

南大-上海交大几何分析研讨会

2026 年 5 月 29 日-6 月 1 日

会议手册

住宿与交通

住宿酒店：南京市中山路 251 号，新纪元大酒店



交通：

- 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。

会议报告日程

报告地点：南京大学 鼓楼校区 数学学院 蒙民伟楼 1105 室

报告日程：

时间	报告人	题目
5 月 30 日		
9:00-9:50	Xiaodong Wang	Problems and results on a nonlinear elliptic PDE on Riemannian manifolds
10:00-10:50	于浩斌	Singularity removal rigidity theorem for minimal hypersurfaces with isolated singularities in manifolds of nonnegative scalar curvature
10:50-11:20	茶歇	
11:20-12:10	尤江城	Curvature at Infinity of Scalar-Flat ALE Four-Manifolds
12:10-14:00	午餐	
14:00-14:50	李超	Some results related to extremal Kähler submanifolds of complex projective spaces
15:00-15:50	张雅山	Green’s function estimates in Kähler geometry
15:50-16:20	茶歇	
16:20-17:10	干家雪	Strong Green function rigidity of Paneitz operator for $n \neq 4k + 2$
18:00	晚餐	
5 月 31 日		
9:00-9:50	李凤江	Gradient Shrinking Ricci Solitons with Constant Scalar Curvature
10:00-10:50	王志鑫	Scalar Curvature Compactness for Warped Products on $S^2 \times S^1$ with Varying Base Metrics
10:50-11:20	茶歇	
11:20-12:10	赵宇航	The first eigenvalue of embedded minimal hypersurfaces in the unit sphere
12:10-14:00	午餐	
14:00-18:00	自由讨论	

报告题目与摘要

5 月 30 日上午

Xiaodong Wang (Michigan State University)

报告题目: Problems and results on a nonlinear elliptic PDE on Riemannian manifolds

摘要: The nonlinear elliptic PDE in question is closely related to the Yamabe problem. I will discuss uniqueness results and problems in various settings and their geometric applications.

于浩斌 (杭州师范大学)

报告题目: Singularity removal rigidity theorem for minimal hypersurfaces with isolated singularities in manifolds of nonnegative scalar curvature

摘要: In this talk we will present the “Singularity removal rigidity theorem” for minimal hypersurfaces with isolated singularities in manifolds of nonnegative scalar curvature. In particular, we observe a new phenomenon that the extremal scalar curvature condition forces smoothness, which reveals a kind of positive effect of minimal hypersurface singularities in scalar curvature geometry. As an application, we obtain a direct proof of the positive mass theorem (PMT) for asymptotically flat 8-manifolds with arbitrary ends without using N. Smale's generic regularity theorem. A key ingredient is a new spectral version of PMT for AF manifolds with arbitrary ends, whose proof relies on PMT for asymptotically locally flat (ALF) manifolds with S^1 -symmetry. This talk is based on joint work with Shihang He and Prof. Yuguang Shi.

尤江城 (中国科学技术大学)

报告题目: Curvature at Infinity of Scalar-Flat ALE Four-Manifolds

摘要: I will discuss the asymptotic geometry of scalar-flat ALE four-manifolds. Under natural curvature assumptions, we construct preferred coordinates near infinity and identify the leading $|x|^{-2}$ term of the metric. This term splits into an ADM-mass part and a Weyl-type part, giving a Weyl tensor at infinity. I will also explain an application to scalar-flat Kähler ALE surfaces, where this tensor detects the crepant case for minimal quotient resolutions.

5 月 30 日下午

李超（南京理工大学）

报告题目：Some results related to extremal Kähler submanifolds of complex projective spaces

摘要：Extremal Kähler metrics were introduced as a type of canonical metrics by Calabi to seek generalizations of the Uniformization Theorem for closed Riemannian surfaces. It is interesting to know whether we can completely classify extremal Kähler submanifolds of complex projective spaces. In this talk, I will introduce some related results, including the extensibility of non-closed extremal Kähler submanifolds and the non-existence of any Ricci-flat Kähler submanifolds. These works are jointed with Prof. Claudio Arezzo and Andrea Loi.

张雅山（湖南大学）

报告题目：Green's function estimates in Kähler geometry

摘要：In Riemannian geometry, there are fundamental uniform geometric estimates on diameter, volume growth, Green function etc. under certain curvature conditions (e.g. Ricci curvature lower bound). Recent remarkable progresses in Kähler geometry established for compact Kähler manifolds a variety of geometric estimates depending on certain entropy bound but not on any curvature bound, in which a key ingredient is a uniform integral estimate for Green's function. This talk will introduce these developments, as well as our recent joint work with Weiqi Zhang in this direction, focusing on an improved (nearly optimal) integral estimate for Green's function and its geometric applications. These results can be applied to the study of the Kähler-Ricci flow on compact Kähler manifolds.

