数学天空 2nd Pop-up salon

- **会议时间地点** 2019 年 6 月 27 日，东中院 4-106
- **会议日程**

时间	报告人	标题
13:30 - 14:00	高云 (Yun Gao)	曲线的相交
14:10 - 14:40	Sergei Kalmykov	Potential Theory and Polynomial Inequalities
14:50 - 15:20	戎锋 (Feng Rong)	分形与混沌—复动力系统简介
		Coffee break
15:40 - 16:10	Marc Troyanov	Invariant Valuation, Hadwiger's Theorem and Applications
16:20 - 16:50	吴耀琨 (Yaokun Wu)	Finite and Infinite (有涯与无尽)
17:00 - 17:30	Qing Xiang	Higher Incidence Matrices and Their Applications in Combinatorics
		18:00 Dinner

➢ 报告摘要

Speaker: 高云(Yun Gao) (SJTU)

Title: 曲线的相交

Abstract: 我们将从平面几何中大家最熟悉的二次曲线与线的相交，相切情况谈起，把看似不同的结果，给出统一的描述。介绍代数几何中简单的相交定理。给出江学长的五圆共点问题的一般描述。

Chair: 施奕(Yi Shi)

Speaker: Sergei Kalmykov (SJTU)

Title: Potential Theory and Polynomial Inequalities

Abstract: We will discuss some basic facts from potential theory and consider their applications in inequalities for polynomials and rational functions. We will also be interested in cases of equality especially when extremal functions can be descried in terms of conformal mappings or complete covering mappings.

Chair: 李友林(Youlin Li)

Speaker: 戎锋(Feng Rong) (SJTU)

Title: 分形与混沌—复动力系统简介

Abstract:

Chair: 王维克(Weike Wang)

Speaker: Marc Troyanov (Swiss Federal Institute of Technology)

Title: Invariant Valuation, Hadwiger's Theorem and Applications

Abstract: A polyconvex set is a finite union of convex sets in Euclidean space R^n. A valuation is a real valued function defined on the set of all polyconvex sets which satisfies a natural additive property. In this talk we will discuss Hadwiger's Theorem which characterizes all valuations that are invariant under rigid motions and continuous with respect to the natural topology on polyconvex sets. This Theorems leads to simple proofs of the main results in Integral geometry such as the Crofton or Cauchy formulas. We will also briefly discuss some applications in geometric probability and Stereology.

Chair: 李友林(Youlin Li)

Speaker: 吴耀琨(Yaokun Wu) (SJTU)

Title: Finite and Infinite (有涯与无尽)

Abstract: In the talk of Marc, he discussed those good numerical valuations which measure the size of polyconvex subsets of Euclidean spaces. I will instead discuss those valuations which indicate qualitatively the largeness of subsets of any set, namely the concept of ultrafilters. Ultrafilter was introduced by Alfred Tarski in 1937 after Henri Cartan defined filters in 1930. We will showcase some results to demonstrate how ultrafilters connect the finite real world and the infinity. These results about finite and infinite combinatorics will remind you the names of Arrow, Banach, De Bruijn, Cech, Erdos, Furstenberg, Hilbert, Hindman, Stone, Szemeredi, Tarski, Tychnoff, ...

Chair: 吴建春(Jianchun Wu)

Speaker: Qing Xiang (University of Delaware)

Title: Higher Incidence Matrices and Their Applications in Combinatorics

Abstract: Let X be a finite set and let F be a family of subsets of X. The (usual) incidence matrix of F with respect to X is a matrix whose columns are indexed by the elements of X, whose rows are indexed by the elements of F, and the (A, x) entry of the matrix is 1 if x in A, 0 otherwise, where A in F and x in X. Higher incidence

matrices are defined in a similar way except that the columns of these matrices are indexed by subsets of X of fixed size greater than one. We will discuss properties of these matrices, and show how to use these matrices to prove theorems in extremal combinatorics. The talk should be understandable by any one with basic knowledge in linear algebra.

Chair: 李吉有(Jiyou Li)