

Figure courtesy Victor Chepoi, Hans-Juergen Bandelt, David Eppstein from SIDMA 24-4



Sponsored by the SIAM Activity Group on Discrete Mathematics

The SIAG on Discrete Mathematics focuses on combinatorics, graph theory, cryptography, discrete optimization, mathematical programming, coding theory, information theory, game theory, and theoretical computer science, including algorithms, complexity, circuit design, robotics, and parallel processing. This activity group provides an opportunity to unify pure discrete mathematics and areas of applied research such as computer science, operations research, combinatorics, and the social sciences. It organizes the SIAM Conference on Discrete Mathematics; co-sponsors, with ACM SIGACT, the annual Symposium on Discrete Algorithms; and sponsors minisymposia at SIAM meetings and conferences. The activity group also runs DM-Net, an electronic forum; publishes an electronic newsletter; and maintains a website and a member directory. Every two years, the activity group also awards the Dénes König Prize to a young researcher for outstanding research in the area of discrete mathematics.



Society for Industrial and Applied Mathematics

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Conference Themes

Discrete Mathematics, including:

Algebraic Combinatorics

Combinatorial Algorithms

Combinatorial Number Theory

Design Theory

Discrete Geometry

Enumeration

Extremal Combinatorics

Graph Theory

Matroids

Ordered Sets

Probabilistic Combinatorics

Ramsey Theory

Topological and Analytical Techniques
in Combinatorics

With connections to other disciplines, including:

Computational Biology

Combinatorial Scientific Computing

Computer Science

Game Theory

Network Theory

Optimization

Probability

Statistical Physics

Conference Location

All sessions and on-site registration will take place on the University of Colorado, Denver campus located in the Tivoli Student Union and North Classroom Building.

SIAM Registration Desk

The SIAM registration desk locations and hours are listed below:

Monday, June 4

7:00 AM – 8:30 AM

Tivoli Student Union Turnhalle (TV
250) Atrium

9:00 AM – 4:30 PM

North Classroom 1130 Entry

Tuesday, June 5

7:30 AM – 3:30 PM

North Classroom 1130 Entry

Wednesday, June 6

7:30 AM – 3:30 PM

North Classroom 1130 Entry

Thursday, June 7

7:30 AM – 3:30 PM

North Classroom 1130 Entry

Friday, June 8

7:30 AM – 10:30 AM

North Classroom 1130 Entry

Child Care

Conference attendees interested in child care services can visit www.care.com. Attendees are responsible for making their own child care arrangements.

Corporate Members and Affiliates

SIAM corporate members provide their employees with knowledge about, access to, and contacts in the applied mathematics and computational sciences community through their membership benefits. Corporate membership is more than just a bundle of tangible products and services; it is an expression of support for SIAM and its programs. SIAM is pleased to acknowledge its corporate members and sponsors. In recognition of their support, non-member attendees who are employed by the following organizations are entitled to the SIAM member registration rate.

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US Naval Research Labs

List current April 2018.

Funding Agency

SIAM and the conference organizing committee wish to extend their thanks and appreciation to the U.S. National Science Foundation for its support of this conference.



Join SIAM and save!

Leading the applied mathematics community . . .

SIAM members save up to \$140 on full registration for the 2018 SIAM Conference on Discrete Mathematics! Join your peers in supporting the premier professional society for applied mathematicians and computational scientists. SIAM members receive subscriptions to *SIAM Review*, *SIAM News* and *SIAM Unwrapped*, and enjoy substantial discounts on SIAM books, journal subscriptions, and conference registrations.

If you are not a SIAM member and paid the Non-Member or Non-Member Mini Speaker/Organizer rate to attend the conference, you can apply the difference between what you paid and what a member would have paid (\$140 for a Non-Member and \$70 for a Non-Member Mini Speaker/Organizer) towards a SIAM membership. Contact SIAM Customer Service for details or join at the conference registration desk.

If you are a SIAM member, it only costs \$15 to join the SIAM Activity Group on the Discrete Mathematics (SIAG/DM). As a SIAG/DM member, you are eligible for an additional \$15 discount on this conference, so if you paid the SIAM member rate to attend the conference, you might be eligible for a free SIAG/DM membership. Check at the registration desk.

Free Student Memberships are available to students who attend an institution that is an Academic Member of SIAM, are members of Student Chapters of SIAM, or are nominated by a Regular Member of SIAM.

Join onsite at the registration desk, go to www.siam.org/joinsiam to join online or download an application form, or contact SIAM Customer Service:

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Standard Audio-Visual Set-Up in Meeting Rooms

SIAM does not provide computers for any speaker. When giving an electronic presentation, speakers must provide their own computers. SIAM is not responsible for the safety and security of speakers' computers.

A data (LCD) projector and screen will be provided in all technical session meeting rooms. The data projectors support both VGA and HDMI connections. Presenters requiring an alternate connection must provide their own adaptor.

Internet Access

All conference attendees will have access through an open network called "Cu Denver Guest."

Registration Fee Includes

- Admission to all technical sessions
- Business Meeting (open to SIAG/DM members)
- Coffee breaks daily
- Room set-ups and audio/visual equipment
- Welcome Reception

Job Postings

Please check with the SIAM registration desk regarding the availability of job postings or visit <http://jobs.siam.org>.

SIAM Books and Journals

Display copies of books and complimentary copies of journals are available on site. SIAM books are available at a discounted price during the conference. Titles on display forms are available with instructions on how to place a book order.

Table Top Display

Cambridge University Press

Conference Sponsors

(Sponsor of the Dénes König Prize)

ELSEVIER



Name Badges

A space for emergency contact information is provided on the back of your name badge. Help us help you in the event of an emergency!

Comments?

Comments about SIAM meetings are encouraged! Please send to: Cynthia Phillips, SIAM Vice President for Programs (vpp@siam.org).

Get-togethers

Welcome Reception

Monday, June 4

5:15 PM – 7:15 PM



Business Meeting

(open to SIAG/DM members)

Wednesday, June 6

5:30 PM – 6:30 PM

Complimentary refreshments will be served.



Statement on Inclusiveness

As a professional society, SIAM is committed to providing an inclusive climate that encourages the open expression and exchange of ideas, that is free from all forms of discrimination, harassment, and retaliation, and that is welcoming and comfortable to all members and to those who participate in its activities. In pursuit of that commitment, SIAM is dedicated to the philosophy of equality of opportunity and treatment for all participants regardless of gender, gender identity or expression,

sexual orientation, race, color, national or ethnic origin, religion or religious belief, age, marital status, disabilities, veteran status, field of expertise, or any other reason not related to scientific merit. This philosophy extends from SIAM conferences, to its publications, and to its governing structures and bodies. We expect all members of SIAM and participants in SIAM activities to work towards this commitment.

Please Note

SIAM is not responsible for the safety and security of attendees' computers. Do not leave your personal electronic devices unattended. Please remember to turn off your cell phones and other devices during sessions.

Recording of Presentations

Audio and video recording of presentations at SIAM meetings is prohibited without the written permission of the presenter and SIAM.

Social Media

SIAM is promoting the use of social media, such as Facebook and Twitter, in order to enhance scientific discussion at its meetings and enable attendees to connect with each other prior to, during and after conferences. If you are tweeting about a conference, please use the designated hashtag to enable other attendees to keep up with the Twitter conversation and to allow better archiving of our conference discussions. The hashtag for this meeting is #SIAMD18.

SIAM's Twitter handle is @TheSIAMNews.

Changes to the Printed Program

The printed program and abstracts were current at the time of printing, however, please review the online program schedule (<http://meetings.siam.org/program.cfm?CONFCD=DM18>).

Invited Plenary Speakers

Monday, June 4

8:15 AM - 9:00 AM

IP1 Analytic Methods in Graph Theory

Daniel Kral, *University of Warwick, United Kingdom*

Tivoli Student Union Turnhalle (TV 250)

1:30 PM - 2:15 PM

IP2 Interpolation Polynomials, Operator Method, and Theory of Enumeration

Catherine Yan, *Texas A&M University, USA*

Tivoli Student Union Turnhalle (TV 250)

Tuesday, June 5

8:15 AM - 9:00 AM

IP3 Title Not Available at Time of Publication

Anna R. Karlin, *University of Washington, USA*

North Classroom 1130

Invited Plenary Speakers

Wednesday, June 6

8:15 AM - 9:00 AM

IP4 Waiter-Client Games

Michael Krivelevich, *Tel Aviv University, Israel*

North Classroom 1130

1:30 PM - 2:15 PM

IP5 New Developments in Hypergraph Ramsey Theory

Andrew Suk, *University of California, San Diego, USA*

North Classroom 1130

Invited Plenary Speakers

Thursday, June 7

8:15 AM - 9:00 AM

IP6 Random Graph Processes

Robert Morris, *Institute for Pure and Applied Mathematics - IMPA , Brazil*

North Classroom 1130

1:30 PM - 2:15 PM

IP7 Deciphering Cellular Networks: From Normal Functioning to Disease

Mona Singh, *Princeton University, USA*

North Classroom 1130

Friday, June 8

8:15 AM - 9:00 AM

IP8 Algorithms for the Asymmetric Traveling Salesman Problem

Ola Svensson, *École Polytechnique Fédérale de Lausanne, Switzerland*

North Classroom 1130

Prize Lecture

** The Dénes König Prize Lecture will take place in North Classroom 1130**

Tuesday, June 5

1:30 PM – 2:15 PM

SP1 2018 Dénes König Prize Lecture:

Pseudorandom Graphs and the Green-Tao Theorem

Yufei Zhao, *Massachusetts Institute of Technology, USA*



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COMPRISED OF MORE THAN 2,000 PRESENTATIONS
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- atmospheric and oceanographic science
- computational science
- data mining
- geophysical science
- optimization
- uncertainty quantification and more...

The collection, *Featured Lectures from our Archives*, includes audio and slides from more than 30 conferences since 2008, including talks by invited and prize speakers, select minisymposia, and minitutorials. Presentations from SIAM meetings are being added throughout the year.



In addition you can view short video clips of speaker interviews from sessions at Annual Meetings starting in 2010.

Plans for adding more content are on the horizon. Keep an eye out!

The audio, slide, and video presentations are part of SIAM's outreach activities to increase the public's awareness of mathematics and computational science in the real world, and to bring attention to exciting and valuable work being done in the field. Funding from SIAM, the National Science Foundation, and the Department of Energy was used to partially support this project.



New presentations are posted every few months as the program expands with sessions from additional SIAM meetings. Users can search for presentations by category, speaker name, and/or key words.

www.siam.org/meetings/presents.php



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SIAM Activity Group on Discrete Mathematics (SIAG/DM)

www.siam.org/activity/dm

A GREAT WAY TO GET INVOLVED!

Collaborate and interact with mathematicians and applied scientists whose work involves Discrete Mathematics

ACTIVITIES INCLUDE:

- Special Sessions at SIAM meetings
- Biennial conference
- Dénes König Prize

BENEFITS OF SIAG/DM MEMBERSHIP:

- Listing in the SIAG's online membership directory
- Additional \$15 discount on registration at the SIAM Conference on Discrete Mathematics
- Electronic communications about recent developments in your specialty
- Eligibility for candidacy for SIAG/DM office
- Participation in the selection of SIAG/DM officers

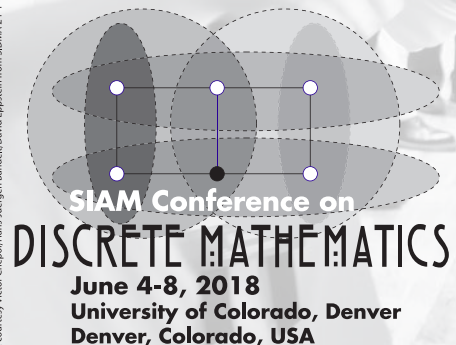
ELIGIBILITY:

- Be a current SIAM member.

COST:

- \$15 per year
- Student members can join 2 activity groups for free!

Figure courtesy Victor Chepoi, Hans-Jürgen Bandelt, David Eppstein from SIAM 24-4



2018-19 SIAG/DM OFFICERS

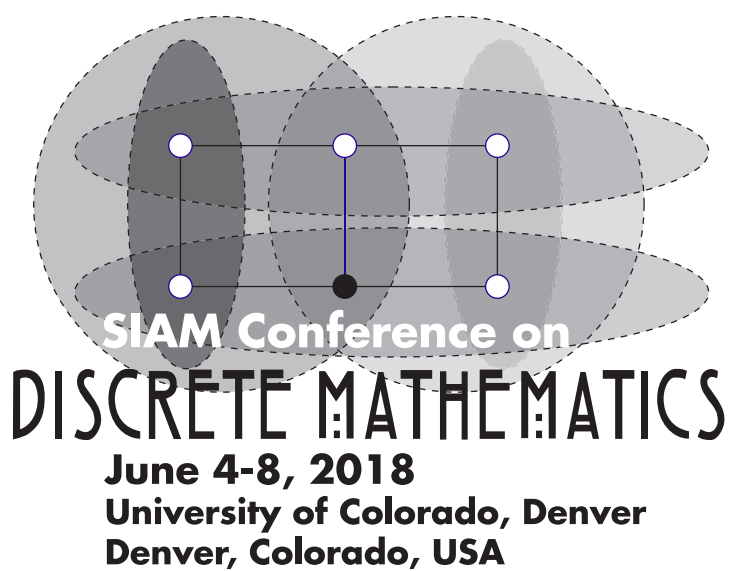
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TO JOIN:

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Program Schedule

Figure courtesy Victor Chepoi, Hans-Juergen Bandelt, David Eppstein from SIDMA 24-4



Gene Golub
g2s3 2019
 SIAM Summer School

June 17-28, 2019
Aussois, France

HIGH PERFORMANCE DATA ANALYTICS



The tenth Gene Golub SIAM Summer School will take place in France, at the Paul Langevin conference center in Aussois, in the French Alps.

The focus of the school will be on large-scale data analytics, which lies at the intersections of data analytics algorithms and high performance computing. Students will be introduced to problems in data analytics arising from both the machine learning and the scientific computing communities. The school will include perspectives from industry, such as Amazon, Google, and IBM, as well as from academic instructors.

Students will be exposed to “end-to-end” multidisciplinary topics, which span several traditionally disparate areas. The series of lectures will develop background on methods and algorithms for data analytics, approximation algorithms to deal with large volumes of data, languages and tools for implementing those algorithms on large scale computers, and data-driven applications from scientific computing and machine learning.

The summer school is being organized by Laura Grigori (Inria and Sorbonne University), Matthew Knepley (University at Buffalo) Olaf Schenk (Università della Svizzera Italiana), and Rich Vuduc (Georgia Institute of Technology).

The intended audience is intermediate graduate students (students with a Master’s degree, 2nd-3rd year Ph.D. students without an MS, or equivalent). Applicants selected to participate pay no registration fee. Funding for local accommodations and meal expenses will be available for all participants.

Application deadline: February 1, 2019

As information becomes available on how to apply, it will be posted at:

<http://www.siam.org/students/g2s3/>



Sponsored by SIAM through an endowment from the estate of Gene Golub.

For more information about prior summer schools and Professor Gene Golub go to
<http://www.siam.org/students/g2s3/>

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Monday, June 4

Registration

7:00 AM-8:30 AM

Room: Tivoli Student Union Turnhalle
(TV 250) Atrium

At 8:30 AM, registration will move to North Classroom 1130 Entry.

Opening Remarks

8:00 AM-8:15 AM

Room: Tivoli Student Union Turnhalle (TV 250)

Monday, June 4

IP1

Analytic Methods in Graph Theory

8:15 AM-9:00 AM

Room: Tivoli Student Union Turnhalle (TV 250)

Chair: To Be Determined

The theory of graph limits provides analytic tools to study large graphs. Such tools have found applications in various areas of computer science and mathematics; they are also closely linked to the flag algebra method, which changed the landscape of extremal combinatorics. We will present an introduction to this rapidly developing area of graph theory and survey some of the recent results obtained in the area.

Daniel Kral

University of Warwick, United Kingdom

Coffee Break

9:00 AM-9:30 AM



Room: Tivoli Student Union Turnhalle
(TV 250) Atrium

Monday, June 4

Registration

9:00 AM-4:00 PM

Room: North Classroom 1130 Entry

MS1

Combinatorics of Partially Ordered Sets - Part I of III

9:30 AM-12:00 PM

Room: North Classroom 1604

For Part 2 see MS6

Over the past 10 years there has been a resurgence of research into the combinatorics of partially ordered sets, including significant progress on old conjectures, applications of classical techniques to seemingly unrelated problems in other areas of mathematics, and novel connections between well-studied areas. The goal of this mini-symposium is to continue the growth of this area by bringing together senior and junior researchers working on the combinatorics of partially ordered sets.

