非线性椭圆方程及应用-青年论坛
会议手册

时间：2022 年 3 月 26 日（星期六）下午 1:30-5:25

2022 年 3 月 27 日（星期日）上午 9:00-12:10

地点：腾讯会议在线

腾讯会议 ID: 988 277 217

主办单位：复旦大学

会议组织者: 华波波，王志张，黄耿耿

报告人：

周　斌　北京大学

杨　文　中国科学院精密测量科学与技术创新研究院

韦　韡　南京大学

陈世炳　中国科学技术大学

李奇睿　浙江大学

唐　岚　华中师范大学

熊昌伟　四川大学

陈志杰　清华大学

沈伟明　首都师范大学

时间安排表

	3 月 26 日(周六)	报告人	主持人
Session 1	下午 1:30-2:10	周斌	陈传强
	2:15-2:55	杨文	
	3:00-3:40	韦鞻	
Session 2	下午 4:00-4:40	陈世炳	鲁建
	4:45-5:25	李奇睿	

	3 月 27 日(周日)	报告人	主持人
Session 3	上午 9:00-9:40	唐岚	王志张
	9:45-10:25	熊昌伟	
Session 4	上午 10:45-11:25	陈志杰	华波波
	11:30-12:10	沈伟明	

报告题目：Interior estimates for Monge–Ampère type fourth order equations

报告人：周斌

报告摘要：In this talk, we give several new approaches to study the interior estimates for a class of fourth order equations of Monge–Ampère type. First, we prove the interior estimates for the homogeneous equation in dimension two by using the partial Legendre transform. As an application, we obtain a new proof of the Bernstein theorem without using Caffarelli- Gutiérrez's estimate, including the Chern conjecture on the affine maximal surfaces. For the inhomogeneous equation, we also obtain a new proof in dimension two by an integral method relying on the Monge–Ampère Sobolev inequality. This proof works even when the right hand side is singular. In higher dimensions, we obtain the interior regularity in terms of the integral bounds on the second derivatives and the inverse of the determinant.

报告题目：From KP-I Lump solution to travelling waves of Gross-Pitaevskii equation

报告人：杨文

报告摘要：Using classical lump solution of the KP-I(Kadomtsev-Petviashvili-I) equation, we construct a family of travelling wave type solutions to the GP(Gross-Pitaevskii) equation in the transonic regime. One of the main ingredients in our proof is detailed analysis of the Green function associated to a family of fourth order hypoelliptic operators. This a joint work with Yong Liu, Zheng-ping Wang, Jun-cheng Wei.

报告题目：A Liouville's Theorem for some Monge-Ampère type equations

报告人：韦韡

报告摘要：In this paper we study a Monge-Ampère type equation that interpolates the classical 2-Yamabe equation in conformal geometry and the 2-Hessian equation in dimension 4.

报告题目：Uniqueness of solutions to the Log-Minkowski problem in R^3

报告人：陈世炳

报告摘要：Uniqueness of solutions to the Log-Minkowski problem is a very subtle problem and it is related to the well-known Log-Brunn Minkowski conjecture. In dimension 2, there exists some positive smooth density such that the uniqueness fails, hence it is natural to investigate this problem under some extra conditions. In this talk I will discuss our work on the uniqueness of the Log-Minkowski problem in R^3 when the density is C^α}-close to a positive constant.

报告题目：On the Lp-Minkowski problem with super-critical exponents

报告人：李奇睿

报告摘要：The Lp-Minkowski problem deals with the existence of closed convex hypersurface with prescribed p-area measure. The problem has been solved in the sub-critical case $p>-n-1$, but remains widely open in the super-critical case $p<-n-1$. In this talk, we introduce new ideas to solve the problem for all super-critical exponents. A crucial ingredient in the proof is a topological method based on the calculation of the homology of a topological space of ellipsoids. The talk is based on recent joint work with Qiang Guang and Xu-Jia Wang.

报告题目：Boundary Regularity for generalized solutions to the Monge–Ampère equations

报告人：唐岚

报告摘要：We consider global $C^{1, \alpha}$ regularity for generalized solutions to the Dirichlet problem of the degenerate Monge–Ampère equations.

报告题目：Sharp bounds for the anisotropic p-capacity of Euclidean compact sets

报告人：熊昌伟

报告摘要：The capacity problem is an important topic in the potential theory, the mathematical physics, the partial differential equations, the convex geometry and other fields. In this talk we will present several sharp bounds for the anisotropic p-capacity of compact sets in the Euclidean space under various conditions. This is a joint work with Ruixuan Li (Tsinghua University).

报告题目：Asymptotic behavior of positive solutions to the Lane-Emden system

报告人：陈志杰

报告摘要：In this talk, I will introduce our recent work joint with Dr. Haowang Li and Prof. Wenming Zou about the asymptotic behavior of positive solutions to the Lane-Emden system.

报告题目：The Loewner-Nirenberg problem in singular domains and cones

报告人：沈伟明

报告摘要：First, we will talk about asymptotic behaviors of solutions of the Loewner-Nirenberg problem in singular domains and prove that the solutions are well approximated by the corresponding solutions in tangent cones at singular points on the boundary. Then we talk about asymptotic behaviors of solutions to the Loewner-Nirenberg problem in finite cones and establish optimal asymptotic expansions in terms of the corresponding solutions in infinite cones. The spherical domains over which cones are formed are allowed to have singularities. This talk is

based on joint works with Professor Qing Han, and with Professor Qing Han, Xumin Jiang.