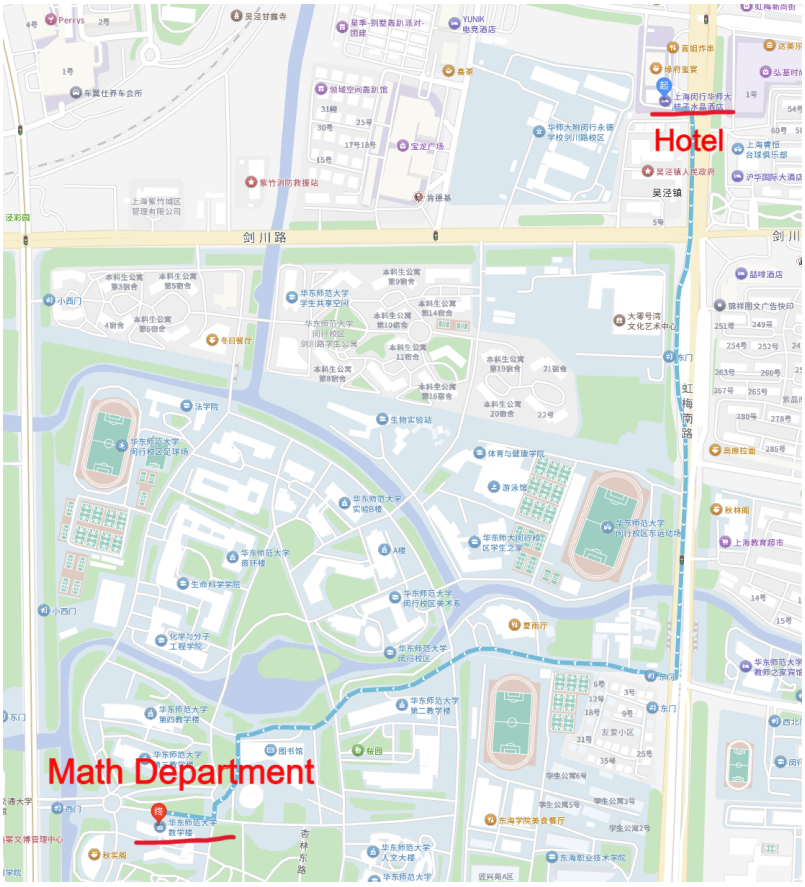

图 1: 路线图 Figure 1: Route map

3 Conference Schedule

January 5th

Time	Talks	
9:00 – 9:10	Opening and registration	
9:10 – 10:10	**Ruadhai DERVAN**	Arcs and stability of pairs
10:10 – 10:40	Tea Break	
10:40 – 11:40	**Jingjun HAN**	On boundedness in general type MMP
11:40 – 13:30	Lunch	
13:30 – 14:30	**Minghao MIAO**	The volume of K-semistable Fano manifolds
14:30 – 15:00	Tea Break	
15:00 – 16:00	**Chuyu ZHOU**	On finiteness of K-moduli compactifications
17:30 – 19:30	Reception	

January 6th

Time	Talks	
9:10 – 10:10	**Kento FUJITA**	Another view on smooth prime Fano threefolds of degree 22 with infinite automorphism groups
10:10 – 10:40	Tea Break	
10:40 – 11:40	**Chenyang XU**	Properness of K-moduli
11:40 – 13:30	Lunch	
13:30 – 14:30	**Junyao PENG**	Asymptotics of stability thresholds
14:30 – 15:00	Tea Break	
15:00 – 16:00	**Linsheng WANG**	K-polystability of Fano cone singularities
16:20 – 17:20	**Speed talks**	
18:00 – 20:00	Reception	

January 7th

Time	Talks	
9:10 – 10:10	**Mattias JONSSON**	On the Yau–Tian–Donaldson conjecture for cscK metrics
10:10 – 10:40	Tea Break	
10:40 – 11:40	**Kewei ZHANG**	Canonical metrics and K-beta stability
11:40 – 13:30	Lunch	
13:30 – 14:30	**Theodros PAPAZACHARIOU**	TBA