Organizer: Mitchel T. Keller
Washington and Lee University, USA

Organizer: Stephen J. Young
Pacific Northwest National Laboratory, USA

9:30-9:55 Hereditary Semiorders and Enumeration of Semiorders by Dimension (Part I)

Mitchel T. Keller, Washington and Lee University, USA; Stephen J. Young, Pacific Northwest National Laboratory, USA

10:00-10:25 Hereditary Semiorders and Enumeration of Semiorders by Dimension (Part II)

Mitchel T. Keller, Washington and Lee University, USA; Stephen J. Young, Pacific Northwest National Laboratory, USA

10:30-10:55 A Simple Proof Characterizing Interval Orders with Interval Lengths between 1 and k

Simona Boyadzhyska, Freie Universität Berlin, Germany; Garth T. Isaak, Lehigh University, USA; Ann N. Trenk, Wellesley College, USA

11:00-11:25 A Note on the Size of N -free Families

Shanise Walker and Ryan R. Martin, Iowa State University, USA

Monday, June 4

MS2

Structural Graph Theory - Part I of III

9:30 AM-12:00 PM

Room:North Classroom 1130

For Part 2 see MS7

Structural theorems in graph theory seek to describe all the graphs with satisfying some desirable property by showing such graphs either fall into one of a number of basic classes or can be decomposed into smaller graphs. The methodology has shown to be extremely effective in proving both theoretical results as well as in the development of efficient algorithms.

Organizer: Paul Wollan

University of Rome La Sapienza, Italy

9:30-9:55 Large Independent Sets in Triangle-free Graphs Avoiding a Clique-minor

Zdenek Dvorak, Charles University, Czech Republic; Liana Yepremyan, University of Oxford, United Kingdom

10:00-10:25 Hereditary Families with Atypical Structure

Sergey Norin, McGill University, Canada; Yelena Yuditsky, Karlsruhe Institute of Technology, Germany

10:30-10:55 Polynomial-time Algorithm for Maximum Weight Independent Set on P_6 -free Graphs

Andrzej Grzesik, University of Warwick, United Kingdom; Tereza Klimosova, Charles University, Czech Republic; Marcin Pilipczuk and Michal Pilipczuk, University of Warsaw, Poland

11:00-11:25 Erdős-Pósa Property of Chordless Cycles and its Applications

O-Joung Kwon, Incheon National University, Korea; Eun Jung Kim, Universite Paris Dauphine and CNRS, France

11:30-11:55 The Grid Theorem for Rank-Width

Jim Geelen, University of Waterloo, Canada; O-Joung Kwon, Incheon National University, Korea; Rose McCarty, University of Waterloo, Canada; Paul Wollan, University of Rome La Sapienza, Italy

Monday, June 4

MS3

Graph Coloring - Part I of II

9:30 AM-12:00 PM

Room:North Classroom 1005

For Part 2 see MS8

Graph coloring is a central area of discrete mathematics, and it is widely studied. In this minisymposium we will hear about recent developments in the area.

Organizer: Daniel Cranston

Virginia Commonwealth University, USA

9:30-9:55 Acyclic Edge-coloring of Planar Graphs: Delta Colors Suffice when Delta is Large

Daniel Cranston, Virginia Commonwealth University, USA

10:00-10:25 Characterization of Cycle Obstruction Sets for Improper Coloring Planar Graphs

Ilkyoo Choi, Hankuk University of Foreign Studies, Korea

10:30-10:55 Distributed Coloring with Fewer Colors

Marthe Bonamy, LaBRI, Université de Bordeaux, and CNRS, France

11:00-11:25 Vector Coloring the Categorical Product of Graphs

Robert Šámal, Charles University, Czech Republic

11:30-11:55 Vertex Partition with Average Degree Constraint

Hehui Wu, Shanghai Center for Mathematical Sciences, China

Monday, June 4

MS4

Discrete Random Processes - Part I of II

9:30 AM-12:00 PM

Room:North Classroom 1003

For Part 2 see MS10

The analysis of discrete random processes is a central topic in the fields of probabilistic combinatorics and random graph theory, and has important applications to extremal combinatorics. In this minisymposium, researchers will share recent results in the area including dynamic concentration and the so-called “differential equations method” and its applications.

Organizer: Deepak Bal

Montclair State University, USA

Organizer: Patrick Bennett

Western Michigan University, USA

9:30-9:55 The Bipartite $K_{2,2}$ -Free Process and Ramsey Numbers

Patrick Bennett, Western Michigan University, USA

10:00-10:25 A Probabilistic Approach Towards the Aharoni-Berger Conjecture on Rainbow Matchings

Pu Gao, Monash University, Australia

10:30-10:55 Domination in Random Regular Graphs and in Graphs with Large Girth

Carlos Hoppen and Giovane Mansan, Federal University of Rio Grande do Sul, Brazil

11:00-11:25 The Size of the Giant Component in the D-Process

Laura Eslava, Georgia Institute of Technology, USA

11:30-11:55 Packing Edge-disjoint Spanning Trees in Random Geometric Graphs

Pu Gao, Monash University, Australia; Xavier Perez-Gimenez, University of Nebraska-Lincoln, USA; Cristiane M. Sato, University of Waterloo, Canada

Monday, June 4

MS5

Extremal Problems Involving Cycles and Trees - Part I of II

9:30 AM-11:30 AM

Room: North Classroom 1806

For Part 2 see MS11

Extremal combinatorics is the study of questions of the form “How large does a parameter of a graph G need to be to guarantee that G contains a certain substructure?” In addition to being interesting on their own right, problems in extremal combinatorics are important because they occur in many other branches of mathematics as well as computer science. Additionally, many useful methods, such as the probabilistic method and regularity, have arisen from the study of extremal combinatorics. The aim of this minisymposium is to bring together promising young researchers in extremal combinatorics. We will discuss recent progress on important conjectures, new methods developed to solve them, and interesting new problems in the area. We will particularly focus on extremal problems involving sparse structures such as cycles, trees and hypercubes. Such problems are usually much harder than ones involving dense structures. However, recently various new methods have been found for studying sparse structures e.g. the hypergraph container method. We hope that gathering researchers working on such problems will encourage the exchange of ideas, leading to further progress in the area.

Organizer: Shoham Letzter
University of Cambridge, United Kingdom

Organizer: Alexey Pokrovskiy
ETH Zürich, Switzerland

9:30-9:55 Rainbow Trees

Alexey Pokrovskiy, ETH Zürich, Switzerland

10:00-10:25 Three Colour Bipartite Ramsey Number of Cycles and Paths

Matija Bucic, Shoham Letzter, and Benjamin Sudakov, ETH Zürich, Switzerland

10:30-10:55 A Stability Theorem for Small Cycle Covers

Frank Mousset, Tel Aviv University, Israel

11:00-11:25 Linear Cycles of Consecutive Lengths in Linear Hypergraphs

Liana Yepremyan, University of Oxford, United Kingdom

Monday, June 4

CP1

Networks

9:30 AM-11:10 AM

Room: North Classroom 1606

Chair: To Be Determined

9:30-9:45 Algebraic Analysis of Spiking Neural Networks for Graph Partitioning

Kathleen Hamilton, Catherine Schuman, and Travis Humble, Oak Ridge National Laboratory, USA

9:50-10:05 Approximating Sparse Graphs: the Random Overlapping Communities Model

Samantha N. Petti and Santosh Vempala, Georgia Institute of Technology, USA

10:10-10:25 Robust Maximal Independent Sets

Kevin C. Halasz, Simon Fraser University, Canada; Arnaud Casteigts, Université de Bordeaux I, France; Luis Goddyn, Simon Fraser University, Canada

10:30-10:45 Large Degree Asymptotics and the Reconstruction Threshold of Asymmetric Ising Model on Regular D -Ary Trees

Wenjian Liu, City University of New York, USA

10:50-11:05 Dynamical Stability Despite Time-Varying Network Structure

David Reber and Benjamin Webb, Brigham Young University, USA

Monday, June 4

CP2

Directed Graphs

9:30 AM-11:10 AM

Room: North Classroom 1607

Chair: To Be Determined

9:30-9:45 Proper Orientations of Planar Bipartite Graphs

Sebastian Gonzalez Hermosillo De La and Fiachra Knox, Simon Fraser University, Canada; Naoki Matsumoto, Seikei University, Japan; Bojan Mohar, Simon Fraser University, Canada; Claudia Linhares Sales, Federal University of Ceará, Brazil

9:50-10:05 Cyclic Triangle Factors in Regular Tournaments

Theodore Molla, University of South Florida, USA; Lina Li, University of Illinois at Urbana-Champaign, USA

10:10-10:25 A Matrix Approach to p -Competition Graphs

Taehee Hong, Suh-Ryung Kim, and Seung Chul Lee, Seoul National University, Korea

10:30-10:45 On 1-Factors with Prescribed Lengths in Tournaments

Dongyeap Kang, Korea Advanced Institute of Science and Technology, Korea; Jaehoon Kim, University of Birmingham, United Kingdom

10:50-11:05 Simple Transformation for Finding a Maximum Weighted Matching in General Digraphs

Choon Sung Lim, Bank of Korea, South Korea

Lunch Break

12:00 PM-1:30 PM

Attendees on their own

Monday, June 4

IP2**Interpolation Polynomials,
Operator Method, and
Theory of Enumeration**

1:30 PM-2:15 PM

Room: Tivoli Student Union Turnhalle (TV 250)

Chair: *To Be Determined*

Goncarov Polynomials are the basis of solutions of the classical Goncarov Interpolation Problem, which have been studied extensively by analysts due to their significance in the interpolation theory of smooth and analytic functions. These Polynomials also play an important role in combinatorics due to their close relations to parking functions. This is not just a coincidence. In this talk we will present the interpolation problems with delta-operators, develop the algebraic and analytic theory of delta-Goncarov polynomials, and apply these results to problems in binomial enumeration and order statistics.

Catherine Yan

Texas A&M University, USA

Coffee Break

2:15 PM-2:45 PM



Room: Tivoli Student Union Turnhalle (TV 250) Atrium

Monday, June 4

MS6**Combinatorics of Partially
Ordered Sets - Part II of III**

2:45 PM-5:15 PM

Room: North Classroom 1604

For Part 1 see MS1**For Part 3 see MS12**

Over the past 10 years there has been a resurgence of research into the combinatorics of partially ordered sets, including significant progress on old conjectures, applications of classical techniques to seemingly unrelated problems in other areas of mathematics, and novel connections between well-studied areas. The goal of this mini-symposium is to continue the growth of this area by bringing together senior and junior researchers working on the combinatorics of partially ordered sets.

Organizer: Mitchel T. Keller

Washington and Lee University, USA

Organizer: Stephen J. Young

Pacific Northwest National Laboratory, USA

**2:45-3:10 Local Dimension is
Unbounded for Planar Posets**

Bartłomiej Bosek, Jagiellonian University, Poland; Jarosław Grytczuk, Warsaw University of Technology, Poland; William T. Trotter, Georgia Institute of Technology, USA

3:15-3:40 Fractional Local Dimension

Fidel Barrera-Cruz, Thomas Prag, Heather C. Smith, and William T. Trotter, Georgia Institute of Technology, USA

**3:45-4:10 Dimension and Subdivision
of K_4 Free Posets**

Adam Bamforth, University of Louisville, USA

**4:15-4:40 Partially Ordered Sets and
Finite Topologies**

Emilie Purvine, Cliff Joslyn, and Brenda Praggastis, Pacific Northwest National Laboratory, USA; Michael Robinson, American University, USA

**4:45-5:10 A Random Version of the
r-fork-free Theorem**

Kirsten Hogenson, Colorado College, USA

Monday, June 4

MS7**Structural Graph Theory -
Part II of III**

2:45 PM-4:45 PM

Room: North Classroom 1130

For Part 1 see MS2**For Part 3 see MS13**

Structural theorems in graph theory seek to describe all the graphs with satisfying some desirable property by showing such graphs either fall into one of a number of basic classes or can be decomposed into smaller graphs. The methodology has shown to be extremely effective in proving both theoretical results as well as in the development of efficient algorithms.

Organizer: Paul Wollan

University of Rome La Sapienza, Italy

2:45-3:10 Scattered Classes of Graphs

O-Joung Kwon, Incheon National University, Korea; Sang-Il Oum, KAIST, Korea

**3:15-3:40 On the Genus of the
Complete 3-uniform Hypergraph**

Bojan Mohar and Yifan Jing, Simon Fraser University, Canada

**3:45-4:10 The Genus of a Random
Bipartite Graph**

Yifan Jing and Bojan Mohar, Simon Fraser University, Canada

**4:15-4:40 Half-integral Linkages in
Highly Connected Directed Graphs**

Irene Muzi, University of Warsaw, Poland; Paul Wollan, University of Rome La Sapienza, Italy; Katherine Edwards, Nokia Bell Labs, USA

Monday, June 4

MS8

Graph Coloring - Part II of II

2:45 PM-5:15 PM

Room: North Classroom 1539

For Part 1 see MS3

Graph coloring is a central area of discrete mathematics, and it is widely studied. In this minisymposium we will hear about recent developments in the area.

Organizer: Daniel Cranston
Virginia Commonwealth University, USA

2:45-3:10 Bounding the Chromatic Number by a Fraction of the Maximum Degree for Graphs with no Large Cliques

Thomas Kelly, University of Waterloo, Canada

3:15-3:40 Circular Flow and Circular Coloring of Graphs

Jiaao Li, West Virginia University, USA

3:45-4:10 4-coloring P_6 -free Graphs

Sophie Spirkl, Princeton University, USA

4:15-4:40 Clustered Coloring, Hajos' Conjecture and Gerards-Seymour Conjecture

Chun-Hung Liu, Princeton University, USA

4:45-5:10 Coloring $(2K_2, W_4)$ -Free Graphs

Aur lie Lagoutte, University Clermont-Auvergne, France

Monday, June 4

MS9

Secret Sharing at the Intersection of Cryptography and Coding Theory

2:45 PM-5:15 PM

Room: North Classroom 1606

Secret sharing is an important primitive in cryptography, allowing n parties to share a secret, x , so that "qualified" subsets of parties can recover the secret, but an "unqualified" subsets of parties learn nothing about the secret. There are rich connections between secret sharing and error correcting codes, and this mini-symposium will bring together researchers working at this intersection to discuss their work and share ideas. Secret sharing has found numerous applications in theoretical and real-world cryptographic constructions, and these cryptographic applications have motivated many variations and extensions of the basic definitions, including robust, verifiable, pseudorandom, and homomorphic secret sharing, among others. Ideas from coding theory have been a key tool in the approach of many of these problems, going all the way back to the Shamir secret sharing scheme, which is essentially a Reed-Solomon code. However, more recent advances have including connections throughout coding theory, in particular to locally decodable codes and coding for distributed storage. This minisymposium will highlight recent research on secret sharing across the fields of cryptography, theoretical computer science and electrical engineering, with the aim to strengthen the ties between these fields.

Organizer: Mary Wootters
Stanford University, USA

Organizer: Brett Hemenway
University of Pennsylvania, USA

2:45-3:10 Secure Distributed Storage and Its Connections to Communication-efficient Secret Sharing

Ankit Rawat, Massachusetts Institute of Technology, USA

3:15-3:40 Staircase Codes for Secret Sharing and Private Information Retrieval

Salim El Rouayheb, Rutgers University, USA

3:45-4:10 Homomorphic Secret Sharing, or: Locally Decodable Codes for Functions (Part 1)

Yuval Ishai, Technion, Israel

4:15-4:40 Homomorphic Secret Sharing, or: Locally Decodable Codes for Functions (Part 2)

Elette Boyle, Interdisciplinary Center Herzliya, Israel

4:45-5:10 Coding for Private Function Computation

Joerg Kliewer, New Jersey Institute of Technology, USA

continued in next column

Monday, June 4

MS10

Discrete Random Processes - Part II of II

2:45 PM-4:45 PM

Room: North Classroom 1003

For Part 1 see MS4

The analysis of discrete random processes is a central topic in the fields of probabilistic combinatorics and random graph theory, and has important applications to extremal combinatorics. In this minisymposium, researchers will share recent results in the area including dynamic concentration and the so-called “differential equations method” and its applications.

Organizer: Deepak Bal

Montclair State University, USA

Organizer: Patrick Bennett

Western Michigan University, USA

2:45-3:10 Embedding the Uniform Random Graph into the Bipartite Regular Random Graph

Tereza Klimosova, Charles University, Czech Republic; Christian Reiher, University of Hamburg, Germany; Andrzej Rucinski, Adam Mickiewicz University, Poland, and Emory University, USA; Matas Sileikis, Czech Academy of Sciences, Czech Republic

3:15-3:40 Packing Nearly Optimal Ramsey $R(3,t)$ Graphs

He Guo and Lutz Warnke, Georgia Institute of Technology, USA

3:45-4:10 Assessing Significance in a Markov Chain Without Mixing

Wes Pegden, Carnegie Mellon University, USA

4:15-4:40 Minimizing the Number of 5-cycles in Graphs with Given Edge- density

Andrzej Dudek, Western Michigan University, USA

Monday, June 4

MS11

Extremal Problems Involving Cycles and Trees - Part II of II

2:45 PM-4:45 PM

Room: North Classroom 1806

For Part 1 see MS5

Extremal combinatorics is the study of questions of the form “How large does a parameter of a graph G need to be to guarantee that G contains a certain substructure?” In addition to being interesting on their own right, problems in extremal combinatorics are important because they occur in many other branches of mathematics as well as computer science. Additionally, many useful methods, such as the probabilistic method and regularity, have arisen from the study of extremal combinatorics. The aim of this minisymposium is to bring together promising young researchers in extremal combinatorics. We will discuss recent progress on important conjectures, new methods developed to solve them, and interesting new problems in the area. We will particularly focus on extremal problems involving sparse structures such as cycles, trees and hypercubes. Such problems are usually much harder than ones involving dense structures. However, recently various new methods have been found for studying sparse structures e.g. the hypergraph container method. We hope that gathering researchers working on such problems will encourage the exchange of ideas, leading to further progress in the area.