干家雪（南京大学）

报告题目：Strong Green function rigidity of Paneitz operator for $n \neq 4k + 2$

摘要：This work proves X. Chen and Y. Shi's Green function rigidity conjecture (GFRC) for the Paneitz operator P_4^g on closed embedded hypersurfaces in $\mathbb{R}^{n+1}$ when $n \neq 4k + 2$. For an umbilical point Q in M , we consider the conformally transformed metric $\hat{g} = \rho^{-2}g$ with $\rho = | \cdot - Q |^2$. By analyzing the asymptotic expansion of the hypersurface near Q under inversion, we establish the integrability of the Q -curvature and determine the asymptotic flatness order of $(\hat{M}, \hat{g})$ in terms of the dimension n . Using the fourth-order positive energy theorem due to Avalos–Laurain–Lira, we prove that the fourth-order energy $m_4(\hat{g})$ vanishes for all dimensions except $n = 4k + 2 (k \geq 2)$.

5 月 31 日上午

李凤江(重庆理工大学)

报告题目: Gradient Shrinking Ricci Solitons with Constant Scalar Curvature

摘要: Let (M^n, g, f) be a complete noncompact gradient shrinking Ricci soliton with $Ric + \nabla^2 f = \lambda g$ for some positive constant λ . In this talk, we focus on gradient shrinking Ricci solitons with constant scalar curvature. Fernández-López and García-Río (2016) showed $R \in 0, 2\lambda, \dots, n\lambda$: if $R = (n-1)\lambda$ then $M \cong \mathbb{N}^{n-1} \times \mathbb{R}$ ($\mathbb{N}^{n-1}$ Einstein). If $R = 0$ then $M \cong \mathbb{R}^n$; if $R = n\lambda$ then M is Einstein (Petersen-Wylie, 2009). For $n = 4$, Cheng and Zhou (2025) proved $M \cong \mathbb{R}^2 \times S^2$ if $R = 2\lambda$. We prove the following: for $n = 5$, if $R = 3\lambda$ then $M \cong \mathbb{R}^2 \times S^3$; if $R = 2\lambda$ with bounded curvature, $M \cong \mathbb{R}^3 \times S^2$. In higher dimensions, we prove that if $R = (n-2)\lambda$ under certain curvature conditions, $M \cong \mathbb{R}^2 \times S^{n-2}$.

王志鑫(上海交通大学)

报告题目: Scalar Curvature Compactness for Warped Products on $S^2 \times S^1$ with Varying Base Metrics

摘要: We study the Gromov--Sormani scalar curvature compactness problem for warped product metrics on $S^2 \times S^1$ with varying bases. Assuming nonnegative scalar curvature, a uniform volume upper bound, and a positive lower bound for the areas of closed minimal surfaces, we prove a uniform diameter bound for the base surfaces (S^2, h_i) . This key estimate yields compactness of the base warping functions u_i and local and global estimates for the fiber warping functions φ_i . After passing to a subsequence, the metrics converge in L^p , for every finite p , to a limit metric g_∞ on the regular region. We also obtain Gromov-Hausdorff and Sormani-Wenger intrinsic flat subconvergence, and prove that g_∞ has nonnegative scalar curvature in the distributional sense of Lee-LeFloch. Thus the Gromov-Sormani scalar curvature compactness conjecture is verified for this warped product class. Finally, we construct a $C^{1,\alpha}$ example illustrating that volume-limit tests of nonnegative scalar curvature based on exponential images of fixed tangent space regions are not robust in low regularity.

赵宇航(南京大学)

报告题目: The first eigenvalue of embedded minimal hypersurfaces in the unit sphere

摘要: We establish a lower bound estimate for the first eigenvalue of the Laplacian on closed embedded minimal hypersurfaces in spheres, improving Choi-Wang's result in 1983. As a corollary, when the norm of the second fundamental form is constant, we obtain a lower bound for the first eigenvalue that depends only on the dimension of the hypersurface. Furthermore, combining the proof of this theorem with the lower bound for the first eigenvalue of the Dirichlet-to-Neumann map, we obtain a uniform lower bound for the scalar curvature of such hypersurfaces.