2018 新疆-上海图论与组合数学研讨会

会议手册

中国 • 乌鲁木齐

2018 年 8 月 17 日-20 日

前言

2018 新疆-上海图论与组合数学研讨会定于 2018 年 8 月 17 日至 20 日于乌鲁木齐市红山路建设大厦举行。此系列研讨会系由华东师范大学束金龙教授，新疆大学孟吉翔教授发起，旨在围绕图论与组合数学开展专题报告，交流和分享国际相关前沿热点问题、最新研究成果及理论、方法，加强新疆上海两地图论与组合数学领域专家学者的深入交流。第一届于 2017 年 6 月在上海华东理工大学举办，起了良好开端。此次研讨会由新疆大学数学与系统科学学院、新疆师范大学数学科学学院和新疆数学会联合举办。

热烈欢迎各位朋友来到乌鲁木齐!

预祝本次会议圆满成功，祝各位同仁在此期间生活愉快，身体健康!

学术委员会

孟吉翔 教授 新疆大学 束金龙 教授 华东师范大学

张晓东 教授 上海交通大学 郭继明 教授 华东理工大学

黄琼湘 教授 新疆大学 吴宝音都仍 教授 新疆大学

组织委员会

刘娟 教授 新疆师范大学 孟吉翔 教授 新疆大学

陈星 教授 新疆工程学院 李丹 博士 新疆大学

会议日程

8 月 17 日：全天报到，地点：建设大厦一楼		
8 月 18 日（建设大厦六楼会议室）		
8:30-10:00	早餐（酒店）	
10:00-10:15	开幕式：孟吉翔 教授； 束金龙 教授	
10:15-10:20	集体合影	
主持人	孟吉翔 教授	
10:30-11:00	束金龙	A survey on the A_α-spectra of graphs
11:00-11:30	黄琼湘	Infinite families of strongly regular graphs derived from $\mathrm{GL}(n, F_2)$
11:30-12:00	会议交流与休息时间	
主持人	单而芳 教授	
12:00-12:30	郭继明	Some results on the least eigenvalue of unicyclic graphs
12:30-13:00	吴宝音都仍	Domination and 2-packing of a graph
13:00-13:30	袁西英	On star complement technique in graph spectrum theory
13:30-15:30	午餐（午休）建设大厦餐厅	
主持人	艾尔肯 教授	
15:30-16:00	张晓东	Some spectral Turan-Type results of graphs
16:00-16:30	杨卫华	Labels and connectivity in colored graphs
16:30-17:00	陈星	The rainbow connection of graphs
17:00-17:30	会议交流与休息时间	
主持人	刘娟 教授	
17:30-18:00	吴河辉	Extremal problem on oriented star
18:00-18:30	田应智	On the sizes of k-maximal r-uniform hypergraphs
18:30-19:00	下届承办方简介及交流讨论	
19:00-21:00	晚餐（地点：建设大厦宾馆餐厅）	
2018 年 8 月 19 日：全天交流讨论，地点：建设大厦六楼会议室		