Organizer: Shoham Letzter

University of Cambridge, United Kingdom

Organizer: Alexey Pokrovskiy

ETH Zürich, Switzerland

2:45-3:10 Path Partitions of Regular Graphs

Shoham Letzter, University of Cambridge, United Kingdom

3:15-3:40 Generalized Turan Problem for Trees

Clara Shikhelman, Tel Aviv University, Israel

3:45-4:10 Maximising the Number of Induced Cycles in a Graph

Natasha Morrison, University of Cambridge, United Kingdom

4:15-4:40 Incomplete Tilings

Vytautas Gruslys, University of Cambridge, United Kingdom

continued in next column

continued on next page

Monday, June 4

CP3**Algebraic Combinatorics/
Geometry**

2:45 PM-5:15 PM

Room:North Classroom 1607

Chair: To Be Determined

**2:45-3:00 Solving Tropical Linear
Systems in Terms of the Shortest Path
Problem**

Yuki Nishida, Doshisha University, Japan;
Sennosuke Watanabe, National Institute
of Technology, Oyama College, Japan
; Yoshihide Watanabe, Doshisha University,
Japan

**3:05-3:20 Topology and Holomorphic
Invariants Using the Application of
Combinatorics**

Abdulsalam G. Ya'u, Abubakar Tafawa
Balewa University Bauchi, Nigeria;
Mohammed Abdulhameed, Federal
Polytechnic Bauchi, Nigeria

**3:25-3:40 Many k -Neighborly
Polytopes from Quivers**

Daniel McKenzie, University of Georgia,
USA; Patricio Gallardo, Washington
University, St. Louis, USA

**3:45-4:00 On Generalized
Quadrangles and Girth Eight
Algebraically Defined Graphs**

Brian Kronenthal, Kutztown University
of Pennsylvania, USA; Felix Lazebnik,
University of Delaware, USA; Jason
Williford, University of Wyoming, USA

Welcome Reception

5:15 PM-7:15 PM

Room:Tivoli Brewing Company

**Tuesday, June 5****Registration**

7:30 AM-3:30 PM

Room:North Classroom 1130 Entry

Announcements

8:10 AM-8:15 AM

Room:North Classroom 1130

IP3**Title Not Available at Time
of Publication**

8:15 AM-9:00 AM

Room:North Classroom 1130

Chair: To Be Determined

Abstract Not Available At Time Of
Publication.

Anna R. Karlin

University of Washington, USA

Coffee Break

9:00 AM-9:30 AM

Room:North Classroom 1130 Atrium



Tuesday, June 5

MS12**Combinatorics of Partially
Ordered Sets - Part III of III**

9:30 AM-11:30 AM

Room:North Classroom 1604

For Part 2 see MS6

Over the past 10 years there has been
a resurgence of research into the
combinatorics of partially ordered sets,
including significant progress on old
conjectures, applications of classical
techniques to seemingly unrelated
problems in other areas of mathematics,
and novel connections between well-
studied areas. The goal of this mini-
symposium is to continue the growth
of this area by bringing together senior
and junior researchers working on the
combinatorics of partially ordered sets.

Organizer: Mitchel T. Keller

Washington and Lee University, USA

Organizer: Stephen J. Young

Pacific Northwest National Laboratory, USA

**9:30-9:55 On the Dimension of Random
Posets**

Csaba Biro, University of Louisville, USA;
Peter Hamburger, Western Kentucky
University, USA; H. A. Kierstead, Arizona
State University, USA; Attila Por, Western
Kentucky University, USA; William
T. Trotter and Ruidong Wang, Georgia
Institute of Technology, USA

**10:00-10:25 The Width of Down Sets in
Boolean Lattices**

Dwight Duffus, Emory University, USA; David
M. Howard, Colgate University, USA; Imre
Leader, University of Cambridge, United
Kingdom

**10:30-10:55 Minimum Saturated
Families of Sets**

Tuan Tran, Matija Bucic, Shoham Letzter, and
Benny Sudakov, ETH Zürich, Switzerland

**11:00-11:25 Whitney Duals of Graded
Posets**

Joshua Hallam, Wake Forest University, USA

Tuesday, June 5

MS13

Structural Graph Theory - Part III of III

9:30 AM-12:00 PM

Room:North Classroom 1130

For Part 2 see MS7

Structural theorems in graph theory seek to describe all the graphs with satisfying some desirable property by showing such graphs either fall into one of a number of basic classes or can be decomposed into smaller graphs. The methodology has shown to be extremely effective in proving both theoretical results as well as in the development of efficient algorithms.

Organizer: Paul Wollan

University of Rome La Sapienza, Italy

9:30-9:55 Coloring Graphs with No Clique Immersion

Paul Wollan and Tommaso d'Orsi,
University of Rome La Sapienza, Italy

10:00-10:25 Caterpillars and the Strong Erdos-Hajnal Property

Anita Liebenau, Monash University, Australia; Marcin Pilipczuk, University of Warsaw, Poland; Paul Seymour and Sophie Spirkl, Princeton University, USA

10:30-10:55 Obstructions for Three-Coloring and List Three-Coloring H-Free Graphs

Maria Chudnovsky, Princeton University, USA; Jan Goedgebeur, Ghent University, Belgium; Oliver Schaudt, RWTH Aachen, Germany; Mingxian Zhong, Columbia University, USA

11:00-11:25 Unavoidable Minors in 2-connected Graphs of Large Pathwidth

Tony Huynh and Gwenael Joret, Université Libre de Bruxelles, Belgium; Piotr Micek, Jagiellonian University, Poland; David R. Wood, Monash University, Australia

11:30-11:55 Attacking Hadwiger's Conjecture via Chordal Partitions

David R. Wood, Monash University, Australia

Tuesday, June 5

MS14

Graph Colouring - Part I of II

9:30 AM-12:00 PM

Room:North Classroom 1539

For Part 2 see MS17

In its broadest definition, graph coloring involves assigning labels (which might be colors, numbers, lists) to each vertex or edge of a graph using stated restrictions, rules, and goals. Each type of graph coloring has its own uses and motivations. There are many forms of graph coloring. 'Proper' coloring, list coloring, path coloring, fractional coloring, distinguishing coloring are just a few of these. Graph theorists who study various graph colorings often find it useful to learn each others' motivations and methods. This session brings together researchers from a variety of types of graph colorings in order to encourage such sharing and productive cross fertilization.

Organizer: Debra L. Boutin

Hamilton College, USA

Organizer: Gary MacGillivray

University of Victoria, Canada

9:30-9:55 Acyclic Colouring of Graphs on Surfaces

Shayla Redlin and Luke Postle, University of Waterloo, Canada

10:00-10:25 The Distinguishing Cost of Graph Products

Debra L. Boutin, Hamilton College, USA

10:30-10:55 On Uniquely k -List Colorable Graphs

Joan P. Hutchinson, Macalester College, USA; Ebad Mahmoodian, Sharif University of Technology, Iran

11:00-11:25 Distinguishing Numbers of Partially Ordered Sets

Karen Collins, Wesleyan University, USA; Ann N. Trenk, Wellesley College, USA

11:30-11:55 Arithmetic Progressions in Graphs

Michael Young, Iowa State University, USA

Tuesday, June 5

MS15

Computational Biology - Part I of II

9:30 AM-12:00 PM

Room:North Classroom 1003

For Part 2 see MS18

This minisymposium surveys a host of different topics where graph theory, combinatorics, and discrete mathematics more generally are making contributions to computational biology. Part I focuses on the analysis of biological networks. Part II looks at a range of topics from biological networks to sequence analysis, and circles back to new mathematical problems inspired by the biology.

Organizer: Lenore J. Cowen

Tufts University, USA

9:30-9:55 Random Walk Methods and Their Application to Biological Networks

Lenore J. Cowen, Tufts University, USA

10:00-10:25 Synthesizing Signaling Pathways from Temporal Phosphoproteomic Data

Anthony Gitter, University of Wisconsin, Madison, USA

10:30-10:55 Integration and Dissection of Molecular Networks for Functional Analysis and Disease Modeling

Jian Peng, University of Illinois at Urbana-Champaign, USA

11:00-11:25 A Multi-Species Functional Embedding Integrating Sequence and Network Structure

Mark Leiserson, University of Maryland, College Park, USA

11:30-11:55 Denoising Large Scale Molecular Profiling Data Using Network Filters

Andrew J. Kavran and Aaron Clauset, University of Colorado Boulder, USA

Tuesday, June 5

MS16

New Trends in Enumerative Combinatorics - Part I of II

9:30 AM-12:00 PM

Room:North Classroom 1806

For Part 2 see MS19

The origin of algebraic combinatorics lies in the desire to bring coherence and unity to the discipline of combinatorics, in particular, enumeration, and to incorporate it into the mainstream of contemporary mathematics. Today Algebraic and Enumerative Combinatorics concerns itself with the study of combinatorial problems arising from other branches of mathematics and, on the other hand, with the application and use of techniques coming from other parts of mathematics to combinatorial problems. At the heart of the subject there is the development of algebraic theories for the solution to such problems. The implied interactions with other fields are mutually beneficial and concern particularly Algebra, Geometry, Topology, Computer Science, Probability Theory and Statistics. The development of combinatorics requires a familiarity of several mathematical branches for its researchers. This minisymposium is proposed to facilitate the contact between Enumerative and Algebraic Combinatorics and other fields in an effective way. It is aimed to bring together a strong group of active researchers in Algebraic Combinatorics with an emphasis on Enumeration, as well as other areas of mathematical sciences in which substantial enumerative questions with a strong algebraic or geometric foundation have arisen.

Organizer: Catherine Yan

Texas A&M University, USA

Organizer: Yue Cai

Texas A&M University, USA

9:30-9:55 Parking Distributions on Trees

Catherine Yan, Texas A&M University, USA

10:00-10:25 Barely Set-valued Tableaux and Nonintersecting Paths in Young Diagrams

Peter L. Guo, Nankai University, China

10:30-10:55 Mahonian-Stirling Statistics on Labeled Trees

Svetlana Poznanovikj and Amy Grady,
Clemson University, USA

11:00-11:25 Log-behavior of Partition Function

Xingwei Wang, Nankai University, China

11:30-11:55 Counting with Borel's Triangle

Yue Cai and Catherine Yan, Texas A&M University, USA

Tuesday, June 5

CP4

Algorithms and Applications

9:30 AM-11:50 AM

Room:North Classroom 1606

Chair: To Be Determined

9:30-9:45 Polynomial Time Solution to the Domino Puzzle

Ivan Avramovic, George Mason University, USA

9:50-10:05 The Solution Attractor Theory of Local Search System: The Traveling Salesman Problem Case

Wei Qi Li, University of Michigan-Flint, USA

10:10-10:25 Efficient Methods for Enforcing Contiguity in Geographic Districting Problems

Sheldon H. Jacobson, University of Illinois at Urbana-Champaign, USA; Douglas King, University of Illinois, USA; Edward Sewell, Southern Illinois University, Edwardsville, USA

10:30-10:45 Optimizing Order Picking Problem By a New Scalable Method

Arash Ghasemi, University of Tennessee, Chattanooga, SimCenter, USA

10:50-11:05 Leximax and Leximin Rank-Ordered Rules on the Power Set with Discrete Categories

Takashi Kurihara, Waseda University, Japan

11:10-11:25 Garden-of-Eden States and Fixed Points of Monotone Systems

Ricky X. Chen, Virginia Tech, USA; Christian Reidys and Henning Mortveit, Biocomplexity Institute, USA

11:30-11:45 The Fullerene Project

Elizabeth Hartung, Massachusetts College of Liberal Arts, USA; Jack Graver, Syracuse University, USA

Lunch Break

12:00 PM-1:30 PM

Attendees on their own

continued in next column

Tuesday, June 5

SP1

2018 Dénes König Prize Lecture: Pseudorandom Graphs and the Green-Tao Theorem

1:30 PM-2:15 PM

Room: North Classroom 1130

Chair: To Be Determined

The celebrated Green-Tao theorem states that there are arbitrarily long arithmetic progressions in the primes. I will explain some of the main ideas of the proof from a graph theoretic perspective, with a focus on the role of pseudorandomness in the proof. (Based on joint work with David Conlon and Jacob Fox)

Yufei Zhao

Massachusetts Institute of Technology, USA

Coffee Break

2:15 PM-2:45 PM



Room: North Classroom 1130 Atrium

Tuesday, June 5

MS17

Graph Colouring - Part II of II

2:45 PM-5:15 PM

Room: North Classroom 1539

For Part I see MS14

This 2-part minisymposium will showcase some of the many faces of graph colouring, arguably one of the most studied topics in graph theory. Part I features talks on distinguishing colourings where the colouring breaks the graph symmetry, list colourings where lists of colours are assigned to each vertex, and polychromatic colourings where given subgraphs must contain an element of each colour class. Part II features the following topics: a coloring game, colourings in which colour classes may induce cliques or independent sets, the chromatic number of subgraphs of a clustered graph, colouring with restrictions on the number of times each colour can appear in any neighborhood, and structures that forbid generalized colourings (i.e., homomorphisms) of graphs with two edge sets.

Organizer: Debra L. Boutin

Hamilton College, USA

Organizer: Gary Macgillivray

University of Victoria, Canada

2:45-3:10 The Slow-Coloring Game

Douglas B. West, Zhejiang Normal University, China and University of Illinois, USA

3:15-3:40 Fractional Ccolorings of Graphs

John Gimbel, University of Alaska, Fairbanks, USA; Andre Kundgen, California State University, San Marcos, USA

3:45-4:10 The Selective Coloring Problem

Tinaz Ekim, Bogazici University, Turkey

4:15-4:40 Homomorphism Duals for 2-Edge-Coloured Paths

Kyle Booker and Richard Brewster, Thompson Rivers University, Canada

4:45-5:10 Frugal Colourings and Homomorphisms

Gary MacGillivray, University of Victoria, Canada

Tuesday, June 5

MS18

Computational Biology - Part II of II

2:45 PM-5:15 PM

Room: North Classroom 1003

For Part I see MS15

This minisymposium surveys a host of different topics where graph theory, combinatorics, and discrete mathematics more generally are making contributions to computational biology. Part I focuses on the analysis of biological networks. Part II looks at a range of topics from biological networks to sequence analysis, and circles back to new mathematical problems inspired by the biology.

Organizer: Lenore J. Cowen

Tufts University, USA

2:45-3:10 Network-based Investigation of Mutational Profiles Reveals Cancer Genes

Borislav Hristov, Princeton University, USA

3:15-3:40 New Directions in Deconvolving Genomic Mixtures of Copy Number Variation Data

Haoyun Lei, Theodore Roman, Jesse Eaton, and Russell Schwartz, Carnegie Mellon University, USA

3:45-4:10 Two Problems on Tree-based Networks

Megan Owen, City University of New York, USA

4:15-4:40 The Language of RNA Base Pairings

Christine Heitsch, Georgia Institute of Technology, USA; Svetlana Poznanović, Clemson University, USA; Torin Greenwood, Georgia Institute of Technology, USA

4:45-5:10 Multi de Bruijn Sequences

Glenn Tesler, University of California, San Diego, USA

Tuesday, June 5

MS19**New Trends in Enumerative Combinatorics - Part II of II**

2:45 PM-5:15 PM

*Room: North Classroom 1806***For Part I see MS16**

The origin of algebraic combinatorics lies in the desire to bring coherence and unity to the discipline of combinatorics, in particular, enumeration, and to incorporate it into the mainstream of contemporary mathematics.

Today Algebraic and Enumerative Combinatorics concerns itself with the study of combinatorial problems arising from other branches of mathematics and, on the other hand, with the application and use of techniques coming from other parts of mathematics to combinatorial problems. At the heart of the subject there is the development of algebraic theories for the solution to such problems. The implied interactions with other fields are mutually beneficial and concern particularly Algebra, Geometry, Topology, Computer Science, Probability Theory and Statistics. The development of combinatorics requires a familiarity of several mathematical branches for its researchers. This minisymposium is proposed to facilitate the contact between Enumerative and Algebraic Combinatorics and other fields in an effective way. It is aimed to bring together a strong group of active researchers in Algebraic Combinatorics with an emphasis on Enumeration, as well as other areas of mathematical sciences in which substantial enumerative questions with a strong algebraic or geometric foundation have arisen.

