

2026 南京几何分析论坛

2026 年 3 月 28-29 日

南京大学数学学院&现代数学研究所

地点：鼓楼校区数学学院西大楼 108 室

会议日程：

时间	报告人	题目
3 月 28 日		
9:00-9:10	开幕式	
9:10-10:00	杨建平	Q and Q'
10:05-10:55	马世光	On potentials for sub-Laplacians and geometric applications
11:00-11:20	自由讨论	
11:20-12:10	孙黎明	Prescribed T -curvature flow on the four-dimensional unit ball
12:20-14:30	午餐（南芳苑餐厅）	
14:30-15:20	朱苗苗	Geometric analysis aspects for some fourth order PDEs
15:25-16:15	李刚	A normalized Ricci flow on surfaces with boundary
16:20-16:40	自由讨论	
16:40-17:30	来米加	Strong Green function rigidity in dimension two
18:00	晚餐（南芳苑餐厅）	
3 月 29 日		
9:00-9:50	袁伟	Q -曲率的形变及其几何应用
9:55-10:45	朱锦天	Recent Progress on Mass Inequalities for Asymptotically Flat Manifolds with Arbitrary Ends
10:50-11:10	自由讨论	
11:10-12:00	张世红	Poisson kernels and Green functions for conformal boundary operators and their applications
12:10-14:00	午餐（南芳苑餐厅）	
14:00-14:50	韦韡	A Yamabe problem for the quotient between the Q -curvature and the scalar curvature
14:55-15:45	李明翔	Cohn-Vossen and Bonnet-Myers meet Q -Curvature
18:00	晚餐（南芳苑餐厅）	

会议住宿与交通

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。
- **高铁抵达：**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。

题目和摘要

来米加 上海交通大学

题目: Strong Green function rigidity in dimension two

摘要: X. Chen and Y. Shi investigated Green's function on round spheres for various conformally invariant operators, including the conformal Laplacian and the Paneitz operator. In these settings, the Green's function admits a neat expression in terms of the ambient Euclidean distance. They then conjectured that the converse holds even if such an expression is assumed only at a single point. Chen-Shi and Chen-Gan-Shi have verified their conjecture for the conformal Laplacian in dimensions $n \geq 3$. In this talk, I will present a positive answer to Chen-Shi's conjecture for the Laplace operator in dimension $n = 2$. More precisely, let $M \subset \mathbb{R}^3$ be a closed C^2 embedded surface and suppose that there exists a point $p \in M$ such that the Green's function of the Laplacian satisfies

$$G(p, q) = -\frac{1}{2\pi} \ln d_{\mathbb{R}^3}(p, q),$$

then M must be a round sphere. This is a joint work with Chilin Zhang.

李刚 山东大学

题目: A normalized Ricci flow on surfaces with boundary

摘要: On a compact surface with boundary, we consider the a normalized Ricci flow, with prescribed geodesic curvature on the boundary. We show that for a large class of initial data, when geodesic curvature on the boundary is larger than $1 + \epsilon$ for some $\epsilon > 0$, the solution converges locally uniformly to the complete hyperbolic metric in the interior of the surface.

李明翔 香港中文大学

题目: Cohn-Vossen and Bonnet-Myers meet Q -Curvature

摘要: In this talk, we revisit the Cohn-Vossen inequality and the Bonnet-Myers theorem from the perspective of Q -curvature. In addition, we explore various relations connecting scalar curvature, Ricci curvature, and Q -curvature. In particular, we obtain growth control of lower order Q -curvature over geodesic balls and some gap theorems on conformally flat manifolds. Some works are joint with Juncheng Wei and Xingwang Xu.

马世光 南开大学

题目: On potentials for sub-Laplacians and geometric applications

摘要: Recently, Professor Jie Qing and I extend the research on potential theory from Euclidean spaces to homogeneous Carnot groups. And we are able to apply the potential theory to CR, quaternionic CR, octonionic CR geometry.

