2022 离散几何分析会议 Day 1

时间：2022 年 11 月 19 日（星期六）

上午 9:00-11:45，下午 2:00-4:45

地点：腾讯会议在线

会议 ID：753 437 821

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 19 日	**主持人**
上午 9:00-9:45	吴杰	华波波
9:55-10:40	葛化彬	杨云雁
11:00-11:45	Supanat Kamtue	
下午 2:00-2:45	余成杰	王作勤
2:55-3:40	韩凤文	
4:00-4:45	张栋	刘世平

报告题目：Topological Approaches to Hypergraphs and Hypernetworks

报告人：吴杰

报告人所在单位：北京雁栖湖应用数学研究院

报告摘要：In this talk, guided by the applications to higher-order interaction network and hyper-network, we will discuss some topological approaches to graphs and hypergraphs, including path homology introduced by S. T. Yau et al, and their generalizations such as hypergraph homology, which is an extension of simplicial homology. We will also report some of our recent works on the topic, including a frame work for introducing a new theory which unifies various aspects of topological approaches for data science, by being applicable both to point cloud data and to graph data, including networks beyond pairwise interactions.

报告题目：圆堆积的特征

报告人：葛化彬

报告人所在单位：中国人民大学

报告摘要：Thurston 圆堆积理论在证明三维 Haken 流形的双曲化定理中发挥重要作用。本报告中，我们将引入圆堆积的特征，建立曲面圆堆积与曲面几何之间的深刻联系。作为推论，我们将得到曲面存在几何剖分定理，以及曲面单值化定理。最后我们还将简要介绍圆堆积的高维推广，尤其是今年新晋菲尔兹奖得主 Viazovska 的 8 维、24 维球堆积定理。报告部分内容来自与国防科大林爱津教授的合作。

报告题目：Entropic Ricci curvature in view of Bochner's formula

报告人：Supanat Kamtue

报告人所在单位：清华大学丘成桐数学科学中心

报告摘要：In 2012, Erbar and Maas defined a Ricci curvature notion on finite Markov chains based on the displacement convexity of the Entropy functional. This curvature, henceforth called Entropic Ricci curvature, is a discrete analogue of the famous synthetic Ricci curvature introduced by Lott, Sturm and Villani, and it enjoys several analogous results of functional inequalities (e.g., modified logarithmic Sobolev inequality). This curvature, however, has only been computed for some Markov chains/graphs with nice structures by the reformulation of this curvature via Bochner's formula. For general Markov chains, the curvature computation is relatively unknown, and in this talk I will present my work on this topic.

报告题目：Monotonicity of Steklov eigenvalues on graphs

报告人：余成杰

报告人所在单位：汕头大学

报告摘要：In this talk, we will present our recent work on extending the monotonicity of the first Steklov eigenvalues on trees found by Zunwu He and Bobo Hua to higher Steklov eigenvalues on graphs. This actually gives a positive answer to a question proposed by He-Hua. This talk is based on a joint work with Ms. Yingtao Yu.

报告题目：Discrete Schwarz rearrangement in lattice graphs

报告人：韩凤文

报告人所在单位：河南大学

报告摘要：In this talk, we define the discrete rearrangement in Z^d, and prove a discrete version of the generalized Riesz inequality. As a consequence, we will derive the extended Hardy-Littlewood and Polya-Szego inequalities. We also discuss some applications of our findings. The talk is based on a joint work with Hichem Hajaiej and Bobo Hua.

报告题目：Spectral theory for p-Laplacians on graphs and signed graphs

报告人：张栋

报告人所在单位：北京大学

报告摘要：The spectrum of the graph p-Laplacian is closely related to many properties of the graph itself. In this talk, we will present some recent results on the eigenvalue problem for graph p-Laplacians. New nodal domain theorems for p-Laplacians on signed graphs that we showed in a most recent joint work with Chuanyuan Ge and Shiping Liu, will be discussed.