Organizer: Catherine Yan

Texas A&M University, USA

Organizer: Yue Cai

*Texas A&M University, USA***2:45-3:10 CLT for Descents in Matchings and Derangements***Gene Kim, University of South Carolina, USA***3:15-3:40 Two Types of Quasisymmetric Power Sums**

*Angela Hicks, Lehigh University, USA;
Cristina Ballantine, College of the Holy Cross, USA; Zaji Daugherty, The City College of New York, USA; Sarah Mason, Wake Forest University, USA; Elizabeth Niese, Marshall University, USA*

3:45-4:10 Enumeration on Row-increasing Tableaux of Shape $2 \times n$ *Ruoxia Du, East China Normal University, China***4:15-4:40 Detecting the Integer Decomposition Property and Ehrhart Unimodality in Reflexive Simplices***Robert Davis, Michigan State University, USA***4:45-5:10 New Duals of MacMahon's Theorem on Plane Partitions***Tri Lai, University of Nebraska-Lincoln, USA*

Tuesday, June 5

MS20**Linear Algebra Methods in Combinatorics**

2:45 PM-5:15 PM

Room: North Classroom 1005

Linear algebraic methods provide powerful tools for answering questions in combinatorics. Surprisingly, often the only solution for a purely combinatorial problem is found using linear algebra. Recent representative applications of these types of methods is the breakthrough upper bound on the maximum size of a 3-term AP free subset of \mathbb{F}_3^n and the recent constructions of smaller counterexamples to Borsuk's conjecture. Our minisymposium will focus on linear algebra methods with a special emphasis on spectral graph theory. Often, spectral graph theory theorems can be used to strengthen those in classical extremal graph theory. Our session will bring together both junior and senior researchers, both domestic and international.

Organizer: Michael Tait

Carnegie Mellon University, USA

Organizer: Sebastian Cioaba

*University of Delaware, USA***2:45-3:10 The Normalized Laplacian Matrix and Qualitative Properties of Graphs Including Random Walks**

*Steve Butler, Iowa State University, USA;
Shaun Fallat, University of Regina, Canada;
Kristin Heyse, Macalester College, USA;
Stephen Kirkland, University of Manitoba, Canada*

3:15-3:40 Forbidden Subgraphs and Equiangular Lines*Zilin Jiang, Technion Israel Institute of Technology, Israel***3:45-4:10 Rainbow Spanning Trees in General Graphs***Lauren M. Nelsen and Paul Horn, University of Denver, USA***4:15-4:40 Graphs Whose Distance Matrices Have the Same Determinant**

Jephian C.-H. Lin, University of Victoria, Canada; Yen-Jen Cheng, National Chiao Tung University, Taiwan

4:45-5:10 Balanced Set Type Conditions*Jason Williford, University of Wyoming, USA**continued in next column*

Tuesday, June 5

CP5

Hypergraphs, Ordered Sets, Extremal Combinatorics

2:45 PM-3:45 PM

Room: North Classroom 1604

Chair: To Be Determined

2:45-3:00 The Zarankiewicz Problem in 3-Partite Graphs

Craig Timmons, California State University, Sacramento, USA; Michael Tait, Carnegie Mellon University, USA

3:05-3:20 Decomposition of Random Hypergraphs

Xing Peng, Tianjin University, China

3:25-3:40 The Saturation Number, Extremal Number, Spectral Radius, and Family of k-Edge-Connected Graphs

Suail O, State University of New York, USA; Hui Lei and Yongtang Shi, Nankai University, China; Douglas B. West, Zhejiang Normal University, China and University of Illinois, USA; Xuding Zhu, Zhejiang Normal University, China

Tuesday, June 5

CP6

Computational Geometry/ Words

2:45 PM-3:25 PM

Room: North Classroom 1606

Chair: To Be Determined

2:45-3:00 An Algorithm to Find Maximum Area Polygons Circumscribed About a Convex Polygon

Zsolt Langi, Budapest University of Technology and Economics, Hungary

3:05-3:20 Circular Repetition Thresholds for Small Alphabets

James D. Currie, Lucas Mol, and Narad Rampersad, The University of Winnipeg, Canada

Wednesday, June 6

Registration

7:30 AM-3:30 PM

Room: North Classroom 1130 Entry

Announcements

8:10 AM-8:15 AM

Room: North Classroom 1130

Wednesday, June 6

IP4**Waiter-Client Games**

8:15 AM-9:00 AM

Room: North Classroom 1130

Chair: To Be Determined

Waiter-Client games (also called Picker-Chooser games) is a type of positional games that gained popularity recently. When played on the edge set of a graph G (typically a complete graph K_n , or a random graph drawn from $G(n,p)$), the game goes as follows. For a positive integer q (the so called game bias), in each round Waiter offers to Client $q+1$ previously unoffered edges of G . Client chooses one of the edges offered, the rest go to Waiter. Waiter wins the game if by the time every edge of G has been claimed, Client's graph possesses a given graph theoretic property P , Client wins otherwise. We will present several recent results about Waiter-Client games played on complete and random graphs and discuss the role of the so called probabilistic intuition in their analysis. Based on joint works with M. Bednarska-Bzdega, D. Hefetz, T. Luczak, W. E. Tan, N. Trumer.

Michael Krivelevich

Tel Aviv University, Israel

Coffee Break

9:00 AM-9:30 AM



Room: North Classroom 1130 Atrium

Wednesday, June 6

MS21**Edge Colouring and Related Notions - Part I of II**

9:30 AM-11:30 AM

Room: North Classroom 1003

For Part 2 see MS28

Speakers will discuss problems related to edge colouring, including but not limited to: the classification problem, the Goldberg--Seymour conjecture, edge list colouring, matchings, and rainbow/antirainbow subgraphs in edge-coloured graphs.

Organizer: Gregory J. Puleo
Auburn University, USA

Organizer: Jessica McDonald
Auburn University, USA

9:30-9:55 f -Cores for $(\Delta+f)$ -edge-colouring

Jessica McDonald and Gregory J. Puleo,
Auburn University, USA

10:00-10:25 Star Edge-colorings of Subcubic Multigraphs

Zixia Song, University of Central Florida,
USA

10:30-10:55 Delay Edge-colouring Bipartite Graphs

Katherine Edwards and William Kennedy,
Nokia Bell Labs, USA

11:00-11:25 Recent Progress Toward Goldberg's Conjecture

Guantao Chen, Georgia State University,
USA

Wednesday, June 6

MS22**Theoretical Computer Science as a New Discovery Engine of Discrete Mathematics**

9:30 AM-12:00 PM

Room: North Classroom 1607

Theoretical Computer Science has a close relationship with discrete mathematics. The recent developments and breakthroughs in theoretical computer science can lead to surprising new progress of discrete mathematics. This session is a collection of some such amazing breakthroughs and connections.

Organizer: Rupei Xu
University of Texas at Dallas, USA

Organizer: Andrea Lincoln
Massachusetts Institute of Technology, USA

9:30-9:55 Fine-grained Complexity, Meta-algorithm and their Connections with Extremal Graph Theory

Rupei Xu and András Faragó, University of
Texas at Dallas, USA

10:00-10:25 The 4/3 Additive Spanner Exponent Is Tight

Amir Abboud, IBM Research, USA; Greg
Bodwin, Massachusetts Institute of
Technology, USA

10:30-10:55 A Fast New Algorithm for Weak Graph Regularity

Jacob Fox, Stanford University, USA; László
M. Lovász, University of California, Los
Angeles, USA; Yufei Zhao, Massachusetts
Institute of Technology, USA

11:00-11:25 Explicit Constructions of Ramsey Graphs via Randomness Extractors

Xin Li, Johns Hopkins University, USA

11:30-11:55 Duality, Flows, and Shortest Paths in Planar Graphs

Jeff Erickson, University of Illinois at
Urbana-Champaign, USA; Kyle Fox,
University of Texas, Dallas, USA;
Luvsandondov Lkhamsuren, Airbnb, USA

Wednesday, June 6

MS23

Reconfiguration Problems

9:30 AM-12:00 PM

Room: North Classroom 1604

Given two feasible solutions to a (combinatorial) problem, reconfiguration is the process of modifying the first into the second through a sequence of allowed steps while ensuring all intermediate configurations are feasible. A common framework for studying reconfiguration is to build a graph whose vertices are feasible solutions and adjacency indicates two solutions differ by a single reconfiguration step. Natural questions include studying the algorithmic complexity of finding reconfiguration sequences, conditions for the existence of reconfiguration sequences, and properties of reconfiguration graphs. Reconfiguration problems are interesting in their own right. They are also naturally applied to problems where one wishes to incrementally improve an existing solution while maintaining feasibility. Typically NP-hard problems lead to PSPACE-complete reconfiguration problems. A surprising example 3-colouring: it is NP-complete to determine if a graph admits a 3-colouring, but it is polynomial to determine if one colouring reconfigures to the another. This mini-symposium includes an introductory talk, and talks on reconfiguration of matroids, homomorphisms, matching, and dominating sets.

Organizer: Richard Brewster
Thompson Rivers University, Canada

9:30-9:55 Invitation to Combinatorial Reconfiguration

Takehiro Ito, Tohoku University, Japan

10:00-10:25 Reconfiguring Graph Colourings and Homomorphisms

Richard Brewster, Thompson Rivers University, Canada; Jae-Baek Lee, Kyungpook National University, Korea; Sean McGuinness, Thompson Rivers University, Canada; Benjamin Moore, University of Waterloo, Canada; Jonathan A. Noel, University of Warwick, United Kingdom; Mark Siggers, Kyungpook National University, Korea

10:30-10:55 The Independent Domination Graph

Laura E. Teshima, University of Victoria, Canada; Richard Brewster, Thompson Rivers University, Canada; Kieka Mynhardt, University of Victoria, Canada

11:00-11:25 Hamilton Connectedness of Sdr Graphs

Stefan Bard, University of Victoria, Canada

11:30-11:55 Reconfiguration of Common Independent Sets of Matroids

Moritz Muehlenthaler, TU Dortmund, Germany

Wednesday, June 6

MS24

Analytic and Probabilistic Techniques in Combinatorics - Part I of II

9:30 AM-12:00 PM

Room: North Classroom 1005

For Part 2 see MS30

Contemporary combinatorics is an exciting and rapidly growing discipline on the frontier of mathematics and computer science. Many new techniques in combinatorics rely on applications of tools from other mathematical areas such as algebra, analysis and probability. In the last decade, various powerful novel methods have emerged. For example, recent works in the probabilistic method that culminated with the celebrated container method which answered many long-standing open Ramsey-type and extremal questions, new developments of algebraic techniques that were crucial in settling famous conjectures in design theory and number theory, and analytic approaches to Szemerédi's regularity lemma that served as the corner-stone of graph limits, which then spin-off to techniques for large networks and development of flag algebras. In this mini-symposium, we aim to bring mostly junior researchers in combinatorics in order to present further developments and applications of these methods, as well as talk about completely new approaches. We will discuss relevant open problems, exchange research ideas, and initiate new collaborations.

Organizer: Andrzej Grzesik
University of Warwick, United Kingdom

Organizer: Jan Volec
McGill University, Canada

9:30-9:55 Extremal Graph Theory and Finite Forcibility

Andrzej Grzesik and Daniel Kral, University of Warwick, United Kingdom; Laszlo M. Lovasz, University of California, Los Angeles, USA

continued in next column

continued on next page

10:00-10:25 Inducibility in Graphs

Florian Pfender, University of Colorado at Denver, USA; Bernard Lidicky, Iowa State University, USA

10:30-10:55 Large Multipartite Subgraphs of H-Free Graphs

Jan Volec, McGill University, Canada; Bernard Lidicky, Iowa State University, USA; Taisa Martins, University of Warwick, United Kingdom; Sergey Norin, McGill University, Canada; Ping Hu, University of Warwick, United Kingdom

11:00-11:25 Forcing Oriented Cycles

Roman Glebov, Hebrew University of Jerusalem, Israel; Andrzej Grzesik, University of Warwick, United Kingdom; Jan Volec, McGill University, Canada

11:30-11:55 Step Sidorenko Property and Non-Norming Edge-Transitive Graphs

Daniel Kral, Taisa Martins, and Péter Pál Pach, University of Warwick, United Kingdom; Marcin Wrochna, University of Warsaw, Poland

Wednesday, June 6

MS25**Graph Pebbling - Part I of III**

9:30 AM-12:00 PM

Room: North Classroom 1130

For Part 2 see MS31

The subject of graph pebbling encompasses a broad spectrum of concepts regarding the movement of pebbles through a graph, with many diverse applications to areas such as computational complexity, graph rigidity, large sparse matrix storage, and combinatorial number theory, among others. Modern graph pebbling also fits under the umbrella of network optimization, as a model for the transportation of limited and consumable resources. One of the main goals of this minisymposium is to attract new researchers to the field. Graph pebbling utilizes many techniques, including those from probabilistic combinatorics, linear optimization, discharging, domination, and more, making it naturally attractive to a wide audience. The topic has also supported a great amount of undergraduate research since the 1990s. Dozens of papers in this area have been written by participants in various REUs and such. We intend to introduce many new problems that are accessible to this population.

Organizer: John Asplund

Dalton State College, USA

Organizer: Glenn Hurlbert

Virginia Commonwealth University, USA

Organizer: Franklin Kenter

United States Naval Academy, USA

Organizer: Carl Yerger

Davidson College, USA

9:30-9:55 A Brief Introduction to Graph Pebbling

Franklin Kenter, United States Naval Academy, USA

10:00-10:25 Graph Pebbling Algorithms, Doppelgangers, and Lemke Graphs

Charles A. Cusack, Hope College, USA

10:30-10:55 Pebbling on Semi-2-Trees

Liliana Alcon and Marisa Gutierrez, Universidad Nacional de La Plata, Argentina; Glenn Hurlbert, VCU, Center for the Study of Biological Complexity, USA

11:00-11:25 Pebbling on Graph Products and More!

John Asplund, Dalton State College, USA; Franklin Kenter, United States Naval Academy, USA; Glenn Hurlbert, Virginia Commonwealth University, USA

11:30-11:55 Pebbling on Split Graphs

Liliana Alcon and Marisa Gutierrez, Universidad Nacional de La Plata, Argentina; Glenn Hurlbert, Virginia Commonwealth University, USA

continued in next column

Wednesday, June 6

MS26

Matroid Theory - Part I of II

9:30 AM-12:00 PM

Room:North Classroom 1806

For Part 2 see MS32

Matroid Theory is a vibrant and growing subject with connections across mathematics to graph theory, projective geometry, lattice theory, design theory, coding theory, combinatorial optimization etc. Groups of researchers in matroids and related objects tend to develop topic-specific language that obscures the interrelations. This minisymposium brings together researchers from different areas of matroid theory with the purpose of seeking commonalities and exploring connections between matroids and other areas of combinatorics.

Organizer: Sandra Kingan

City University of New York, Brooklyn, USA

9:30-9:55 Graph and Matroid Designs

Talmage J. Reid, University of Mississippi, USA

10:00-10:25 Delta-Matroids and Rigidity Matroids

Brigitte Servatius, Worcester Polytechnic Institute, USA

10:30-10:55 Interlacement and Activities in Delta-Matroids

Ada Morse, University of Vermont, USA

11:00-11:25 Algebraic Structures Related to Matroid Theory

Ivan Martino, Northeastern University, USA

11:30-11:55 Projective Planarity of 3-Nets and Biased Graphs

Rigoberto Florez, The Citadel, USA

Wednesday, June 6

CP7

Structural Graph Theory

9:30 AM-11:30 AM

Room:North Classroom 1606

Chair: To Be Determined

9:30-9:45 A Bandwidth Theorem for Approximate Decompositions

Padraig Condon, Jaehoon Kim, Daniela Kühn, and Deryk Osthus, University of Birmingham, United Kingdom

9:50-10:05 Coloring Vertex-minor-free Graphs with No Short Cycles

James G. Davies, University of Warwick, United Kingdom

10:10-10:25 On the Excluded Minors for Represented Frame Matroids

Cynthia Rodriguez and Jim Geelen, University of Waterloo, Canada

10:30-10:45 Extending a Result of Corradi and Hajnal

Michael Santana, Grand Valley State University, USA

10:50-11:05 Extremal Collections of k-Uniform Vectors

Joseph G. Briggs and Wesley Pegden, Carnegie Mellon University, USA

11:10-11:25 On Group Divisible Designs with Two Associate Classes and Larger Second Index

Chariya Uiyyasathian, Chulalongkorn University, Thailand

Lunch Break

12:00 PM-1:30 PM

Attendees on their own

Wednesday, June 6

IP5

New Developments in Hypergraph Ramsey Theory

1:30 PM-2:15 PM

Room:North Classroom 1130

Chair: To Be Determined

The Ramsey number $r_k(s, n)$ is the minimum integer N , such that for any red/blue coloring of the k -tuples of $\{1, 2, \dots, N\}$, there are s integers such that every k -tuple among them is red, or there are n integers such that every k -tuple among them is blue. In this talk, I will discuss new lower bounds for $r_k(s, n)$ which nearly settles a question of Erdos and Hajnal from 1972. I will also discuss a more general function introduced by Erdos and Hajnal, and several interesting open problems in the area. This is joint work with Dhruv Mubayi.

