Workshop on Extrinsic geometric flows

Schedule

Venue: 5101 Fifth teaching building, USTC

Monday, 2 June 2025

- 14:30 - 15:30 Ben Andrews
- Tea break
- 16:00 - 17:00 Haizhong Li

Tuesday, 3 June 2025

- 10:00 - 10:50 Xianfeng Wang
- 10:55 - 11:35 Ruijia Zhang

- 14:30 - 15:10 Bo Yang
- Tea break
- 15:40 - 16:20 Yao Wan
- 16:25 - 17:05 Pingxin Gu

Abstract

Ben Andrews (Australian National University)

Title: Stability and instability in high order curve flows

Abstract: I will describe some new results and some unsolved questions regarding the long time behaviour of curves evolving by high order geometric flows, particularly the free elastic flow, the curve diffusion flow, and B.Y. Chen's flow (in which the embedding satisfies a biharmonic heat flow with respect to arc length).

Haizhong Li (Tsinghua University)

Title: Summation for two sets in hyperbolic space

Abstract: The classical Brunn-Minkowski theory studies the geometry of convex bodies in Euclidean space by use of the Minkowski summation. In this talk, we introduce a summation for two sets in hyperbolic space, and we call it the hyperbolic summation. Then we develop a Brunn-Minkowski theory in hyperbolic space by use of our hyperbolic summation. This is joint work with Dr Botong Xu.

Xianfeng Wang (Nankai University)

Title: Uniqueness of self-similar solutions to curvature flows and uniqueness of solutions to isotropic curvature problems

Abstract: Self-similar solutions play an important role in the study of the asymptotic behaviors of curvature flows, and are closely related to some prescribed curvature problems. In this talk, we will discuss uniqueness of self-similar solutions to a large family of fully nonlinear curvature flows by high powers of curvature, as well as uniqueness of solutions to some isotropic curvature problems.

Ruijia Zhang (Peking University)
Title: C^2 estimates for k-Hessian equations and a rigidity theorem
Abstract: We derive a concavity inequality for k-Hessian operators under the semiconvexity condition. As an application, we establish interior estimates for semiconvex solutions to the k-Hessian equations with vanishing Dirichlet boundary conditions and obtain a Liouville-type result. This result confirms Chang-Yuan's conjecture under the super quadratic growth condition.

Bo Yang (Tsinghua University)
Title: A Minkowski type inequality in warped cylinders
Abstract: In this talk, we will firstly introduce the classical results on the Minkowski type inequality in space forms. Then we will prove a Minkowski type inequality in warped cylinders which are asymptotically flat or hyperbolic. In particular, we show that this sharp inequality holds for outward minimizing hypersurfaces in the Schwarzschild manifold or the hyperbolic space. This is a joint work with Dr. Shujing Pan.

Yao Wan (Chinese University of Hong Kong)
Title: Uniqueness of S_2-isotropic solutions to the isotropic L_p-Minkowski problem
Abstract: The L_p-Minkowski problem concerns the existence and uniqueness of convex bodies with prescribed L_p-surface-area measures. In this talk, we present our recent work on the uniqueness of S_2-isotropic solutions to the isotropic L_p-Minkowski problem for super-critical exponents.

Pingxin Gu (Tsinghua University)
Title: Weinstock inequality in hyperbolic space
Abstract: In this talk, we establish the Weinstock inequality for the first non-zero Steklov eigenvalue on star-shaped mean convex domains in hyperbolic space H^n for $n \geqslant 4$. In particular, when the domain is convex, our result gives an affirmative answer to Open Question 4.27 in [Colbois, Girouard, Gordon and Sher, Rev. Mat. Complut. 37 (2024)] for the hyperbolic space H^n when $n \geqslant 4$.

Information

Lunch 11:30 – 13:00, 2nd floor of USTC Guest house hotel 专家楼二楼自助
Dinner 17:30 – 19:00, Faculty dinning hall 东区教工餐厅（美食广场三楼）
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