2018 新疆-上海图论与组合数学研讨会通讯录

序号	姓名	单位	邮箱地址
1	阿依古丽	新疆大学	aygul@xju.edu.cn
2	艾尔肯	新疆大学	vumar@xju.edu.cn
3	安心慧	新疆大学	xjaxh@163.com
4	边红	新疆师范大学	bh1218@163.com
5	陈来焕	河南财经政法大学	Chlh@huel.edu.cn
6	陈星	新疆工程学院	13699376896@163.com
7	董畅畅	新疆大学	374813014@qq.com
8	郭继明	华东理工大学	jimingguo@hotmail.com
9	郭利涛	厦门理工大学	ltguo2012@126.com
10	何常香	上海理工大学	Changxiang-he@163.com
11	侯江霞	新疆大学	jxhou@xju.edu.cn
12	胡琳	新疆大学	hhlinlin@qq.com
13	黄琼湘	新疆大学	huangqx@xju.edu.cn
14	黄雪毅	新疆大学	huangxymath@gmail.com
15	冀彦	新疆师范大学	1683730421@qq.com
16	李丹	新疆大学	ldxjedu@163.com
17	李建奎	华东理工大学	jkli@ecust.edu.cn
18	李锐	河海大学	lirui@hhu.edu.cn
19	李晓璞	新疆师范大学	137166548@qq.com
20	李中华	新疆大学	674388128@qq.com
21	梁晓东	新疆大学	liangxd1970@sina.com
22	林辉球	华东理工大学	huiqiulin@126.com
23	刘凤霞	新疆大学	xjulfx@163.com
24	刘娟	新疆师范大学	liujuan1999@126.com
25	梁晓东	新疆大学	liangxd1970@sina.com
26	鲁卢	新疆大学	lulu549588@hotmail.com
27	马红霞	新疆师范大学	598254233@qq.com

28	买吐肉孜	新疆师范大学	895282523@qq.com
29	孟吉翔	新疆大学	mjx@xju.edu.cn
30	单而芳	上海大学	efshan@i.shu.edu.cn
31	束金龙	华东师范大学	jlshu@math.ecnu.edu.cn
32	唐泉	新疆师范大学	1049024093@qq.com
33	田应智	新疆大学	tianyzhxj@163.com
34	王建锋	山东理工大学	jfwang@sdut.edu.cn
35	王娜	新疆大学	136192562@qq.com
36	王新艳	新疆师范大学	863721798@qq.com
37	吴宝音都仍	新疆大学	baoywu@163.com
38	吴河辉	复旦大学	hhwu@fudan.edu.cn
39	徐路路	新疆师范大学	1297260311@qq.com
40	许英	新疆财经大学	840082048@qq.com
41	薛杰	华东师范大学	jie_xue@126.com
42	杨洪	新疆师范大学	1070556334@qq.com
43	杨卫华	太原理工大学	ywh222@163.com
44	依明江	新疆大学	eminjan20150513@163.com
45	尤利华	华南师范大学	20041023@m.scnu.edu.cn
46	袁利利	新疆大学	yuanli0920@163.com
47	袁西英	上海大学	xiyingyuan2007@hotmail.com
48	赵飚	新疆大学	zhb_xj@163.com
49	赵爽	新疆大学	zshuangm@163.com
50	张晓东	上海交通大学	xiaodong@sjtu.edu.cn

会议报告

1、The Rainbow Connection of Graphs

陈星　新疆工程学院

A path P in an edge-colored graph (not necessarily a proper edge-coloring) is a rainbow path if no two edges of P are colored the same. For an l-connected graph G and an integer k with $1 \leq k \leq l$, the rainbow k−connectivity $rc_k(G)$ of G is the minimum integer j for which there exists a j-edge-coloring of G such that every two distinct vertices of G are connected by k internally disjoint rainbow paths. In this talk, we first enumerate some results about $rc(G)$ and $rc_k(G)$. Then, we investigate the rainbow k-connectivity of $K_2 \square K_n$ for some k, determine $rc_k(K_2 \square K_n)$ for k = 2, 3, 4, and shown that for each integer $k \geq 2$, there exists an integer n such that $rc_k(K_2 \square K_n) = 3$.

2、Infinite families of strongly regular graphs derived from $GL(n, F_2)$

黄琼湘　新疆大学

It is known that the automorphism group of the elementary abelian 2-group Z_2^n is isomorphic to the general linear group $GL(n, F_2)$ of degree n over F_2. Let W be the collection of permutation matrices of order n. It is clear that $W \leq GL(n, F_2)$, from which we define the orbit Cayley graphs $Cay(Z_2^n, S)$, where S is the union of some orbits under the action of W. In this report, we summarize some researches on strongly regular graphs and give eight infinite families of strongly regular graphs among orbit Cayley graphs over Z_2^n, in which six families are new. By the way, we formulate the spectra of orbit Cayley graphs as well.