Andrew Suk

University of California, San Diego, USA

Coffee Break

2:15 PM-2:45 PM



Room:North Classroom 1130 Atrium

Wednesday, June 6

MS27**Modification Problems to Discrete Structures - Part I of II**

2:45 PM-5:15 PM

*Room:North Classroom 1604***For Part 2 see MS34**

A surprisingly high number of the interesting computational problems arising from theory and applications can be formulated as graph/matrix modification problems. In a graph modification problem, we are given as input a graph G , and the goal is to apply certain operations on G (such as vertex deletions, edge deletions, additions or contractions) in order to obtain a graph H with some particular property. A matrix modification problem is defined analogously. For an example the classical Vertex Cover problem can be formulated as trying to change G into an edgeless graph by deleting the minimum number of vertices. The treewidth problem is essentially a graph modification problem, where we add edges to make a graph chordal and having the minimum clique number, while the classic matrix rigidity problems is nothing but a matrix modification problem. These problems have been studied quite extensively, and both algorithms for these problems and structural aspects have been thoroughly explored. We plan to bring together experts in algorithms and experts in graph classes and structural graph theory to join forces on graph modification problems.

Organizer: Yixin Cao

Hong Kong Polytechnic University, China

Organizer: Saket Saurabh

*Institute of Mathematical Sciences, India***2:45-3:10 Modifications to Chordal Graphs***Saket Saurabh, Institute of Mathematical Sciences, India***3:15-3:40 Dynamic Parameterized Problems and Algorithms***Josh Alman, Massachusetts Institute of Technology, USA***3:45-4:10 Solving Feedback Vertex Set via Half-Integral Relaxation***Yoichi Iwata, National Institute of Informatics, Japan***4:15-4:40 Delta Decomposition***Ross McConnell, Colorado State University Fort Collins, USA*

Wednesday, June 6

MS28**Edge Colouring and Related Notions - Part II of II**

2:45 PM-5:15 PM

*Room:North Classroom 1003***For Part 1 see MS21**

Speakers will discuss problems related to edge colouring, including but not limited to: the classification problem, the Goldberg--Seymour conjecture, edge list colouring, matchings, and rainbow/antirainbow subgraphs in edge-coloured graphs.

Organizer: Gregory J. Puleo

Auburn University, USA

Organizer: Jessica McDonald

*Auburn University, USA***2:45-3:10 Edge-Colouring Planar Graphs with Precoloured Edges***Joshua Harrelson, Jessica McDonald, and Gregory J. Puleo, Auburn University, USA***3:15-3:40 Total List Coloring of Planar Graphs***Marthe Bonamy, LaBRI, Université de Bordeaux, and CNRS, France; Théo Pierron and Eric Sopena, Université de Bordeaux I, France***3:45-4:10 Independence Number of Edge-chromatic Critical Graphs***Yan Cao, Guantao Chen, and Guanming Jing, Georgia State University, USA; Songling Shan, Vanderbilt University, USA***4:15-4:40 Polychromatic Colorings of Complete Graphs with Respect to 1-,2-factors and Hamiltonian Cycles***Maria Axenovich, Karlsruhe Institute of Technology, Germany; John L. Goldwasser and Ryan Hansen, West Virginia University, USA; Bernard Lidicky and Ryan R. Martin, Iowa State University, USA; David Offner, Westminster College, USA; John Talbot, University College London, United Kingdom; Michael Young, Iowa State University, USA***4:45-5:10 Polychromatic Colorings of the Integers and Integers Mod N** *John L. Goldwasser, West Virginia University, USA**continued in next column*

Wednesday, June 6

MS29

Spatial Random Networks

2:45 PM-5:15 PM

Room: North Classroom 1606

The application of random graphs to the analysis of complex networks has led to many new mathematical models. Of special interest are spatial random graph models, where the vertices of the graphs are embedded in a metric space, and link formation depends on the distance of the vertices in the space. Spatial models are especially suited for the modelling of complex networks, such as social networks, biological networks, and Web-based networks such as Wikipedia. The underlying metric space represents the feature space, in which vertices are placed according to their defining properties. Vertices that are close together represent entities that are similar and so are more likely to be linked. This minisymposium aims to give an overview of the many different aspects of spatial random graphs. The simplest spatial graph model is the random geometric graph, where vertices are connected if and only if they are within a threshold distance of each other. The study of spatial random graphs is flourishing, and some of our speakers will give the latest results, including research on infinite random geometric graphs. A fundamental question addressed by some of our speakers is whether a large finite or infinite graph embodies the characteristics of the underlying metric space. Finally, some speakers will present state-of-the-art research using spatial random graphs to simulate the properties of real-life networks.

Organizer: Jeannette Janssen
Dalhousie University, Canada

Organizer: Anthony Bonato
Ryerson University, Canada

continued in next column

2:45-3:10 Infinite Random Geometric Graphs

Jeannette Janssen, Dalhousie University,
Canada

3:15-3:40 Random Geometric Graphs in Normed Spaces

Karen Gunderson, University of Manitoba,
Canada

3:45-4:10 Geometric Networks and Graph Limits

Mahya Ghandehari, University of Delaware,
USA

4:15-4:40 On Geometric Embedding of Graphs and Random Graphs

Huda Chuangpishit, Ryerson University,
Canada

4:45-5:10 Layout of Random Circulant Graphs

Israel S. Rocha, Czech Academy of Sciences,
Czech Republic

Wednesday, June 6

MS30

Analytic and Probabilistic Techniques in Combinatorics - Part II of II

2:45 PM-5:15 PM

Room: North Classroom 1539

For Part 1 see MS24

Contemporary combinatorics is an exciting and rapidly growing discipline on the frontier of mathematics and computer science. Many new techniques in combinatorics rely on applications of tools from other mathematical areas such as algebra, analysis and probability. In the last decade, various powerful novel methods have emerged. For example, recent works in the probabilistic method that culminated with the celebrated container method which answered many long-standing open Ramsey-type and extremal questions, new developments of algebraic techniques that were crucial in settling famous conjectures in design theory and number theory, and analytic approaches to Szemerédi's regularity lemma that served as the corner-stone of graph limits, which then spin-off to techniques for large networks and development of flag algebras. In this mini-symposium, we aim to bring mostly junior researchers in combinatorics in order to present further developments and applications of these methods, as well as talk about completely new approaches. We will discuss relevant open problems, exchange research ideas, and initiate new collaborations.

Organizer: Andrzej Grzesik
University of Warwick, United Kingdom

Organizer: Jan Volec
McGill University, Canada

continued on next page

2:45-3:10 Induced Subgraphs of Ramsey Graphs

Matthew Kwan and *Benjamin Sudakov*, ETH Zürich, Switzerland

3:15-3:40 On the Turón Number of Ordered Forests

Daniel Korandi, École Polytechnique Fédérale de Lausanne, Switzerland; *Gábor Tardos*, Alfréd Rényi Institute of Mathematics, Budapest; *Istvan Tomon*, École Polytechnique Fédérale de Lausanne, Switzerland; *Craig Weidert*, Google, Inc., USA

3:45-4:10 Polynomial Time Smoothed Analysis for Local Max-Cut

Fan Wei, Stanford University, USA; *Omer Angel*, University of British Columbia, Canada; *Yuval Peres* and *Sébastien Bubeck*, Microsoft Research, USA

4:15-4:40 Counting Tree-Like Graphs in Locally Dense Graphs

Joonkyung Lee, University of Oxford, United Kingdom

4:45-5:10 The Erdos-Gallai Theorem for Berge-Cycles in Hypergraphs

Alexandr Kostochka and *Ruth Luo*, University of Illinois at Urbana-Champaign, USA

Wednesday, June 6

MS31**Graph Pebbling - Part II of III**

2:45 PM-5:15 PM

Room: North Classroom 1130

For Part 1 see MS25

For Part 3 see MS37

The subject of graph pebbling encompasses a broad spectrum of concepts regarding the movement of pebbles through a graph, with many diverse applications to areas such as computational complexity, graph rigidity, large sparse matrix storage, and combinatorial number theory, among others. Modern graph pebbling also fits under the umbrella of network optimization, as a model for the transportation of limited and consumable resources. One of the main goals of this minisymposium is to attract new researchers to the field. Graph pebbling utilizes many techniques, including those from probabilistic combinatorics, linear optimization, discharging, domination, and more, making it naturally attractive to a wide audience. The topic has also supported a great amount of undergraduate research since the 1990s. Dozens of papers in this area have been written by participants in various REUs and such. We intend to introduce many new problems that are accessible to this population.

Organizer: John Asplund

Dalton State College, USA

Organizer: Carl Yeger

Davidson College, USA

Organizer: Glenn Hurlbert

Virginia Commonwealth University, USA

Organizer: Franklin Kenter

United States Naval Academy, USA

2:45-3:10 Thresholds for Random Pebbling

Neal Bushaw, Virginia Commonwealth University, USA

3:15-3:40 Optimal Pebbling Number of Graphs with Given Minimum Degree

Andrzej Czygrinow, Arizona State University, USA

3:45-4:10 The Weight Function Lemma and Its Applications

Glenn Hurlbert, Virginia Commonwealth University, USA

4:15-4:40 Distance Pebbling on Directed Cycle Graphs

Michael P. Knapp, Loyola University Maryland, USA

4:45-5:10 A Graph Pebbling Algorithm on Weighted Graphs

Nandor Sieben, Northern Arizona University, USA

continued in next column

Wednesday, June 6

MS32**Matroid Theory - Part II of II**

2:45 PM-4:45 PM

Room: North Classroom 1806

For Part 1 see MS26

Matroid Theory is a vibrant and growing subject with connections across mathematics to graph theory, projective geometry, lattice theory, design theory, coding theory, combinatorial optimization etc. Groups of researchers in matroids and related objects tend to develop topic-specific language that obscures the interrelations. This minisymposium brings together researchers from different areas of matroid theory with the purpose of seeking commonalities and exploring connections between matroids and other areas of combinatorics.

Organizer: Sandra Kingan

City University of New York, Brooklyn, USA

2:45-3:10 Deletion Sets in Binary Matroids

Sandra Kingan, City University of New York, Brooklyn, USA

3:15-3:40 Efficient Enumeration of Binary Matroids Using a New Canonical Form

Ken Sugimori, University of Tokyo, Japan; Sonoko Moriyama, Nihon University, Japan; Kunihiko Sadakane, University of Tokyo, Japan

3:45-4:10 Beta Invariants of 3-Connected Matroids

Sooyeon Lee, University of Mississippi, USA

4:15-4:40 Triangle Roundedness in Matroids

Joao Paulo Costalonga, Federal University of Espirito Santo, Brazil

Wednesday, June 6

CP8**Enumeration**

2:45 PM-4:05 PM

Room: North Classroom 1607

Chair: To Be Determined

2:45-3:00 Some Partitions Identities Between $P(n,m)$ - $P(n-1,m)$ and $p(n,m-1)$

Acadia B. Larsen, The University of Texas Rio Grande Valley, USA

3:05-3:20 Enumeration of Unsensed Orientable Maps on Surfaces of a Given Genus

Evgeniy Krasko and Alexander Omelchenko, St. Petersburg Academic University, Russia

3:25-3:40 Tools for Enumerating Graphs with Prescribed Degree Sequences

David Burstein, Swarthmore College, USA; Jonathan E. Rubin, University of Pittsburgh, USA

3:45-4:00 A Randomized Algorithm for Approximating Zonotopes

Paul Constantine, University of Colorado Boulder, USA; David F. Gleich, Purdue University, USA; Kerrek Stinson, Carnegie Mellon University, USA

Intermission

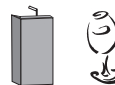
5:15 PM-5:30 PM

SIAG/DM Business Meeting

5:30 PM-6:30 PM

Room: North Classroom 1130

Complimentary refreshments will be served.

**Thursday, June 7****Registration**

7:30 AM-3:30 PM

Room: North Classroom 1130 Entry

Announcements

8:10 AM-8:15 AM

Room: North Classroom 1130

IP6**Random Graph Processes**

8:15 AM-9:00 AM

Room: North Classroom 1130

Chair: To Be Determined

When dealing with random objects, it is often useful to reveal the randomness gradually, rather than all at once; that is, to turn a static random object into a random process. In this talk we will describe some classical proofs of this type, and a few more recent applications, for example to Ramsey numbers, and to determining sharp thresholds in $G(n,p)$ and in random sets of integers. Various parts of the talk are based on joint work with Paul Balister, Béla Bollobás, Asaf Ferber, Gonzalo Fíez Pontiveros, Simon Griffiths, Oliver Riordan, Wojciech Samotij, and Paul Smith.

Robert Morris

Institute for Pure and Applied Mathematics - IMPA, Brazil

Coffee Break

9:00 AM-9:30 AM



Room: North Classroom 1130 Atrium

Thursday, June 7

MS33**The Structure of Families of Finite Sets - Part I of II**

9:30 AM-12:00 PM

*Room: North Classroom 1539***For Part 2 see MS39**

The theme of this minisymposium is the research on ordered sets in recent years, mainly on the structure of families of finite sets. In the last decade, more and more results on the problems related to finding the families of subsets avoiding a given pattern have been discovered and published. In the two sessions, we invite international researchers to give talks on the problems and results of determining the largest size of \mathcal{P} -free families (avoiding the poset \mathcal{P} as a subfamily) for general posets, for the specific posets, and for the induced subposets. In addition, we also invite the researchers to give talks addressing the results on antichains as well as the Ramsey-type results in Boolean lattices. We expect this minisymposium will enhance the development of new theory of the structures of finite sets and draw attention to more people who may be interested in this type of problems.

Organizer: Wei-Tian Li

*National Chung-Hsing University, Taiwan***9:30-9:55 An Improvement on the Intersecting Shadow Theorem***Gyula Katona, Renyi Institute, Hungary***10:00-10:25 Problems and Results Related to Maximal Antichains***Uwe Leck, Europa-Universitaet Flensburg, Germany***10:30-10:55 On Difference Graphs and the Local Dimension of Posets**

Ryan R. Martin, Iowa State University, USA; Jinha Kim, Seoul National University, Korea; Tomas Masarik, Charles University, Czech Republic; Warren Shull, Emory University, USA; Heather C. Smith, Georgia Institute of Technology, USA; Andrew Uzzell, Grinnell College, USA; Zhiyu Wang, University of South Carolina, USA

11:00-11:25 Forbidden Induced Subposets*Istvan Tomon, École Polytechnique Fédérale de Lausanne, Switzerland***11:30-11:55 Ramsey-Type of Problems on Posets in the Boolean Lattices***Wei-Tian Li, National Chung-Hsing University, Taiwan*

Thursday, June 7

MS34**Modification Problems to Discrete Structures - Part II of II**

9:30 AM-12:00 PM

*Room: North Classroom 1604***For Part 1 see MS27**

A surprisingly high number of the interesting computational problems arising from theory and applications can be formulated as graph/matrix modification problems. In a graph modification problem, we are given as input a graph G , and the goal is to apply certain operations on G (such as vertex deletions, edge deletions, additions or contractions) in order to obtain a graph H with some particular property. A matrix modification problem is defined analogously. For an example the classical Vertex Cover problem can be formulated as trying to change G into an edgeless graph by deleting the minimum number of vertices. The treewidth problem is essentially a graph modification problem, where we add edges to make a graph chordal and having the minimum clique number, while the classic matrix rigidity problems is nothing but a matrix modification problem. These problems have been studied quite extensively, and both algorithms for these problems and structural aspects have been thoroughly explored. We plan to bring together experts in algorithms and experts in graph classes and structural graph theory to join forces on graph modification problems.

