28-th Ontario Combinatorics Workshop
Carleton University
May 24-25, 2025

Welcome to the 28-th Ontario Combinatorics Workshop. We are happy to feature three wonderful speakers, Professors Jane Breen, Daniel Panario, and Mateja Šajna, in our plenary talks.

We are grateful for each and every submission for the contributed talks. To give every graduate student an opportunity to present their work, we schedule the talks in two parallel sessions. Regrettably, the judges will not be able to attend all student talks, which led to our decision of skipping the Peter Rodney Book Prize this year.

All talks and coffee breaks will take place in the Herzberg Laboratories (HP). Enjoy the social and mathematical exchanges in this workshop.

Acknowledgements

We thank Carleton University for their logistic support, and the Tutte Institute for Mathematics and Computing for their financial support.

Land acknowledgement

We would like to acknowledge the Algonquin nation whose traditional and unceded territory we are gathered upon today.

Organizing committee

Ada Chan, York University
Andriaherimanana Sarobidy Razafimahatratra, Fields Institute
Bobby Miraftab, Carleton University

Schedule

Saturday May 24		
8:45 a.m.	Opening remarks (HP 4351)	
9:00 a.m.	Jane Breen (HP 4351*)	
Coffee break		
Sessions	HP 4351	HP 5345
10:30 a.m.	Hermie Monterde	Guilherme Zeus Dantas e Moura
11:00 a.m.	Smrati Pandey	Sooa Song
11:30 a.m.	Johnna Parenteau	Thomas Karam
Lunch		
Sessions	HP 4351	HP 5345
2:00 p.m.	Sapir Ben-Shahar	Prangya Parida
2:30 p.m.	Prajwal Dhondiram Udanshive	Kianoosh Shokri
Coffee break		
Sessions	HP 4351	HP 5345
3:30 p.m.	Yakob Kahane	Theodore Morrison
4:00 p.m.	Stijn Cambie	Gregory DeCamillis
4:30 p.m.	Amena Assem	Marshall Kaatz

Sunday May 25		
9:00 a.m.	Daniel Panario (HP 4351*)	
Coffee break		
Sessions	HP 4351	HP 5345
10:30 a.m.	Jack Neubecker	Xinyue Fan
11:00 a.m.	Lukas Klawuhn	Jędrzej Hodor
Lunch		
1:30 p.m.	Mateja Šajna (HP 4351*)	
Sessions	HP 4351	HP 5345
2:30 p.m.	Masoomeh Akbari	Blake Shirman
3:00 p.m.	Chi Hoi (Kyle) Yip	Thomas Lee
	Closing remarks	

* Both HP 4351 and HP 5345 hold 45-50 people. We will broadcast the plenary talks via Zoom in HP 5345 if the attendance exceeds the capacity of HP 4351.

Plenary talks

Speaker: Jane Breen, Ontario Tech University

Title: Recent trends in random walks on graphs

Abstract:

Random walks are a simple but powerful way to explore the structure of a graph. This talk will provide an introduction to Markov chains and explain how their key ideas apply to random walks on graphs, and provide interesting graph invariants and parameters to study. We will focus in particular on Kemeny?s constant, an interesting and useful quantifier of how well-connected the vertices of a graph are. This talk will include a survey of recent results and open problems in the area.

Speaker: Daniel Panario, Carleton University

Title: An introduction to iterating functions over finite sets

Abstract: Let f be a function defined over a finite set X. For any $x_0 \in X$, consider successive compositions of f with itself:

$$x_0, f(x_0), f(f(x_0)), f(f(f(x_0))), \dots .$$

When this is done for every element of X, a natural underlying graph, called the "functional graph" of f, emerges. This graph has as vertices the elements of X, and it has an edge from a to b, $a, b \in X$, if $f(a) = b$.

We give examples showing the structure of functional graphs for special functions, such as quadratic polynomials and Chebyshev functions over finite fields. Combinatorially, functional graphs are sets of connected components, components are directed cycles of nodes, and each of these nodes is the root of a directed tree.

Finally, using analytic combinatorics, we briefly comment on the behaviour of random mappings over finite sets and their relation to applications in cryptography.

Speaker: Mateja Šajna, University of Ottawa

Title: The Oberwolfach Problem: New Directions?

Abstract: The celebrated Oberwolfach problem, over 50 years old and in general still open, asks whether n participants at a conference can be seated at k round tables of sizes $m_1, \dots, m_k$ (where $m_1 + \dots + m_k = n$) so that over the course of several meals everybody sits next to everybody else exactly once. This problem can be modeled as a decomposition of the complete graph K_n into 2-factors, each consisting of k disjoint cycles of lengths $m_1, \dots, m_k$.

The Oberwolfach problem for tables of equal size was solved decades ago, and since then, solutions to many other special cases (for example, tables of even length, and exactly two tables) have been found. Then, in 2021, Glock, Joos, Kim, Kühn, and Osthus published an impressive paper with the title "Resolution of the Oberwolfach problem". But does that mean that the Oberwolfach problem has been completely solved?