4 Titles and Abstracts

Arcs and stability of pairs

Ruadhai Dervan

Abstract: Paul introduced the theory of stability of pairs about twenty years ago, as a generalisation of geometric invariant theory to the case when one does not have an ample line bundle. I will begin by discussing some algebro-geometric results around the theory of stability of pairs, such as a numerical criterion (through Donaldson's theory of arcs), and a result stating that stability of pairs is a very general condition. These results have applications to K-stability, where they give an answer to a question of Tian around the behaviour of the Mabuchi functional, and where they show that (uniform) arc K-stability is a very general condition in families. This is joint work with Rémi Reboulet.

Another view on smooth prime Fano threefolds of degree 22 with infinite automorphism groups

Kento Fujita 藤田健人

Abstract: All smooth Fano threefolds with infinite automorphism groups are understood due to Prokhorov, Kuznetsov and Shramov by use of deep studies of their Hilbert scheme of lines. I will present as our joint work with Adrien Dubouloz and Takashi Kishimoto an alternative and self-contained proof of it, allowing us to use several properties on the smooth quintic del Pezzo threefold. Moreover, I would like to explain an interesting elementary link joining prime Fano threefolds of degree 22 with Fano threefolds of No. 2.21 in Mori-Mukai's list.

On the Yau–Tian–Donaldson conjecture for cscK metrics

Mattias Jonsson

Abstract: I will report on joint work with S. Boucksom, in which we prove that the existence of a (weighted) cscK metric on a polarized manifold (X, L) is equivalent to a condition of algebro-geometric nature, formulated in terms of non-Archimedean pluripotential theory.

On boundedness in general type MMP

Jingjun Han 韩京俊

Abstract: One of the main open problems in the Minimal Model Program (MMP) is the termination. Motivated by local volumes introduced by Chi Li, we introduce log canonical volume which is non-decreasing in any sequence of MMP for general type varieties. As a result, in such kind of MMP, we show that (1) the Cartier index of any Weil $\mathbb{Q}$-Cartier is uniformly bounded; (2) every fiber of the extremal contractions or the flips is bounded (3) the set of minimal log discrepancies belongs to a finite set. This is a joint work with Lu Qi and Ziquan Zhuang.

The volume of K-semistable Fano manifolds

Minghao Miao 缪铭昊

Abstract: In 2015, K. Fujita showed that for any n-dimensional K-semistable Fano manifold, the anti-canonical volume is always less than or equal to that of complex projective space ($\mathbb{P}^n$). In this talk, I will discuss my recent joint work with Chi Li on characterizing the second-largest volume. We prove that for any n-dimensional K-semistable Fano manifold X that is not isomorphic to $\mathbb{P}^n$, the volume is at most $2n^n$, with the equality holds if and only if X is a smooth quadric hypersurface or $\mathbb{P}^1 \times \mathbb{P}^{n-1}$. This result applies, in particular, to all Fano manifolds admitting Kähler–Einstein metrics. Our proof is based on a new connection between K-stability and minimal rational curves.

Some explicit examples of K-moduli spaces

Theodoros Papazachariou

Abstract: In the past decade, K-stability has made extraordinary progress in constructing moduli spaces of Fano varieties and log Fano pairs. This construction, however, is not explicit, and needs to be studied on a case-by-case basis to explicitly describe specific examples of moduli spaces for Fano varieties. Recently, the focus has shifted to explicit descriptions of such K-moduli of Fano threefolds, which has resulted in the full moduli description of a number of families. The methods used to obtain these descriptions rely either on explicit computations of the invariants defining K-stability, or on the moduli continuity method, which relates K-moduli spaces to other natural compactifications such as GIT, which are more easily approachable. In this talk, I will explain how the moduli continuity method allows us to obtain new explicit K-moduli descriptions for four more families (2.11, 3.3, 3.5, 3.8) via relating the K-moduli to explicit GIT quotients.

