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上海交通大學 数学科学学院
SHANGHAI JIAO TONG UNIVERSITY SCHOOL OF MATHEMATICAL SCIENCES

上海偏微分方程及其应用学术研讨会

华东师范大学数学科学学院

中国 • 上海

2022 年 12 月 10 日 — 12 月 11 日

上海偏微分方程及其应用学术研讨会

会议通知

华东师范大学-上海交通大学-复旦大学三校将于 2022 年 12 月 9-11 日联合举办“上海偏微分方程及其应用学术研讨会”。本次会议拟邀请偏微分方程、几何分析领域优秀学者进行学术交流，探讨学术前沿问题，促进学术交流与合作。学术会议的主题涉及几何分析、非线性偏微分方程等相关领域。

会议特邀报告人：

曹欣茹(东华大学)　冯媛媛(华东师范大学)　华波波(复旦大学)
姬超(华东理工大学)　刘钢（华东师范大学)　王芳(上海交通大学)
王志张(复旦大学)　项杏飞(同济大学)　熊革(同济大学)
杨辉(香港科技大学-上海交通大学)　姚锋平(上海大学)

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会议日程

12 月 10 日

主持人	时间	报告信息
叶东	08:50—09:00	开幕式
	09:00—09:45	Quantitative analysis on complete Kahler manifolds with nonnegative bisectional curvature 刘钢 （华东师范大学）
茶歇		
周春琴	10:05—10:50	The geometric flow in Minkowski space 王志张 （复旦大学）
	10:55—11:40	Some comparison theorems for fractional GJMS operators 王芳 （上海交通大学）
午　　餐		
周风	14:00—14:45	The Orlicz Minkowski problem for the electrostatic capacity 熊革 （同济大学）
	14:50—15:35	Some results on semilinear equations on graphs 华波波 （复旦大学）
茶　　歇		
谢春景	15:55—16:40	Regularity estimates for weak solutions of some quasilinear elliptic and parabolic equations 姚锋平 （上海大学）
	16:45—17:30	Some results on normalized solutions for the Schrödinger equations 姬超 （华东理工大学）
晚餐		

12 月 11 日

主持人	时间	报告信息
赵纯奕	08:40—09:25	On the shape of Meissner solutions to the 2-dimensional Ginzburg-Landau system 项杏飞 （同济大学）
	09:30—10:15	Local estimates for conformal Q-curvature equations 杨辉 （香港科技大学-上海交通大学）
茶　　歇		
王丽萍	10:35—11:20	Critical mass in a quasilinear parabolic-elliptic Keller-Segel model 曹欣茹 （东华大学）
	11:25—12:10	The dissipation enhancing flows and the applications 冯媛媛 （华东师范大学）
午　　餐		

报告摘要（报告人字母序）

Critical mass in a quasilinear parabolic-elliptic Keller-Segel model

曹欣茹　　东华大学

A quasilinear parabolic-elliptic Keller-Segel model with critical exponent will be discussed in the talk. We show that if the total mass is small, the solution is bounded; if total mass is large, we can construct blowup solutions.

The dissipation enhancing flows and the applications

冯媛媛　　华东师范大学

In this talk, we would study how stirring would help dissipate the energy and the applications to the nonlinear models. We would first introduce the dissipation enhancing flows and study the dissipation time of such flows, where the dissipation time is the time required for the system to dissipate a constant fraction of its initial energy. We study the dissipation time of mixing flows, shear flows and "planar helical flows". Then we will apply these flows to the passive flame propagation (Kuramoto-Sivashinsky) models in 2d or 3d to obtain global existence of the solution.

Some results on semilinear equations on graphs

华波波　　复旦大学

The lattice graph Z^n is a discrete analog of the Euclidean space $\mathbb{R}^n$. We discuss some elementary results on the existence of solutions to Yamabe type semilinear equations on the lattice graph. This is based on joint works with Ruowei Li, and with Hichem Hajaiej-Fengwen Han.

Some results on normalized solutions for the Schrödinger equations

姬超　　华东理工大学

In this talk, we will introduce some recent results on normalized solutions for the Schrödinger equations. On one hand, we show existence of normalized solutions for the Schrödinger equations with L^2-subcritical growth and different types of potentials. On the other hand, existence and multiplicity of normalized solutions for a Schrödinger equation with critical growth in $\mathbb{R}^N$ will be given. These are joint works with C.O. Alves and O.H. Miyagaki from Brazil.

Quantitative analysis on complete Kahler manifolds with nonnegative bisectional curvature

刘钢　　华东师范大学

We study quantitative analysis on complete Kahler manifolds with nonnegative bisectional curvature. As a result, we answer a question of Ni on the average of scalar curvature on such manifolds.

Some comparison theorems for fractional GJMS operators

王芳　　上海交通大学

In this talk, I will first introduce an inequality for the Yamabe constants of order 1 and of order 2. By characterizing the equality case, this leads to a rigidity theorem for the conformally compact Einstein manifold. Then I will introduce recent work on the inequalities for the fractional Q-curvatures of different orders, as well as some interesting applications of these inequalities.

The geometric flow in Minkowski space

王志张　　复旦大学

In this talk, we study fully nonlinear curvature flows of noncompact spacelike hypersurfaces in Minkowski space. We prove that if the initial hypersurface is strictly convex and satisfies certain conditions, then the flow exists for all time. Moreover, we show that after rescaling the flow converges to a self-expander. We also will study the existence of self-expander with prescribed asymptotic behavior.

On the shape of Meissner solutions to the 2-dimensional Ginzburg-Landau system

项杏飞　　同济大学

In this talk, we will consider the location of the nucleation of instability of the Meissner state for 2-dimensional superconductors when the applied magnetic field is increased in the transition between the Meissner state and the vortex state. For superconductors with small penetration depth and with any Ginzburg-Landau parameter, we prove that the instability occur near the maximum points of curvature of the domain boundary. We also show that the solutions decay exponentially in the normal direction away from the boundary. This is a joint work with professor Xingbin Pan at CUHK-Shenzhen.

The Orlicz Minkowski problem for the electrostatic capacity

熊革　同济大学

The Minkowski problem is a characterization problem for a geometric measure generated by convex bodies: It asks for necessary and sufficient conditions in order that a given measure arises as the measure generated by a convex body. The study of Minkowski problems has a long history and strong influence on both the Brunn-Minkowski theory and fully nonlinear partial differential equations. In this talk, I will present our recent results on the Minkowski problem for the electrostatic capacity: the discrete logarithmic Minkowski problem and the Orlicz Minkowski problem. This talk is based on joint works with Jiawei Xiong.

Local estimates for conformal Q-curvature equations

杨辉　香港科技大学-上海交通大学

In this talk, we study local behavior of positive solutions to the higher order Q-curvature equations with a singular set. For the conformally invariant case, we establish a local estimate and the asymptotic symmetry of solutions supposing the singular set is a smooth k-dimensional closed manifold with $k \leq \frac{n-2m}{2}$. For the general Q-curvature equations, we also derive local estimates of singular solutions under certain flatness conditions at critical points of Q-curvature.

Regularity estimates for weak solutions of some quasilinear elliptic and parabolic equations

姚锋平　上海大学

In this talk, we shall report some recent results on regularity estimates in Sobolev spaces and Besov spaces for weak solutions of some quasilinear elliptic and parabolic equations, including p-Laplace and more general quasilinear equations. This talk is based on joint works with R. Ma and S. Zhou.