孙黎明 中科院数学研究所

题目: Prescribed T -curvature flow on the four-dimensional unit ball

摘要: We study the prescribed T -curvature problem on the unit ball B^4 of R^4 via the T -curvature flow approach. By combining the Ache-Chang's inequality with the Morse theoretical approach of Malchiodi-Struwe, we establish existence results under strong Morse type inequalities at infinity. As a byproduct of our argument, we also prove the exponential convergence of the T -curvature flow on B^4 , starting from a Q -flat and minimal metric conformal to the standard Euclidean metric, to an extremal metric of the Ache-Chang's inequality whose explicit expression was derived by Ndiaye-Sun.

韦鞞 南京大学

题目: A Yamabe problem for the quotient between the Q -curvature and the scalar curvature

摘要: In this talk we introduce the following Yamabe problem for the quotient between the Q curvature and the scalar curvature R : Find a conformal metric g in a given conformal class $[g_0]$ with $Q_g/R_g = \text{const}$. We begin with the Sobolev inequality for σ_2 -curvatures and the scalar curvature, and prove a new Sobolev inequality between the total Q -curvature and the total scalar curvature for any g in the conformal class of the round metric with positive scalar curvature, with equality if and only if g is also a metric with constant sectional curvature. With this inequality we introduce a new Yamabe constant $Y_{4,2}(M, [g_0])$ and prove the existence of the above problem provided that $Y_{4,2}(M, [g_0]) < Y_{4,2}(S^n, [g_{S^n}])$. This strict inequality is proved if (M, g) is not conformally equivalent to the round sphere. This follows from a crucial relation between $Y_{4,2}$ and the ordinary Yamabe constant $Y(M, [g_0])$, which is proved in this paper, and the resolution of the ordinary Yamabe problem. Finally, we prove that on a closed n -dimensional Riemannian manifold (M, g_0) with semi-positive Q -curvature and non-negative scalar curvature, the above Yamabe problem is solvable, thanks to the maximum principle of Gursky-Malchiodi, when $n \geq 5$. The proof for $n = 3$ and $n = 4$ follows closely the methods developed by Hang-Yang, Gursky-Malchiodi, and Chang-Yang. This is a joint work with Y.X. Ge and G.F. Wang

杨建平 普林斯顿大学

题目: Q and Q'

摘要:

袁伟 中山大学

题目: Q -曲率的形变及其几何应用

摘要: Q -曲率是数量曲率的4阶推广,是共形几何中重要的研究对象之一。传统的 Q -曲率的研究主要集中于其共形几何性质上,而作为黎曼几何对象的相关研究却相对较少。本报告主要利用曲率形变的工具,探讨 Q -曲率的黎曼几何性质,诸如环面刚性、体积比较定理等结果以及相关的一些公开问题。

朱锦天 西湖大学

题目: Recent Progress on Mass Inequalities for Asymptotically Flat Manifolds with Arbitrary Ends

摘要: In this talk, I will survey the current state of research on mass inequalities for asymptotically flat manifolds with arbitrary ends. I will also present my recent work on the mass-capacity inequality and the positive mass theorem, which is joint with Yuchen Bi, Tianze Hao, Shihang He, and Yuguang Shi.

朱苗苗 上海交通大学

题目: Geometric analysis aspects for some fourth order PDEs

摘要: In this talk, we shall present some recent progress on the geometric analysis aspects of the solution spaces of some fourth order PDEs: biharmonic maps from non-collapsed Einstein manifolds and biharmonic functions (and bi-Schrödinger equations) over complete noncompact manifolds.

张世红 清华大学

题目: Poisson kernels and Green functions for conformal boundary operators and their applications

摘要: In the half-space, we study the Poisson kernel and Green function for m -Laplace equation with conformal boundary conditions. We present explicit formulas of these Poisson kernels and Green functions. As two applications, we establish a class of maximum principles for m -Laplace boundary value problems and classify positive smooth solutions to the Q -flat and constant T -curvature equation in the half space. This is a joint work with Professors Xuezhang Chen and Qiaohua Yang