

2022 离散几何分析会议 Day 2

时间: 2022 年 11 月 20 日 (星期日)

上午 8:30-12:00, 下午 2:00-4:45

地点: 腾讯会议在线

会议 ID: 196 731 618

主办单位: 清华大学, 中国科学技术大学, 南京信息工程大学, 复旦大学

主办人: 林勇 (清华大学); 刘世平 (中国科学技术大学); 黄学平 (南京信息工程大学); 华波波 (复旦大学)

	11 月 20 日	主持人
上午 8:30-9:15	叶东	王俊
9:25-10:10	赵亮	
10:20-11:05	刘双	白淑亮
11:15-12:00	彭攀	
下午 2:00-2:45	侯松波	王林峰
2:55-3:40	胡二彦	
4:00-4:45	林伟扬	林勇

报告题目：On sharp discrete Hardy-Rellich inequalities

报告人：叶东

报告人所在单位：华东师范大学

报告摘要：Although the history of Hardy inequalities found its origin somehow in the discrete setting, the discrete Hardy-Rellich inequalities are much less understood comparing to the continuous situation. We will show discrete Hardy-Rellich inequalities on \mathbb{N} with $\Delta^{\frac{\ell}{2}}$ and optimal constants, for any $\ell \geq 1$. As far as we are aware, these sharp inequalities are new for $\ell \geq 3$. Our approach is to establish some sharp first order Hardy inequalities using weighted equality, and then to handle the higher order cases by iteration. We provide also a first order Leray type inequality on \mathbb{N} with the same constant as the continuous setting. The main idea to get weighted equalities works also for general graphs. This is a joint work with Xia Huang at ECNU.

报告题目：Nonlinear Schrödinger equations and systems on graphs

报告人：赵亮

报告人所在单位：北京师范大学

报告摘要：We focus on several nonlinear Schrödinger type equations or systems on locally finite graphs. After some preliminaries and basic settings for calculus of variation on graphs, we propose several results about the existence and convergence of solutions for these equations or coupled systems. In addition, we also provide several numerical experiments to illustrate these results. The works are in cooperation with Zhang N., Han X.L., Shao M.Q. and Xu J.Y.

报告题目： Multiple solutions of Kazdan–Warner equation on graphs in the negative case

报告人： 刘双

报告人所在单位： 中国人民大学

报告摘要： The Kazdan–Warner equation arises from the basic geometric problem on prescribing Gaussian curvature of Riemann surface, which was proposed on graphs by Grigor’yan et al. in 2016. In this talk, we consider the Kazdan–Warner equation on connected finite graphs in the negative case, and give its multiple solutions by variational method. This is based on a joint work with Prof. Yunyan Yang.

报告题目： Sublinear-Time Algorithms for Graph Clustering

报告人： 彭攀

报告人所在单位： 中国科学技术大学

报告摘要： Due to the massive size of modern network data, algorithms that only read a small portion of the graph are receiving growing interest. Such algorithms are known as sublinear-time algorithms in the theoretical computer science community. In this talk, I will present a new sublinear-time algorithm for graph clustering, called local robust clustering oracle, that are tailored for analyzing the cluster structure of graphs with noisy partial information. Using conductance based definition for measuring the quality of clusters, our local clustering oracle can answer if a given vertex v is a noise or not, and answer membership queries (“which community does v belong to?”) for any vertex v that is not a noise, both in sublinear time. The oracle provides consistent answers and correctly classifies almost all vertices with respect to a set of hidden planted ground-truth clusters. I will also discuss how to generalize such clustering oracle to signed graphs.

报告题目: Existence of solutions to Chern–Simons systems on graphs

报告人: 侯松波

报告人所在单位: 中国农业大学

报告摘要: In this talk, we introduce two Chern–Simons systems on graphs. We use the upper and lower solutions method to get the existence of solutions. We also take a new method to get the asymptotic behaviors of solutions.

报告题目: Mean value inequality and generalized capacity on doubling spaces

报告人: 胡二彦

报告人所在单位: 天津大学

报告摘要: We prove a mean value inequality for subharmonic functions of a regular Dirichlet form in a doubling metric measure space, assuming that the Dirichlet form satisfies the Faber-Krahn inequality, the tail estimate of jump measure outside balls, as well as the generalized capacity condition. We also prove the equivalence between different forms of the generalized capacity condition.

报告题目: Delaunay decompositions minimizing energy of weighted toroidal graphs

报告人: 林伟扬

报告人所在单位: 卢森堡大学

报告摘要: Given a weighted toroidal graph, each realization to a Euclidean torus is associated with the Dirichlet energy. By minimizing the energy over all possible Euclidean structures and over all realizations within a fixed homotopy class, one obtains a harmonic map into an optimal Euclidean torus. We show that only with this optimal Euclidean structure, the harmonic map and the edge weights are induced from a weighted Delaunay decomposition.