

南大-上海交大几何分析研讨会

School of Mathematics & IMS, Nanjing University

2025 年 5 月 9 日 – 5 月 12 日

一、会议时间与地点：

- 2025 年 5 月 9 日，参会人员直接去酒店办理入住。
- 2025 年 5 月 10 日-5 月 11 日上午，会议学术报告；5 月 11 日下午，自由讨论。
- 2025 年 5 月 12 日，离会。

会议地点：[南京大学鼓楼校区（汉口路 22 号）数学学院蒙民伟楼 1104 报告厅](#)。

二、住宿与交通：

住宿：南京市中山路 251 号，新纪元大酒店。

交通方式：

- 飞机抵达。南京禄口机场离新纪元大酒店约 43 公里，1 小时车程，打车费超过 200 元。也可以地铁前往酒店：禄口机场站乘坐地铁 S1 号线至南京南站，换乘地铁 1 号线至珠江路站（1 号口或 3 号口出站），步行 350 米抵达新纪元大酒店，全程约 1.5 小时。
- 高铁抵达。绝大多数高铁会抵达南京南站，建议地铁前往酒店：南京南站乘坐地铁 1 号线至珠江路站（1 号口或 3 号口出站），步行 350 米抵达酒店，全程约半小时，若坐出租车前往也需要半小时，堵车风险较高。
- 火车抵达。少数高铁、动车会抵达南京站，建议地铁前往酒店：南京站乘坐地铁 1 号线至珠江路站（1 号口或 3 号口出站），步行 350 米抵达酒店，全程约 25 分钟，若坐出租车前往需要 20 分钟左右，遇高峰期有堵车风险。

三、报告日程安排：

	5 月 10 日	5 月 11 日
8:30-9:20	宋肿	傅鑫
9:20-10:10	陈露	Lynn Heller
10:10-10:40	茶歇	茶歇
10:40-11:30	孙俊	单宇飞
12:00-14:00	午餐	午餐
14:00-14:50	许小卫	自由讨论
14:50-15:40	沈伟明	
15:40-16:10	茶歇	
16:10-17:00	王邵东	
18:00-	晚餐	晚餐

四、报告题目与摘要：(按姓氏拼音排序)

- (1) 陈露 (北京理工大学)

Title: Recent progress on the optimal stability of geometric inequality

Abstract: In this talk, we first recall sharp geometric inequality and their stability. Then we present our recent progress on the optimal stability of some geometric inequality includes Sobolev, Hardy-Littlewood-Sobolev, Log-Sobolev, Moser-Onofri etc. Some interesting problem will be also discussed.

- (2) 傅鑫 (西湖大学)

Title: Kähler RCD space and its application to fundamental group

Abstract: Let X be a compact Riemannian manifold with nonnegative Ricci curvature, it is well known that its fundamental group is almost abelian by Cheeger-Gromoll splitting theorem. In this talk, by using recent progress on Kähler RCD space and Margulis lemma, we exhibit some results on the fundamental group of singular Kähler variety whose anti canonical bundle is “almost” nonnegative. This is based on joint work with Bin Guo, Jian Song and Juanyong Wang.

- (3) Lynn Heller (雁栖湖北京应用数学研究所)

Title: Minimal surface and alternating multiple zeta values

Abstract: In this talk we show for every sufficiently large integer g the existence of a complete family of closed and embedded constant mean curvature (CMC) surfaces deforming the Lawson surfaces $\xi_{1,g}$ parametrized by their conformal type. When specializing to the minimal case, we discover a pattern resulting in the coefficients of the involved expansions being alternating multiple zeta values (MZVs), which generalizes the notion of Riemann’s zeta values to multiple integer variables. This allows us to extend a new existence proof of the Lawson surfaces $\xi_{1,g}$ to all $g \geq 3$ using complex analytic methods and to give closed form expressions of their area expansion up to order 7. For example, the third order coefficient is $9/4\zeta(3)$. As a corollary, we obtain that the area of $\xi_{1,g}$ is monotonically increasing in their genus g for all $g \geq 0$. This is joint work with Steven Charlton, Sebastian Heller, and Martin Traizet. This is joint work with Steven Charlton, Sebastian Heller, and Martin Traizet.

- (4) 单宇飞 (上海交通大学)

Title: Volume Comparison Theorem for Symmetric Spaces of Noncompact Type of Rank 1

Abstract: The classical Bishop volume comparison theorem states that a complete n -dimensional manifold with Ricci curvature bounded below by that of a space form has volume growth of metric balls at most equal to that of the corresponding balls in that space form.

R. Schoen conjectured that a similar volume comparison should hold if we replace the Ricci curvature and the space form with scalar curvature and a closed hyperbolic surface, respectively. This conjecture remains open to this day.

Recently, Xue Hu, Dandan Ji, and Yuguang Shi proved a variant of Schoen’s conjecture using the Ricci flow, in the context of conformally compact Einstein manifolds, with the notion of “relative volume”.

Building upon their methodology, we can establish a related volume comparison result for symmetric spaces of noncompact type of rank 1. In this talk, I will outline the key ideas and sketch the proof of this variant of Schoen’s conjecture in that setting.

- (5) 沈伟明 (首都师范大学)

Title: The Monge-Ampere equation in convex polytope

Abstract: I will talk about the existence and regularity of solutions for the Monge-Ampere equation in convex polytope. This is based on joint works with Genggeng Huang.

(6) 宋翀 (厦门大学)

Title: Yang-Mills-Higgs-Schrödinger flow

Abstract: In this talk, we will introduce the Yang-Mills-Higgs-Schrödinger (YMHS) flow, which is the infinite dimensional Hamiltonian flow of the Yang-Mills-Higgs functional defined on a holomorphic fiber bundle. It originates from the Schrödinger-Chern-Simons system and naturally extends the Schrödinger map flow introduced by Ding-Wang to a gauged setting. We will discuss its geometric structures and also local well-posedness. This is a joint work with Bo Chen.

(7) 孙俊 (武汉大学)

Title: On pseudoharmonic functions and pseudoharmonic maps from pseudohermitian manifold

Abstract: In this talk, we will introduce some geometric and analytic properties for pseudoharmonic functions and pseudoharmonic maps from pseudohermitian manifold. More precisely, we will first talk about gradient estimate for positive pseudoharmonic functions using Moser iteration. Then we will study the small energy regularity and compactness theorem for pseudoharmonic maps. Finally, we will provide rigidity results for bi-pseudoharmonic maps from pseudohermitian manifold. This talk is based on the joint work with Dr. Shitong Niu.

(8) 王邵东 (南京理工大学)

Title: Compactness for the Yamabe problem on manifolds with boundary

Abstract: In this talk, I will present some recent progress on the Yamabe problem on Riemannian manifolds with boundary. Working in the case where the manifold is of positive Yamabe type, we obtain several compactness results where the prescribed scalar curvatures of the conformal metrics are zero, positive and negative respectively. This is based on joint works with Sergio Almaraz and Olivaine Queiroz.

(9) 许小卫 (中国科学技术大学)

Title: On the area-minimizing and f-minimizing cones

Abstract: In this talk we introduce the area-minimizing and f-minimizing cones. We give the proofs of the area-minimizing of Pfaffian varieties and the f-minimizing of determinantal varieties and Pfaffian varieties, by using the method of directed slicing.