Asymptotics of stability thresholds

Junyao Peng 彭俊尧

Abstract: We study asymptotic behavior of the stability thresholds of a big line bundle, and prove explicit bounds on the error terms. This answers Jin–Rubinstein–Tian's questions affirmatively. A key step in our proof is to show that the stability thresholds of a big line bundle can always be computed by quasi-monomial valuations. This generalizes Blum–Jonsson's result on the stability thresholds of an ample line bundle.

K-polystability of Fano cone singularities

Linsheng Wang 王淋生

Abstract: In this talk, I would like to introduce a recent work about K-polystability of log Fano cone singularities. Precisely, we prove that a K-semistable log Fano cone singularity is K-polystable for normal test configurations if and only if it is K-polystable for special test configurations.

Properness of K-moduli

Chenyang Xu 许晨阳

Abstract: (Joint with Harold Blum, Yuchen Liu, and Ziquan Zhuang) We present a new proof of the properness of K-moduli spaces. While our approach still depends on the higher-rank finite generation theorem, it avoids the use of Halpern-Leistner's Θ-stratification theory. Instead, we develop a purely birational method, rooted in a relative framework for K-stability, which provides a more direct geometric proof of properness.

Canonical metrics and K-beta stability

Kewei Zhang 张科伟

Abstract: The Yau-Tian-Donaldson conjecture predicts that existence of constant scalar curvature Kähler (cscK) metrics is equivalent to (uniform) K-stability. In this talk I will introduce a new stability notion called K-beta stability, which we show to be equivalent with the existence of cscK metrics. This talk is based on my joint work with T. Darvas.

On finiteness of K-moduli compactifications

Chuyu Zhou 周楚宇

Abstract: Given a family of K-semistable log Fano manifolds with changeable coefficient, we hope that there are only finitely many K-moduli compactifications as we change the coefficient, which clearly implies the boundedness of K-semistable degenerations. In this talk, we will see that this boundedness is enough to establish the whole non-proportional wall crossing theory for K-stability, i.e. there is a finite semi-algebraic chamber decomposition to control the variation of K-(semi/poly)stability.

Speed talks

TBA

Zhiming Guo 郭志明

Abstract: TBA

TBA

Yijue Hu 胡忆珏

Abstract: TBA

K-stability for models on Kähler manifolds

Pietro Mesquita-Piccione

Abstract: Based on joint work with David Witt Nyström, this talk will address the extension of K-stability for models to non-algebraic Kähler manifolds. I will present an overview of the theory in this more general setting. If time permits, I will also explain how the non-Archimedean Monge–Ampère equation yields an explicit valuative criterion for K-stability for models.

TBA

Yuxin Zhang 张宇鑫

Abstract: TBA

5 List of Participants

姓名	单位
陈国度	上海交通大学
陈炜	University of Roma Tre
Ruadhai Dervan	University of Glasgow
Kento Fujita	Osaka University
韩京俊	复旦大学
韩骥原	西湖大学
胡忆珏	University of Nottingham
胡勇	上海交通大学
江辰	复旦大学
江孝炜	清华大学
焦骏鹏	清华大学
Mattias Jonsson	University of Michigan
罗宇杰	National University of Singapore
Pietro Mesquita-Piccione	University of Gothenburg
缪铭昊	南京大学
Theodoros Papazachariou	清华大学
彭俊尧	Princeton University
王淋生	复旦大学
许晨阳	Princeton University
徐政	北京大学
薛庆源	复旦大学
Yaoqi Yang	University of Warwick
张科伟	北京师范大学
周楚宇	厦门大学
杜荣	华东师范大学
陆俊	华东师范大学
吕鑫	华东师范大学
骆文斌	华东师范大学
孟晟	华东师范大学
戚鲁	华东师范大学
谈胜利	华东师范大学
张通	华东师范大学