Organizer: Yixin Cao

Hong Kong Polytechnic University, China

Organizer: Saket Saurabh

*Institute of Mathematical Sciences, India***9:30-9:55 An $O(k^4)$ Kernel for Unit Interval Vertex Deletion***Yixin Cao, Hong Kong Polytechnic University, China***10:00-10:25 Complexity Dichotomies for H -free Edge Modification Problems***R B Sandeep, Indian Institute of Information Technology, India***10:30-10:55 Modification of Matroids and Matrices***Meirav Zehavi, Ben-Gurion University, Israel***11:00-11:25 A Polynomial Kernel of Distance-Hereditary Vertex Deletion***Eun Jung Kim, Université Paris Dauphine and CNRS, France; O-Joung Kwon, Incheon National University, Korea***11:30-11:55 Maximum Induced Matching Algorithms via Vertex Ordering Characterizations***Lalla Mouatadid, University of Toronto, Canada**continued in next column*

Thursday, June 7

MS35**Modeling and Mining
Network Data - Part I of II**

9:30 AM-12:00 PM

*Room:North Classroom 1003***For Part 2 see MS40**

Discrete mathematics is at the heart of challenging data-driven problems. Many discrete datasets look like networks, a mathematical formalism for modeling complex systems by interactions between entities. This minisymposium highlights several recent advances in modeling and mining network data with an underlying theme of connecting theory and applications with real data. The theoretical tools are quite diverse and include extremal graph theory, numerical linear algebra, and algorithm design. The applications are equally diverse, drawing from marketing, machine learning, and social network analysis, using data from protein interactions, neural systems, email communications, transportation systems, and more. This minisymposium will showcase the exciting opportunities at the intersection of discrete mathematics and data science.

Organizer: Austin Benson

*Cornell University, USA***9:30-9:55 New Perspectives on
Measuring Network Clustering**

Austin Benson, Cornell University, USA;
Hao Yin and Jure Leskovec, Stanford
University, USA

**10:00-10:25 Hypergraph Kronecker
Models for Networks**

David F. Gleich and Nicole Eikmeier,
Purdue University, USA

**10:30-10:55 Mitigating Overexposure
in Viral Marketing**

Rediet Abebe, Cornell University, USA; Lada
Adamic, The University of Michigan, Ann
Arbor, USA; Jon M. Kleinberg, Cornell
University, USA

**11:00-11:25 Modeling and Mining
Dynamic Competition Networks**

Anthony Bonato, Ryerson University, Canada

**11:30-11:55 Tuning the Activity of
Neural Networks at Criticality**

Kathleen Finlinson, University of Colorado
Boulder, USA

Thursday, June 7

MS36**Open Problems in
Combinatorics on Words**

9:30 AM-12:00 PM

Room:North Classroom 1806

Combinatorics on words is a rapidly growing field at the border of mathematics and computer science. Roughly speaking, it is the study of words (finite lists of symbols) and their combinatorial properties. Our minisymposium will center around the theme of open problems in combinatorics on words. We propose to have speakers discussing (1) the additive k 'th power problem: does there exist an infinite word over a finite subset of \mathbb{Z} avoiding k consecutive blocks of the same size and the same sum? Recently this problem was (positively) resolved for $k = 3$, but the problem for $k = 2$ is still open. (2) discrete tilings and their relationship to combinatorics on words. Here the principal open problem is Nivat's conjecture about two-dimensional periodicity. (3) automatic sequences (sequences generated by finite automata) and their generalizations. Here we propose to have speakers addressing generalizations of Cobham's theorem and p -adic properties.

Organizer: Jeffrey Shallit

University of Waterloo, Canada

Organizer: Narad Rampersad

The University of Winnipeg, Canada

Organizer: James D. Currie

*The University of Winnipeg, Canada***9:30-9:55 Introduction to Combinatorics
on Words**

James D. Currie, The University of Winnipeg,
Canada

**10:00-10:25 Generalizations of
Cobham's Theorem**

Jakub Byszewski, Jagiellonian University,
Poland

**10:30-10:55 The Additive K 'th Power
Problem and Generalizations**

Matthieu Rosenfeld, LIMOS- UCA, France

**11:00-11:25 Decidability and the
Ostrowski Numeration System**

Philipp Hieronymi, University of Illinois,
Urbana-Champaign, USA

**11:30-11:55 Automatic Sequences and
 p -adic Asymptotics**

Eric Rowland, Hofstra University, USA

Thursday, June 7

MS37**Graph Pebbling - Part III of III**

9:30 AM-12:00 PM

*Room:North Classroom 1130***For Part 2 see MS31**

The subject of graph pebbling encompasses a broad spectrum of concepts regarding the movement of pebbles through a graph, with many diverse applications to areas such as computational complexity, graph rigidity, large sparse matrix storage, and combinatorial number theory, among others. Modern graph pebbling also fits under the umbrella of network optimization, as a model for the transportation of limited and consumable resources. One of the main goals of this minisymposium is to attract new researchers to the field. Graph pebbling utilizes many techniques, including those from probabilistic combinatorics, linear optimization, discharging, domination, and more, making it naturally attractive to a wide audience. The topic has also supported a great amount of undergraduate research since the 1990s. Dozens of papers in this area have been written by participants in various REUs and such. We intend to introduce many new problems that are accessible to this population.

Organizer: John Asplund

Dalton State College, USA

Organizer: Carl Yerger

Davidson College, USA

Organizer: Glenn Hurlbert

Virginia Commonwealth University, USA

Organizer: Franklin Kenter

*United States Naval Academy, USA**continued on next page*

9:30-9:55 Pebbling on Low Diameter Interval Graphs

Carl Yerger, Davidson College, USA; Xuchen Zhou, Columbia University, USA

10:00-10:25 Optimal Pebbling Number of Grids

Ervin Gyori, Renyi Institute, Hungary; Gyula Y. Katona and *Laszlo F. Papp*, Budapest University of Technology and Economics, Hungary; Casey Tompkins, Renyi Institute, Hungary

10:30-10:55 Variations on the Pebbling Game: Critical, Weighted, and Transport Pebbling

Josh Laison, Willamette University, USA

11:00-11:25 On Some Questions Regarding Class 0 Graphs

John Schmitt, Middlebury College, USA

11:30-11:55 Pebbling Bounds for Class 0 Graphs

Daniel Cranston, Virginia Commonwealth University, USA; Luke Postle, University of Waterloo, Canada; Carl Yerger, Davidson College, USA; *Chenxiao Xue*, Google, Inc., USA

Thursday, June 7

CP9**Coloring**

9:30 AM-10:30 AM

Room: North Classroom 1606

Chair: To Be Determined

9:30-9:45 A k -Partite Generalization of Chordal Bipartite Graphs

Terry McKee, Wright State University, USA

9:50-10:05 Properly Colored Connections in Graphs

Wayne Goddard and Robert Melville, Clemson University, USA

10:10-10:25 An Asymptotic Bound for the Strong Chromatic Number

Allan Lo and *Nicolás Sanhueza-Matamala*, University of Birmingham, United Kingdom

Lunch Break

12:00 PM-1:30 PM

Attendees on their own

Thursday, June 7

IP7**Deciphering Cellular Networks: From Normal Functioning to Disease**

1:30 PM-2:15 PM

Room: North Classroom 1130

Chair: To Be Determined

Each cell in our body accomplishes its functions via a complex network of molecular interactions. Analyses of these networks are thus key to understanding cellular functioning (and, in the case of disease, malfunctioning). I will overview what has been discovered about the basic structure and organization of cellular networks, and present frameworks and algorithms that leverage these properties in order to gain a better understanding of diseases such as cancer.

Mona Singh

Princeton University, USA

Coffee Break

2:15 PM-2:45 PM



Room: North Classroom 1130 Atrium

Thursday, June 7

MS38

Extremal Problems for Sparse Graphs and Hypergraphs - Part I of II

2:45 PM-5:15 PM

Room: North Classroom 1003

For Part 2 see MS43

Extremal theory for graphs and hypergraphs is a fast developing and important area within Combinatorics that typically studies extrema of parameters of graphs and hypergraphs with given properties. It has applications to areas such as combinatorial geometry, number theory, coding theory, computer science, and etc. In recent decades, extremal (hyper-)graph theory has experienced significant growth thanks to the development of some powerful methods such as the probabilistic method, the regularity method and the absorbing method. The latter two are especially effective on dense graphs. Relatively speaking, there has been a lack of general tools for tackling extremal problems for sparse graphs. However, there have been many interesting developments in this area and some promising methods have been introduced such as dependent random choice, delta system method, junta method and etc. The aim of this mini-symposium is to bring together a diverse group of active researchers working on sparse problems using different methods. The hope is that the interchanging of ideas from different angles will help forging the development of more universal tools for extremal problems in the sparse setting. We also hope that the broad range of the interesting results and methods covered by the talks will help generate more interests from the general discrete mathematics community in the extremal problems in the sparse setting.

Organizer: Tao Jiang

Miami University, USA

Organizer: Liana Yepremyan

University of Oxford, United Kingdom

continued in next column

2:45-3:10 Spanning Subgraphs of Randomly Perturbed Graphs

Julia Boettcher, London School of

Economics, United Kingdom; Yury Person and Olaf Parczyk, University of Frankfurt, Germany; Richard Montgomery, University of Cambridge, United Kingdom

3:15-3:40 Proof of Komlos's Conjecture on Hamiltonian Subsets

Jaehoon Kim, University of Birmingham, United Kingdom; Hong Liu and Maryam Sharifzadeh, University of Warwick, United Kingdom; Katherine L. Staden, University of Oxford, United Kingdom

3:45-4:10 On Subgraphs of $2k$ -cycle-free Graphs and Some Generalised Turán Problems

Abhishek Methuku, Central European University, Hungary

4:15-4:40 The Junta Method in Extremal Hypergraph Theory and Chvátal's Conjecture

Nathan Keller and Noam Lifshitz, Bar-Ilan University, Israel

4:45-5:10 Isoperimetric Stability for the Cube

Peter Keevash and Eoin Long, University of Oxford, United Kingdom

Thursday, June 7

MS39

The Structure of Families of Finite Sets - Part II of II

2:45 PM-4:45 PM

Room: North Classroom 1539

For Part 1 see MS33

The theme of this minisymposium is the research on ordered sets in recent years, mainly on the structure of families of finite sets. In the last decade, more and more results on the problems related to finding the families of subsets avoiding a given pattern have been discovered and published. In the two sessions, we invite international researchers to give talks on the problems and results of determining the largest size of P -free families (avoiding the poset P as a subfamily) for general posets, for the specific posets, and for the induced subposets. In addition, we also invite the researchers to give talks addressing the results on antichains as well as the Ramsey-type results in Boolean lattices. We expect this minisymposium will enhance the development of new theory of the structures of finite sets and draw attention to more people who may be interested in this type of problems.

Organizer: Wei-Tian Li

National Chung-Hsing University, Taiwan

2:45-3:10 Sizes of Maximal Antichains in B_n

Jerry Griggs, University of South Carolina, USA; Thomas Kalinowski, University of New England, Armidale, Australia; Uwe Leck, Europa-Universitaet Flensburg, Germany; Ian Roberts, Charles Darwin University, Australia; Michael Schmitz, Europa-Universitaet Flensburg, Germany

3:15-3:40 An Algorithm Approach to Bounding Families of Subsets Avoiding a Subposet in Boolean Lattices

Hong-Bin Chen, Feng-Chia University, Taiwan

3:45-4:10 An Upper Bound on the Size of Diamond-Free Families of Sets

Dániel Grósz, Università di Pisa, Italy; Abhishek Methuku, Central European University, Hungary; Casey Tompkins, Renyi Institute, Hungary

4:15-4:40 A Generalization of Sperner's Theorem for Convex Families

Lili Mu, Liaoning Normal University, China

Thursday, June 7

MS40**Modeling and Mining
Network Data - Part II of II**

2:45 PM-4:45 PM

*Room: North Classroom 1604***For Part 1 see MS35**

Discrete mathematics is at the heart of challenging data-driven problems. Many discrete datasets look like networks, a mathematical formalism for modeling complex systems by interactions between entities. This minisymposium highlights several recent advances in modeling and mining network data with an underlying theme of connecting theory and applications with real data. The theoretical tools are quite diverse and include extremal graph theory, numerical linear algebra, and algorithm design. The applications are equally diverse, drawing from marketing, machine learning, and social network analysis, using data from protein interactions, neural systems, email communications, transportation systems, and more. This minisymposium will showcase the exciting opportunities at the intersection of discrete mathematics and data science.

Organizer: Austin Benson

*Cornell University, USA***2:45-3:10 Graph Matching Via Low
Rank Factors***Huda Nassar, Purdue University, USA***3:15-3:40 Risk-Averse Matchings over
Uncertain Graph Databases***Charalampos Tsourakakis, Boston University
and Harvard University, USA***3:45-4:10 Detectability of Hierarchical
Community Structure in Preprocessed
Multilayer Networks***Dane Taylor, State University of New York,
Buffalo, USA; Peter J. Mucha, University of
North Carolina at Chapel Hill, USA***4:15-4:40 Evaluating Overfit and
Underfit in Models of Network
Community Structure***Amir Ghasemian, University of Colorado
Boulder, USA; Homa Hosseinmardi,
University of Southern California, USA;
Aaron Clauset, University of Colorado
Boulder, USA*

Thursday, June 7

MS41**Foundations of Data Science
- Part I of II**

2:45 PM-5:15 PM

*Room: North Classroom 1130***For Part 2 see MS47**

In support of the NSF initiative on Transdisciplinary Research in Principles of Data Science (TRIPODS) and tapping into the broader research interest and investment from research labs across the nation, this minisymposium will feature lectures on frontier research in foundational aspects of data science. A primary goal is to feature a diverse set of speakers from computing, engineering and statistics who will help identify algorithmic and mathematical challenges confronting the current state of this fast growing, exciting interdisciplinary field. Topics will include nonlinear optimization and high-dimensional statistics, statistical and large-scale machine learning, data-driven algorithm design, scalable learning algorithms, automation of data analysis, neural nets and deep learning, structured sparsity and compressed sensing, submodular optimization, and analysis of complex, high-dimensional data sets, large networks and computational phylogeny.

Organizer: Prasad Tetali

Georgia Institute of Technology, USA

Organizer: Jennifer Chayes

Microsoft Research, USA

Organizer: David Shmoys

*Cornell University, USA***2:45-3:10 Bayesian Optimization with
Exotic Structure***Peter I. Frazier, Saul Toscano Palmerin,
Matthias Poloczek, and Andrew Wilson,
Cornell University, USA; Jian Wu, Two
Sigma, USA***3:15-3:40 Graphons: From Graph Limits
to Non-Parametric Graph Models and
Estimation***Christian Borgs, Microsoft Research, USA***3:45-4:10 Learning Determinantal Point
Processes***Philippe Rigollet, Victor-Emmanuel
Brunel, Ankur Moitra, and John Urschel,
Massachusetts Institute of Technology, USA***4:15-4:40 Stochastic Combinatorial
Optimization with Queries***Takanori Maehara, RIKEN Center for
Advanced Intelligence Project, Japan;
Yutaro Yamaguchi, Osaka University, Japan***4:45-5:10 Mathematical and
Computational Grand Challenges in
Estimating the Tree of Life***Tandy Warnow and Mike Nute, University
of Illinois at Urbana-Champaign, USA;
Sebastien Roch, University of Wisconsin,
Madison, USA; Siavash Mirarab, University
of California, San Diego, USA**continued in next column*

Thursday, June 7

MS42

Results from the Graduate Research Workshop in Combinatorics

2:45 PM-5:15 PM

Room: North Classroom 1606

Since the summer of 2014 the Graduate Research Workshop in Combinatorics (GRWC) has worked with over a hundred graduate students and postdocs by engaging them in original research in combinatorics. The research topics that have been explored cover a wide range including structural graph theory, graph coloring, extremal graph theory, and combinatorial linear algebra, resulting in over twenty papers (and counting). This minisymposium will bring together a few of the past participants to speak on some of the research which has come out of GRWC over the past few years. More information about GRWC is online at CombinatoricsWorkshop.org.

Organizer: Bernard Lidicky
Iowa State University, USA

Organizer: Steve Butler
Iowa State University, USA

2:45-3:10 The Zero Forcing Polynomial of a Graph

Kirk Boyer, University of Denver, USA;
Boris Brimkov, Rice University, USA;
Sean English, Western Michigan University, USA; Daniela Ferrero, Texas State University, San Marcos, USA; Ariel Keller, Emory University, USA; Rachel Kirsch, University of Nebraska, USA; Michael Phillips, University of Colorado, Denver, USA; Carolyn Reinhart, Iowa State University, USA

3:15-3:40 A Forest Building Process for Simple Graphs

Zhanar Berikkyzy and Steve Butler, Iowa State University, USA; Jay Cummings, Sacramento State University, USA; Kristin Heyse, Macalester College, USA; Paul Horn, University of Denver, USA; Ruth Luo, University of Illinois at Urbana-Champaign, USA; Brent Moran, Berlin Mathematical School, Germany

3:45-4:10 Graph Saturation Problems with Colored Edges

Michael Tait, Carnegie Mellon University, USA

4:15-4:40 I,F Partitions of Sparse Graphs

Axel Brandt, Davidson College, USA; Micheal Ferrara, University of Colorado, Denver, USA; Mohit Kumbhat, University of Nevada, Reno, USA; Sarah Loeb, College of William & Mary, USA; Derrick Stolee, Microsoft, USA; Matthew Yancey, IDA/CCS, USA

4:45-5:10 Degree Conditions for Small Contagious Sets in Bootstrap Percolation

Andrew Uzzell, Grinnell College, USA

Thursday, June 7

CP10

General Graph Theory

2:45 PM-4:05 PM

Room: North Classroom 1607

Chair: To Be Determined

2:45-3:00 Limited Broadcast Domination and Multipacking

Frank Yang, University of Victoria, Canada

3:05-3:20 On Essentially 4-Edge-Connected Cubic Bricks

Nishad Kothari, University of Vienna, Austria; Marcelo de Carvalho, Universidade Federal do Mato Grosso do Sul, Brazil; Charles Little, Massey University, New Zealand; Claudio Lucchesi, University of Campinas, Brazil

3:25-3:40 Vertex Disjoint Paths Covers of Rectangular Grids, Tori, and Hypertori

Wing Hong Tony Wong, Kutztown University of Pennsylvania, USA

3:45-4:00 A Local Chordalization Approach to the Hadwiger Conjecture and the Erdős-Faber-Lovász Conjecture

Soogang Eoh, Seoul National University, Korea; Jihoon Choi, Cheongju University, South Korea; Suh-Ryung Kim, Seoul National University, Korea

Intermission

5:15 PM-5:30 PM

SP2

Hot Topics Session

5:30 PM-6:30 PM

Room: North Classroom 1130

Chair: To Be Determined

Abstract Not Available At Time Of Publication.