3、Some results on the least eigenvalue of unicyclic graphs

郭继明 华东理工大学

In this paper, the graph with the minimal least eigenvalue in some classes of unicyclic graphs (of fixed order and girth) is determined.

4、 A survey on the A_α-spectra of graphs

束金龙　华东师范大学

Let G be a graph with adjacency matrix A(G) and let D(G) be the diagonal matrix of the degrees of G. For any real $\alpha \in [0,1]$, Nikiforov defined the matrix $A_\alpha(G)$ as

$$A_\alpha(G) = \alpha D(G) + (1-\alpha)A(G).$$

In this report, we talk about results on the eigenvalues of $A_\alpha(G)$ with $0 \leq \alpha < 1$.

5、On the sizes of k-maximal r-uniform hypergraphs

田应智　新疆大学

In this talk, we first determine the extremal sizes of edge-k-maximal r-uniform hypergraphs. Second, we obtain the lower bounds and the upper bounds of the sizes of edge-(k,l)-maximal hypergraphs. Third, we give the best lower bound of vertex-k-maximal r-uniform hypergraphs and a conjecture on the upper bound of vertex-k-maximal r-uniform hypergraphs. And the conjecture is verified for the case r > k.

6、Domination and 2-packing of a graph

吴宝音都仍 新疆大学

Let G be a graph. A $S \subseteq V(G)$set is a dominating set of G if each vertex $v \in V(G)\backslash S$ is adjacent to a vertex of S in G. The domination number of G, denoted by γ(G), is the cardinality of a minimum dominating set of G. We say $S \subseteq V(G)$ a 2-packing of G if $d(u, v) \geq 3$ for any two distinct vertices u, v of S. The packing number of G, denoted by ρ(G), is the cardinality of a maximum 2-packing of G. Note that for any graph G, $\rho(G) \leq \gamma(G)$. Our main concern is to seek the graphs G with ρ(G) = γ(G). 1975, Meir and Moon proved that trees are such kinds of graphs. We show that this family of graphs includes chordal graphs with diameter 2, threshold graphs, interval graphs. A graph G is called γρ-perfect if γ(H) = ρ(H) for any induced subgraph H of G. We characterize all γρ-perfect line graphs.

7、Extremal problem on oriented star

吴河辉 上海数学中心/复旦大学

Let $S_{i,j}$ be the oriented star with i arcs out from the center and j arcs into the center. An orientation of a graph is balance if the difference of the out-degree and the in-degree is at most one for each vertex. We show that when n is big enough, among all the digraphs with n vertices, a complete balanced bipartite digraph contains the maximum number of copies of $S_{2,2}$ as an induced subgraph. This is part of the supervised undergraduate thesis of Qilin Dong in Fudan University.

8、labels and connectivity in colored graphs

杨卫华 太原理工大学

In this talk, we introduce several remarks on colored graphs. Firstly, we pose a problems on labeling graphs, namely, anti-k-coloring of graphs and anti- $L_d(2,1)$ -labeling of graphs. Secondly, we introduce a note on proper connection of graphs with size restriction, and a note on a kind of proper paths in hypercubes will be mentioned.

9、On star complement technique in graph spectrum theory

袁西英 上海大学

Let μ be an eigenvalue of a simple graph G with multiplicity k ≥ 1. A star complement for μ in G is an induced subgraph of G of order n − k with no eigenvalue μ. Some known results related star complement technique will be presented in this talk.

10、Some spectral Turan-Type results of graphs

张晓东 上海交通大学

In 1941, Turan proved the famous Turan theorem, i.e., If G is a graph which does not contain K_{r+1} as its subgraph, then the edge number of G is no more than the Turan graph $T_{n,r}$, which started the extremal theory of graphs. In this talk, we will introduce the spectral Turan-Type results which are associated with the adjacency matrix, signless Laplacian matrix. Moreover, some open problems in this field are proposed.