非线性椭圆方程线上研讨会 A

时间： 2020 年 12 月 15 日（星期二）

上午 9:00-11:20,下午 2:00-4:20

腾讯会议 ID： 447 144 288

主办单位： 复旦大学

会议组织者： 华波波，黄耿耿，王志张

报告人：

向　妮　湖北大学

敖微微　武汉大学

杨　文　中国科学院精密测量科学与技术创新研究院

徐　露　湖南大学

刘海蓉　南京林业大学

孙玉华　南开大学

	12 月 15 日(周二)
上午 9:00-9:40	向妮
9:50-10:30	敖微微
10:40-11:20	杨文
下午 2:00-2:40	徐露
2:50-3:30	刘海蓉
3:40-4:20	孙玉华

报告题目：Pogorelov type estimates for a class of Hessian quotient equations

报告人：向妮

报告摘要：

In this talk, we introduce Pogorelov type estimates for a class of Hessian quotient equations which naturally appear in complex geometry, conformal geometry and differential geometry.

报告题目：ODE method in nonlocal equations

报告人：敖微微

报告摘要：

Non-local equations cannot be treated using classical ODE theorems. Several new methods have been introduced in the non-local gluing scheme. Here we will survey these results. First, from the explicit symbol of the conformal fractional Laplacian, a variation of constants formula is obtained for fractional Hardy operators. We thus develop, in addition to a suitable extension in the spirit of Caffarelli-Silvestre, an equivalent formulation as an infinite system of second order constant coefficient ODEs. Classical ODE quantities like the Hamiltonian and Wronskian may

then be utilized. As applications, we obtain a Frobenius theorem and establish new Pohozaev identities and apply this method to obtain some uniqueness and non-degeneracy of radial solutions to some nonlocal equations.

报告题目：A priori estimate for the critical parameters of SU(3) Toda system with arbitrary singularities and related existence result

报告人：杨文

报告摘要：

To obtain the a-priori estimate of Toda system, the crucial step is to determine all the possible local masses of blow up solutions. In this talk we study this problem and improve the previous results. Our method is based on a recent work by Eremenko-Gabrielov-Tarasov. This work is joint with Prof. C.S.Lin.

报告题目：常秩定理及其应用

报告人：徐露

报告摘要：

常秩定理描述的是方程解的 Hessian 矩阵在半正定条件下秩保持不变，这是一种微观处理函数凸性的技巧，结合连续性方法（又称形变引理）能得到解的严格凸性。利用这种严格凸性以及算子的某种凸性结构条件，我们证明了一类泛函的 Brunn-Minkowski 不等式并得到等号成立的条件。

报告题目：Critical points of solutions to a class of degenerate elliptic equations

报告人：刘海蓉

报告摘要：

In this talk, we will discuss the critical points and the level sets of solutions of a class of degenerate elliptic equations----Grushin equation in the plane. After exactly establishing descriptions about the critical points of the homogeneous Gruhin-harmonic polynomials and investigating the local geometric properties of the level sets near these critical points, we obtain that the critical points of solutions of Grushin equation are isolated and each

critical point has finite multiplicity.

报告题目：Superlinear elliptic inequalities on manifolds

报告人：孙玉华

报告摘要：

Let M be a complete non-compact Riemannian manifold and let σ be a Radon measure on M. We study the problem of existence or non-existence of positive solutions to a semilinear elliptic inequality

$$-\Delta u \geq \sigma u^q \quad \text{in } M,$$

where $q > 1$. We obtain necessary and sufficient criteria for existence of positive solutions in terms of Green function of Δ. In particular, explicit necessary and sufficient conditions are given when M has nonnegative Ricci curvature everywhere in M, or more generally when Green's function satisfies the 3G-inequality.