Henry Cohn

Microsoft Research New England, USA

Friday, June 8

Registration

7:30 AM-10:30 AM

Room: North Classroom 1130 Entry

Closing Remarks

8:10 AM-8:15 AM

Room: North Classroom 1130

IP8

Algorithms for the Asymmetric Traveling Salesman Problem

8:15 AM-9:00 AM

Room: North Classroom 1130

Chair: To Be Determined

The traveling salesman problem is one of the most fundamental optimization problems. Given n cities and pairwise distances, it is the problem of finding a tour of minimum distance that visits each city once. In spite of significant research efforts, current techniques seem insufficient for settling the approximability of the traveling salesman problem. The gap in our understanding is especially large in the general asymmetric setting where the distance from city i to j is *not* assumed to equal the distance from j to i . In this talk, we will give an overview of old and new approaches for settling this question. We shall, in particular, talk about our new approach that gives the first constant-factor approximation algorithm for the asymmetric traveling salesman problem. This is based on joint work with Jakub Tarnawski and László Végh.

Ola Svensson

École Polytechnique Fédérale de Lausanne,
Switzerland

Coffee Break

9:00 AM-9:30 AM



Room: North Classroom 1130 Atrium

Friday, June 8

MS43

Extremal Problems for Sparse Graphs and Hypergraphs - Part II of II

9:30 AM-12:00 PM

Room: North Classroom 1806

For Part I see MS38

Extremal theory for graphs and hypergraphs is a fast developing and important area within Combinatorics that typically studies extrema of parameters of graphs and hypergraphs with given properties. It has applications to areas such as combinatorial geometry, number theory, coding theory, Information theory, etc. In recent decades, extremal graph theory has experienced significant growth thanks to the development of some powerful methods such as the probabilistic method, the regularity method and the absorbing method.

The latter two are especially effective on dense graphs. Relatively speaking, there has been a lack of general tools for tackling extremal problems for sparse graphs. However, there have been many interesting developments in this area and some promising methods have been introduced such as dependent random choice, delta system method, junta method, etc. The aim of this mini-symposium is to bring together a diverse group of active researchers working on sparse problems using different methods. The hope is that the interchanging of ideas from different angles will help forging the development of more universal tools for extremal problems in the sparse setting. We also hope that the broad range of the interesting results and methods covered by the talks will help generate more interests from the general discrete mathematics community in the extremal problems in the sparse setting.

Organizer: Tao Jiang

Miami University, USA

Organizer: Liana Yepremyan

University of Oxford, United Kingdom

9:30-9:55 Embedding Trees with Minimum and Maximum Degree Conditions

Maya Stein, Universidad de Chile, Chile

10:00-10:25 Extremal Problems for Multigraphs

Dhruv Mubayi, University of Illinois at Chicago, USA; Caroline Terry, University of Maryland, USA

10:30-10:55 Independent Sets in Sparse Hypergraphs

Jacques Verstraëte, University of California, San Diego, USA; Jeroen Schillewaert, University of Auckland, New Zealand

11:00-11:25 Kissing Numbers in High Dimensions

Matthew Jenssen, University of Oxford, United Kingdom

11:30-11:55 Turan Exponents of Bipartite Graphs

Tao Jiang, Miami University, USA; Jie Ma, University of Science and Technology of China, China; Liana Yepremyan, University of Oxford, United Kingdom

continued in next column

Friday, June 8

MS44

Structured Families of Graphs and Posets

9:30 AM-12:00 PM

Room: North Classroom 3205

This minisymposium brings together researchers in the areas of structured families of graphs and posets, including basic graph properties, graph minors and interval orders. These structured families are utilized to organize and analyze data. Key goals include characterization; recognition and translation from one setting to another. Some families can be recognized in polynomial time and others not.

Organizer: Karen Collins

Wesleyan University, USA

Organizer: Ann N. Trenk

Wellesley College, USA

9:30-9:55 Structured Graphs and Posets Overview

Karen Collins, Wesleyan University, USA

10:00-10:25 Hereditary Families and the Dominance Order

Michael D. Barrus, University of Rhode Island, USA

10:30-10:55 Hamiltonian Path Variants in Structured Graph Families

Garth T. Isaak, Lehigh University, USA

11:00-11:25 Using Three-Sided Brambles to Bound Treewidth in Planar Graphs

Brett Smith, Yale University, USA

11:30-11:55 Non-monochromatic Triangles in 2-edge-coloured Graphs

Jessica McDonald, Auburn University, USA

Friday, June 8

MS45

Graph Curvature and Related Topics

9:30 AM-12:00 PM

Room: North Classroom 3207

There are rich connections between the spectral theory of the Laplace-Beltrami operator on Riemannian manifolds and the spectral theory of graph Laplacians. A recent effort of researchers has been to further develop analogies between Riemannian manifolds and graphs by developing notions of curvature and curvature lower bounds for graphs. These efforts involve a number of ideas from probability and geometry. Two major approaches developed recently are the use of curvature-dimension type inequalities, generalizing Bochner's formula, in a graph setting and using the Wasserstein distance between probability distributions to define a notion of graph curvature. Graph curvature notions have led to graph theoretical analogues of a number of results from Riemannian geometry, including eigenvalue bounds (such as Buser's inequality), and volume and diameter bounds. This mini-symposium brings together a number of active researchers in the area to discuss recent results in this direction, and further challenges on applying graph curvature as well as on related problems.

Organizer: Paul Horn

University of Denver, USA

9:30-9:55 Curvature and the Geometry of Graphs

Paul Horn, University of Denver, USA

10:00-10:25 Volume Growth and Buser's Inequality in Graphs

Peter Ralli, Princeton University, USA

10:30-10:55 Gradient Flows of Wasserstein Spaces on Data Clouds and Their Continuum Limits

Nicolas Garcia Trillos, Brown University, USA

11:00-11:25 Large Scale Ricci Curvature on Graphs

Mark Kempton, Harvard University, USA;

Gabor Lippner, Northeastern University, USA; Florentin Munch, University of Potsdam, Germany; Shing-Tung Yau, Harvard University, USA

11:30-11:55 Using Curvature to Bound Stretches in Eigenfunctions of Graphs

Fan Chung, University of California, San Diego, USA; Shing-Tung Yau, Harvard University, USA

continued in next column

Friday, June 8

MS46**Computational Methods in Discrete Mathematics**

9:30 AM-12:00 PM

Room: North Classroom 1207

Computational methods in discrete mathematics have become more widely used in recent years. Such approaches have had some stunning successes, such as the Four Color Theorem, the nonexistence of the projective plane of order 10, and the proof of the Kepler Conjecture, but these methods are now becoming part of the toolbox of the everyday working mathematician. This minisymposium will showcase recent results in the area.

Organizer: Stephen Hartke

*University of Colorado, USA***9:30-9:55 Chromatic Folkman Numbers and Some Related Computational Challenges**

Xiaodong Xu, Guangxi Academy of Sciences, Guangxi, China; Meilian Liang, Guangxi University, China; *Stanislaw Radziszowski*, Rochester Institute of Technology, USA

10:00-10:25 Computational Bounds on Classical Ramsey Numbers

Brendan McKay, Australian National University, Australia

10:30-10:55 Generating New Patterns for Antique Lace

Veronika Irvine, University of Waterloo, Canada

11:00-11:25 On Small k -chromatic Graphs of Girth g

Geoffrey Exoo, Indiana State University, USA

11:30-11:55 Rotation Systems for Hamilton Cycles

Aaron Williams, Bard College at Simon's Rock, USA

Friday, June 8

MS47**Foundations of Data Science - Part II of II**

9:30 AM-12:00 PM

*Room: North Classroom 1130***For Part I see MS41**

In support of the NSF initiative on Transdisciplinary Research in Principles of Data Science (TRIPODS) and tapping into the broader research interest and investment from research labs across the nation, this minisymposium will feature lectures on frontier research in foundational aspects of data science. A primary goal is to feature a diverse set of speakers from computing, engineering and statistics who will help identify algorithmic and mathematical challenges confronting the current state of this fast growing, exciting interdisciplinary field. Topics will include nonlinear optimization and high-dimensional statistics, statistical and large-scale machine learning, data-driven algorithm design, scalable learning algorithms, automation of data analysis, neural nets and deep learning, structured sparsity and compressed sensing, submodular optimization, and analysis of complex, high-dimensional data sets, large networks and computational phylogeny.

Organizer: Prasad Tetali

Georgia Institute of Technology, USA

Organizer: Jennifer Chayes

Microsoft Research, USA

Organizer: David Shmoys

*Cornell University, USA***9:30-9:55 Robustness and Submodularity**

Stefanie Jegelka and Matthew Staib, Massachusetts Institute of Technology, USA; Bryan Wilder, University of Southern California, USA

10:00-10:25 Statistical Estimation Under Group Actions: The Sample Complexity of Multi-Reference Alignment

Afonso Bandeira, Courant Institute of Mathematical Sciences, New York University, USA

10:30-10:55 Differential Privacy for Growing Databases

Rachel Cummings, Georgia Institute of Technology, USA; Sara Krehbiel, University of Richmond, USA; Kevin Lai and Uthaipon (Tao) Tantipongpipat, Georgia Institute of Technology, USA

11:00-11:25 Title Not Available At Time Of Publication

Hanie Sedghi, Google, Inc., USA

11:30-11:55 Catalyst, Generic Acceleration Scheme for Gradient-based Optimization

Zaid Harchaoui, University of Washington, USA; Hongzhou Lin, Massachusetts Institute of Technology, USA; Courtney Paquette, Lehigh University, USA; Julien Mairal, Inria, France; Dmitriy Drusvyatskiy, University of Washington, USA

continued in next column

Friday, June 8

MS48

Graph Polynomials

9:30 AM-12:00 PM

Room: North Classroom 3209

For a variety of combinatorial problems, such as network reliability and graph colourings, the models turn out to be graph polynomials. On the other hand, the investigation of various subgraph properties (such as independence and domination) leads one to explore the associated combinatorial sequences by formulating generating polynomials. In all cases, polynomials carry useful or even essential information about the underlying combinatorics, and the connections allow one to draw on classical areas of mathematics, such as analysis and algebra, in the investigations. Combinatorial properties such as unimodality and log-concavity of various graphical sequences can surprisingly be extracted from the location of the roots of such polynomials. Different graph properties can also lead to interesting analytical and algebraic properties of the polynomials as well, such as factorability, the distribution of roots in the complex plane, and even fractals appearing in their roots. We aim to draw on the research of people working on a variety of graph polynomials to share techniques and methods to help advance the study of each polynomial.

Organizer: Ben R. Cameron

Dalhousie University, Canada

Organizer: Jason Brown

Dalhousie University, Canada

9:30-9:55 The Theory of Network Reliability

Jason Brown, Dalhousie University, Canada

10:00-10:25 Counting Increasing Spanning Forests in Graphs

Joshua Hallam, Wake Forest University, USA;

Jeremy Martin, University of Kansas, USA; Bruce Sagan, Michigan State University, USA

10:30-10:55 On the Stability of Independence Polynomials

Ben R. Cameron and Jason Brown, Dalhousie University, Canada

11:00-11:25 Chromatic Symmetric Functions and e-Positivity

Samantha Dahlberg, University of British Columbia, Canada

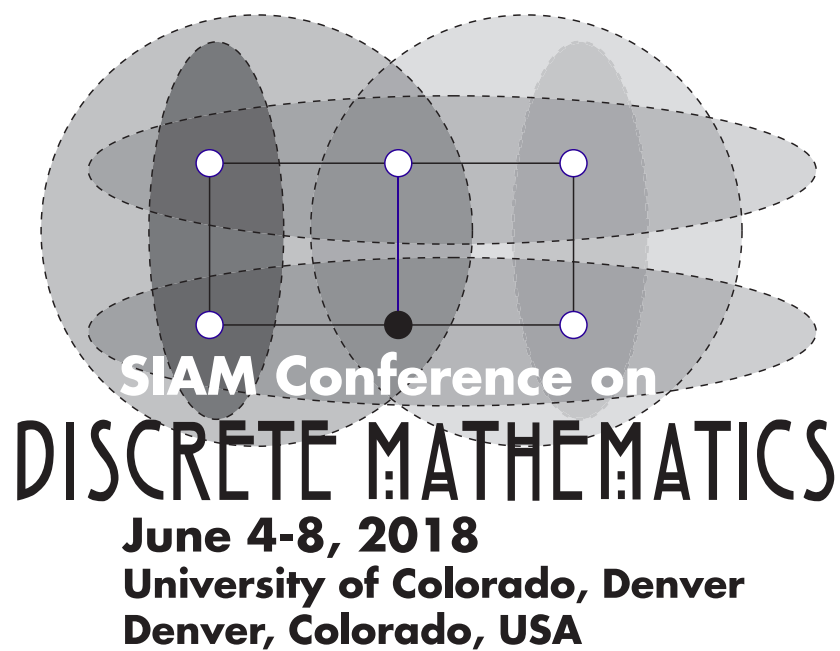
11:30-11:55 On the Roots of Wiener Polynomials of Graphs

Jason Brown, Dalhousie University, Canada; Lucas Mol, The University of Winnipeg, Canada; Ortrud R. Oellermann, The University of Winnipeg, Canada

continued in next column

Organizer and Speaker Index

Figure courtesy Victor Chepoi, Hans-Juergen Bandelt, David Eppstein from SIDMA 24-4



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 Chen, Ricky X., CP4, 11:10 Tue
 Choi, Ilkyoo, MS3, 10:00 Mon
 Chuangpishit, Huda, MS29, 4:15 Wed
 Chung, Fan, MS45, 11:30 Fri
Cioaba, Sebastian, MS20, 2:45 Tue
 Cohn, Henry, SP2, 5:30 Thu
 Collins, Karen, MS14, 11:00 Tue
Collins, Karen, MS44, 9:30 Fri
 Collins, Karen, MS44, 9:30 Fri
 Condon, Padraig, CP7, 9:30 Wed
 Constantine, Paul, CP8, 3:45 Wed
 Costalonga, Joao Paulo, MS32, 4:15 Wed
Cowen, Lenore J., MS15, 9:30 Tue
 Cowen, Lenore J., MS15, 9:30 Tue
Cowen, Lenore J., MS18, 2:45 Tue
Cranston, Daniel, MS3, 9:30 Mon
 Cranston, Daniel, MS3, 9:30 Mon
Cranston, Daniel, MS8, 2:45 Mon
 Cummings, Rachel, MS47, 10:30 Fri

Currie, James D., MS36, 9:30 Thu

Currie, James D., MS36, 9:30 Thu
 Cusack, Charles A., MS25, 10:00 Wed
 Czygrinow, Andrzej, MS31, 3:15 Wed

D

Dahlberg, Samantha, MS48, 11:00 Fri
 Davies, James G., CP7, 9:50 Wed
 Davis, Robert, MS19, 4:15 Tue
 Du, Ruoxia, MS19, 3:45 Tue
 Dudek, Andrzej, MS10, 4:15 Mon
 Duffus, Dwight, MS12, 10:00 Tue
 Dvorak, Zdenek, MS2, 9:30 Mon

E

Edwards, Katherine, MS21, 10:30 Wed
 Ekim, Tinaz, MS17, 3:45 Tue
 El Rouayheb, Salim, MS9, 3:15 Mon
 Eoh, Soogang, CP10, 3:45 Thu
 Eslava, Laura, MS4, 11:00 Mon
 Exoo, Geoffrey, MS46, 11:00 Fri

F

Finlinson, Kathleen, MS35, 11:30 Thu
 Florez, Rigoberto, MS26, 11:30 Wed
 Fox, Kyle, MS22, 11:30 Wed
 Frazier, Peter I., MS41, 2:45 Thu

G

Gao, Pu, MS4, 10:00 Mon
 Garcia Trillos, Nicolas, MS45, 10:30 Fri
 Ghandehari, Mahya, MS29, 3:45 Wed
 Ghasemi, Arash, CP4, 10:30 Tue
 Ghasemian, Amir, MS40, 4:15 Thu
 Gimbel, John, MS17, 3:15 Tue
 Gitter, Anthony, MS15, 10:00 Tue
 Gleich, David F., MS35, 10:00 Thu
 Goddard, Wayne, CP9, 9:50 Thu
 Goldwasser, John L., MS28, 4:45 Wed
 Gonzalez Hermosillo De La, Sebastian, CP2, 9:30 Mon
 Gruslys, Vytautas, MS11, 4:15 Mon

Grzesik, Andrzej, MS24, 9:30 Wed

Grzesik, Andrzej, MS24, 11:00 Wed

Grzesik, Andrzej, MS30, 2:45 Wed

Gunderson, Karen, MS29, 3:15 Wed

Guo, He, MS10, 3:15 Mon

Guo, Peter L., MS16, 10:00 Tue

Gutierrez, Marisa, MS25, 11:30 Wed

H

Halasz, Kevin C., CP1, 10:10 Mon

Hallam, Joshua, MS12, 11:00 Tue

Hallam, Joshua, MS48, 10:00 Fri

Hamilton, Kathleen, CP1, 9:30 Mon

Harchaoui, Zaid, MS47, 11:30 Fri

Harrelson, Joshua, MS28, 2:45 Wed

Hartke, Stephen, MS46, 9:30 Fri

Hartung, Elizabeth, CP4, 11:30 Tue

Heitsch, Christine, MS18, 4:15 Tue

Hemenway, Brett, MS9, 2:45 Mon

Heyse, Kristin, MS42, 3:15 Thu

Hicks, Angela, MS19, 3:15 Tue

Hieronimi, Philipp, MS36, 11:00 Thu

Hogenson, Kirsten, MS6, 4:45 Mon

Hong, Taehee, CP2, 10:10 Mon

Hoppen, Carlos, MS4, 10:30 Mon

Horn, Paul, MS45, 9:30 Fri

Horn, Paul, MS45, 9:30 Fri

Hristov, Borislav, MS18, 2:45 Tue

Hurlbert, Glenn, MS25, 10:30 Wed

Hurlbert, Glenn, MS25, 9:30 Wed

Hurlbert, Glenn, MS31, 2:45 Wed

Hurlbert, Glenn, MS31, 3:45 Wed

Hurlbert, Glenn, MS37, 9:30 Thu

Hutchinson, Joan P., MS14, 10:30 Tue

Huynh, Tony, MS13, 11:00 Tue

I

Irvine, Veronika, MS46, 10:30 Fri

Isaak, Garth T., MS44, 10:30 Fri

Ishai, Yuval, MS9, 3:45 Mon

Ito, Takehiro, MS23, 9:30 Wed

Iwata, Yoichi, MS27, 3:45 Wed

J

Jacobson, Sheldon H., CP4, 10:10 Tue

Janssen, Jeannette, MS29, 2:45 Wed

Janssen, Jeannette, MS29, 2:45 Wed

Jegelka, Stefanie, MS47, 9:30 Fri

Jenssen, Matthew, MS43, 11:00 Fri

Jiang, Tao, MS38, 2:45 Thu

Jiang, Tao, MS43, 9:30 Fri

Jiang, Tao, MS43, 11:30 Fri

Jiang, Zilin, MS20, 3:15 Tue

Jing, Yifan, MS7, 3:45 Mon

K

Kalinowski, Thomas, MS39, 2:45 Thu

Kang, Dongyeap, CP2, 10:30 Mon

Karlin, Anna R., IP3, 8:15 Tue

Katona, Gyula, MS33, 9:30 Thu

Kavran, Andrew J., MS15, 11:30 Tue

Keller, Mitchel T., MS1, 9:30 Mon

Keller, Mitchel T., MS1, 9:30 Mon

Keller, Mitchel T., MS6, 2:45 Mon

Keller, Mitchel T., MS12, 9:30 Tue

Kelly, Thomas, MS8, 2:45 Mon

Kenter, Franklin, MS25, 9:30 Wed

Kenter, Franklin, MS25, 9:30 Wed

Kenter, Franklin, MS31, 2:45 Wed

Kenter, Franklin, MS37, 9:30 Thu

Kim, Eun Jung, MS34, 11:00 Thu

Kim, Gene, MS19, 2:45 Tue

Kingan, Sandra, MS26, 9:30 Wed

Kingan, Sandra, MS32, 2:45 Wed

Kingan, Sandra, MS32, 2:45 Wed

Kliwer, Joerg, MS9, 4:45 Mon

Klimosova, Tereza, MS2, 10:30 Mon

Knapp, Michael P., MS31, 4:15 Wed

Korandi, Daniel, MS30, 3:15 Wed

Kothari, Nishad, CP10, 3:05 Thu

Kral, Daniel, IP1, 8:15 Mon

Krasko, Evgeniy, CP8, 3:05 Wed

Krivelevich, Michael, IP4, 8:15 Wed

Kronenthal, Brian, CP3, 3:45 Mon

Kurihara, Takashi, CP4, 10:50 Tue

Kwan, Matthew, MS30, 2:45 Wed

Kwon, O-Joung, MS2, 11:00 Mon

L

Lagoutte, Aurélie, MS8, 4:45 Mon

Lai, Tri, MS19, 4:45 Tue

Laison, Josh, MS37, 10:30 Thu

Langi, Zsolt, CP6, 2:45 Tue

Larsen, Acadia B., CP8, 2:45 Wed

Leck, Uwe, MS33, 10:00 Thu

Lee, Joonkyung, MS30, 4:15 Wed

Lee, Sooyeon, MS32, 3:45 Wed

Lei, Haoyun, MS18, 3:15 Tue

Leiserson, Mark, MS15, 11:00 Tue

Letzter, Shoham, MS5, 9:30 Mon

Letzter, Shoham, MS11, 2:45 Mon

Letzter, Shoham, MS11, 2:45 Mon

Li, Jiaao, MS8, 3:15 Mon

Li, Weiqi, CP4, 9:50 Tue

Li, Wei-Tian, MS33, 9:30 Thu

Li, Wei-Tian, MS33, 11:30 Thu

Li, Wei-Tian, MS39, 2:45 Thu

Li, Xin, MS22, 11:00 Wed

Lidicky, Bernard, MS28, 4:15 Wed

Lidicky, Bernard, MS42, 2:45 Thu

Lifshitz, Noam, MS38, 4:15 Thu

Lim, Choon Sung, CP2, 10:50 Mon

Lin, Jephian C.-H., MS20, 4:15 Tue

Lincoln, Andrea, MS22, 9:30 Wed

Lippner, Gabor, MS45, 11:00 Fri

Liu, Chun-Hung, MS8, 4:15 Mon

Liu, Wenjian, CP1, 10:30 Mon

Long, Eoin, MS38, 4:45 Thu

Lovasz, Laszlo M., MS24, 9:30 Wed

Luo, Ruth, MS30, 4:45 Wed

M

MacGillivray, Gary, MS14, 9:30 Tue

Macgillivray, Gary, MS17, 2:45 Tue

MacGillivray, Gary, MS17, 4:45 Tue

Maehara, Takanori, MS41, 4:15 Thu

Martin, Ryan R., MS33, 10:30 Thu
 Martino, Ivan, MS26, 11:00 Wed
 Martins, Taisa, MS24, 11:30 Wed
 McCarty, Rose, MS2, 11:30 Mon
 McConnell, Ross, MS27, 4:15 Wed
McDonald, Jessica, MS21, 9:30 Wed
McDonald, Jessica, MS28, 2:45 Wed
 McDonald, Jessica, MS44, 11:30 Fri
 McKay, Brendan, MS46, 10:00 Fri
 McKee, Terry, CP9, 9:30 Thu
 Mckenzie, Daniel, CP3, 3:25 Mon
 Methuku, Abhishek, MS38, 3:45 Thu
 Mohar, Bojan, MS7, 3:15 Mon
 Mol, Lucas, CP6, 3:05 Tue
 Mol, Lucas, MS48, 11:30 Fri
 Molla, Theodore, CP2, 9:50 Mon
 Morris, Robert, IP6, 8:15 Thu
 Morrison, Natasha, MS11, 3:45 Mon
 Morse, Ada, MS26, 10:30 Wed
 Mouatadid, Lalla, MS34, 11:30 Thu
 Mousset, Frank, MS5, 10:30 Mon
 Mu, Lili, MS39, 4:15 Thu
 Mubayi, Dhruv, MS43, 10:00 Fri
 Muehlenthaler, Moritz, MS23, 11:30 Wed
 Muzi, Irene, MS7, 4:15 Mon

N

Nassar, Huda, MS40, 2:45 Thu
 Nelsen, Lauren M., MS20, 3:45 Tue
 Nishida, Yuki, CP3, 2:45 Mon
 Noel, Jonathan A., MS23, 10:00 Wed
 Norin, Sergey, MS2, 10:00 Mon

O

O, Suil, CP5, 3:25 Tue
 Oum, Sang-II, MS7, 2:45 Mon
 Owen, Megan, MS18, 3:45 Tue

P

Papp, Laszlo F., MS37, 10:00 Thu
 Pegden, Wes, MS10, 3:45 Mon
 Peng, Jian, MS15, 10:30 Tue

Peng, Xing, CP5, 3:05 Tue
 Perez-Gimenez, Xavier, MS4, 11:30 Mon
 Petti, Samantha N., CP1, 9:50 Mon
 Pfender, Florian, MS24, 10:00 Wed
 Pierron, Théo, MS28, 3:15 Wed
Pokrovskiy, Alexey, MS5, 9:30 Mon
 Pokrovskiy, Alexey, MS5, 9:30 Mon
Pokrovskiy, Alexey, MS11, 2:45 Mon
 Poznanovikj, Svetlana, MS16, 10:30 Tue
Puleo, Gregory J., MS21, 9:30 Wed
 Puleo, Gregory J., MS21, 9:30 Wed
Puleo, Gregory J., MS28, 2:45 Wed
 Purvine, Emilie, MS6, 4:15 Mon

R

Radziszowski, Stanislaw, MS46, 9:30 Fri
 Ralli, Peter, MS45, 10:00 Fri
Rampersad, Narad, MS36, 9:30 Thu
 Rawat, Ankit, MS9, 2:45 Mon
 Reber, David, CP1, 10:50 Mon
 Redlin, Shayla, MS14, 9:30 Tue
 Reid, Talmage J., MS26, 9:30 Wed
 Rigollet, Philippe, MS41, 3:45 Thu
 Rocha, Israel S., MS29, 4:45 Wed
 Rodriguez, Cynthia, CP7, 10:10 Wed
 Rosenfeld, Matthieu, MS36, 10:30 Thu
 Rowland, Eric, MS36, 11:30 Thu

Š

Šámal, Robert, MS3, 11:00 Mon

S

Sandeep, R B, MS34, 10:00 Thu
 Sanhueza-Matamala, Nicolás, CP9, 10:10 Thu
 Santana, Michael, CP7, 10:30 Wed
Saurabh, Saket, MS27, 2:45 Wed
 Saurabh, Saket, MS27, 2:45 Wed
Saurabh, Saket, MS34, 9:30 Thu
 Schmitt, John, MS37, 11:00 Thu
 Sedghi, Hanie, MS47, 11:00 Fri

Servatius, Brigitte, MS26, 10:00 Wed
Shallit, Jeffrey, MS36, 9:30 Thu
 Shan, Songling, MS28, 3:45 Wed
 Shikhelman, Clara, MS11, 3:15 Mon
Shmoys, David, MS41, 2:45 Thu
Shmoys, David, MS47, 9:30 Fri
 Sieben, Nandor, MS31, 4:45 Wed
 Sileikis, Matas, MS10, 2:45 Mon
 Singh, Mona, IP7, 1:30 Thu
 Smith, Brett, MS44, 11:00 Fri
 Song, Zixia, MS21, 10:00 Wed
 Spirkl, Sophie, MS8, 3:45 Mon
 Spirkl, Sophie, MS13, 10:00 Tue
 Staden, Katherine L., MS38, 3:15 Thu
 Stein, Maya, MS43, 9:30 Fri
 Sugimori, Ken, MS32, 3:15 Wed
 Suk, Andrew, IP5, 1:30 Wed
 Svensson, Ola, IP8, 8:15 Fri

T

Tait, Michael, MS20, 2:45 Tue
 Tait, Michael, MS42, 3:45 Thu
 Taylor, Dane, MS40, 3:45 Thu
 Teshima, Laura E., MS23, 10:30 Wed
 Tesler, Glenn, MS18, 4:45 Tue
Tetali, Prasad, MS41, 2:45 Thu
Tetali, Prasad, MS47, 9:30 Fri
 Timmons, Craig, CP5, 2:45 Tue
 Tomon, Istvan, MS33, 11:00 Thu
 Tompkins, Casey, MS39, 3:45 Thu
 Tran, Tuan, MS12, 10:30 Tue
 Trenk, Ann N., MS1, 10:30 Mon
Trenk, Ann N., MS44, 9:30 Fri
 Trotter, William T., MS6, 3:15 Mon
 Tsourakakis, Charalampos, MS40, 3:15 Thu
U
 Uiyyasathian, Chariya, CP7, 11:10 Wed
 Uzzell, Andrew, MS42, 4:45 Thu

V

Verstraete, Jacques, MS43, 10:30 Fri

Volec, Jan, MS24, 9:30 Wed

Volec, Jan, MS24, 10:30 Wed

Volec, Jan, MS30, 2:45 Wed

W

Walker, Shanise, MS1, 11:00 Mon

Wang, Xingwei, MS16, 11:00 Tue

Warnow, Tandy, MS41, 4:45 Thu

Wei, Fan, MS30, 3:45 Wed

West, Douglas B., MS17, 2:45 Tue

Williams, Aaron, MS46, 11:30 Fri

Williford, Jason, MS20, 4:45 Tue

Wollan, Paul, MS2, 9:30 Mon

Wollan, Paul, MS7, 2:45 Mon

Wollan, Paul, MS13, 9:30 Tue

Wollan, Paul, MS13, 9:30 Tue

Wong, Wing Hong Tony, CP10, 3:25 Thu

Wood, David R., MS13, 11:30 Tue

Wootters, Mary, MS9, 2:45 Mon

Wu, Hehui, MS3, 11:30 Mon

X

Xu, Rupei, MS22, 9:30 Wed

Xu, Rupei, MS22, 9:30 Wed

Xue, Chenxiao, MS37, 11:30 Thu

Y

Yan, Catherine, IP2, 1:30 Mon

Yan, Catherine, MS16, 9:30 Tue

Yan, Catherine, MS16, 9:30 Tue

Yan, Catherine, MS19, 2:45 Tue

Yancey, Matthew, MS42, 4:15 Thu

Yang, Frank, CP10, 2:45 Thu

Ya'u, Abdulsalam G., CP3, 3:05 Mon

Yepremyan, Liana, MS5, 11:00 Mon

Yepremyan, Liana, MS38, 2:45 Thu

Yepremyan, Liana, MS43, 9:30 Fri

Yerger, Carl, MS25, 9:30 Wed

Yerger, Carl, MS31, 2:45 Wed

Yerger, Carl, MS37, 9:30 Thu

Yerger, Carl, MS37, 9:30 Thu

Young, Michael, MS14, 11:30 Tue

Young, Stephen J., MS1, 9:30 Mon

Young, Stephen J., MS1, 10:00 Mon

Young, Stephen J., MS6, 2:45 Mon

Young, Stephen J., MS12, 9:30 Tue

Z

Zehavi, Meirav, MS34, 10:30 Thu

Zhao, Yufei, SP1, 1:30 Tue

Zhao, Yufei, MS22, 10:30 Wed

Zhong, Mingxian, MS13, 10:30 Tue

Notes

DM18 Budget

Conference Budget

SIAM Conference on Discrete Mathematics

June 4-8, 2018

Denver, Colorado

Expected Paid Attendance 300

Revenue

Registration Income		\$83,865
	Total	\$83,865

Expenses

Printing	\$1,900	
Organizing Committee	\$2,700	
Invited Speakers	\$10,200	
Food and Beverage	\$18,000	
Room Rental	\$0	
Advertising	\$3,300	
Conference Labor (including benefits)	\$29,535	
Other (supplies, staff travel, freight, misc.)	\$6,425	
Administrative	\$6,813	
Accounting/Distribution & Shipping	\$4,456	
Information Systems	\$7,538	
Customer Service	\$2,907	
Marketing	\$4,758	
Office Space (Building)	\$3,091	
Other SIAM Services	\$3,802	
	Total	\$105,425

Net Conference Expense (\$21,560)

Support Provided by SIAM		\$21,560
		\$0

Estimated Support for Travel Awards not included above:

Early Career and Students	27	\$21,190
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University of Colorado Campus Map