This talk will serve as an introduction to the Oberwolfach problem and its variants, especially those that I have worked on in the past. I will then focus on my recent work on the directed version of the problem, wherein we are interested in decomposing K_n^*, the complete symmetric digraph of order n, into spanning subdigraphs, each a disjoint union of k directed cycles of lengths $m_1, \dots, m_k$ (where $m_1 + \dots + m_k = n$). Such a decomposition models a seating arrangement of n participants at k tables of sizes $m_1, \dots, m_k$ such that everybody sits *to the right* of everybody else exactly once. I will present a recursive construction that generates solutions to many infinite families of cases of the directed Oberwolfach problem with variable cycle lengths, and discuss its potential to address other variants.

Contributed talks

Speaker: Masoomeh Akbari, University of Ottawa

Title: A complete solution to the generalized HOP with one large table

Abstract:

The Honeymoon Oberwolfach Problem (HOP), introduced by Šajna, is a recent variant of the classic Oberwolfach Problem. This problem asks whether it is possible to seat $2m_1 + 2m_2 + \cdots + 2m_t = 2n$ participants, consisting of n newlywed couples, at t round tables of sizes $2m_1, 2m_2, \ldots, 2m_t$ for $2n-2$ successive nights, so that each participant sits next to their spouse every night and next to every other participant exactly once. This problem is denoted by $\mathrm{HOP}(2m_1, 2m_2, \ldots, 2m_t)$. Jerade, Lepine, and Šajna have studied the HOP and resolved several important cases.

We generalized the HOP by allowing tables of size two, relaxing the previous restriction that tables must have a minimum size of four. In the generalized HOP, we aim to seat the $2n$ participants at s tables of size 2 and t round tables of sizes $2m_1, 2m_2, \ldots, 2m_t$, where $2n = 2s + 2m_1 + 2m_2 + \cdots + 2m_t$ and $m_i \geq 2$, while preserving the adjacency conditions of the HOP. We denote this problem by $\mathrm{HOP}(2^{\langle s \rangle}, 2m_1, \ldots, 2m_t)$.

In this talk, we present a general approach to this problem and provide a solution to the generalized HOP with a single large table, showing that the necessary condition for $\mathrm{HOP}(2^{\langle s \rangle}, 2m)$ to have a solution is also sufficient.

Speaker: Amena Assem, York University

Title: Edge-Disjoint Linkage in Infinite Graphs

Abstract:

In 1980 Thomassen conjectured that, for odd k, every k-edge-connected graph (finite or infinite) is weakly k-linked. The conjecture is still open, however, in 1991, Huck proved that an edge-connectivity of $k + 1$ is sufficient in the case of finite graphs. We prove that Huck's result extends to all infinite graphs, thus improving a result of Ok, Richter, and Thomassen from 2016 where they showed that $(k + 2)$-edge-connectivity implies weak k-linkedness for 1-ended locally finite graphs. This is joint work with Bruce Richter.

Speaker: Sapir Ben-Shahar, University of Wisconsin-Madison

Title: Monadically defined classes of gain-graphic matroids

Abstract:

Matroids are combinatorial structures that generalise the idea of (in)dependence, such as linear independence of vectors in vector spaces over some field. Matroids arise in a number of different contexts, including from vectors in vector spaces, graphs, points in a geometry, and as models of strongly minimal theories (among others). This talk will focus on gain-graphic matroids, which are matroids that arise from group-labeled graphs. Gain-graphic matroids are important in the study of structural matroid theory. It turns out that for "nice enough" classes of matroids, properties that are definable in monadic second-order logic can be recognized in polynomial time. Whether a class of gain-graphic matroids is definable or not depends on which group is chosen to label the graphs. This talk will give a brief introduction to matroids and monadic second order logic, and then describe recent progress on the definability question for gain-graphic matroids.

Speaker: Stijn Cambie, Ku Leuven (Kulak)

Title: Soltes problem almost resolved?

Abstract:

In 1991, Soltes observed that deleting a vertex of C_{11} does not change the total distance of the graph. He asked whether there are other examples.

This will be answered positively for the main generalizations of graphs, with even infinitely many examples. For the main simple question, we create a better understanding, despite leaving it open.

Speaker: Guilherme Zeus Dantas e Moura, University of Waterloo

Title: Probabilistic bijections for non-attacking fillings

Abstract:

Non-attacking fillings are combinatorial objects central to the theory of Macdonald polynomials. A probabilistic bijection for partition-shaped non-attacking fillings was introduced by Mandelshtam (2024) to prove a compact formula for symmetric Macdonald polynomials. In this work, we generalize this probabilistic bijection to composition-shaped non-attacking fillings. As an application, we provide a bijective proof to extend a symmetry theorem for permuted-basement Macdonald polynomials established by Alexandersson (2019), proving a version with fewer assumptions. Joint work with Olya Mandelshtam.

Speaker: Gregory DeCamillis, University of Waterloo

Title: On the asymptotic structure of triangle-free graphs on near regular sparse degree sequences

Abstract:

Let $F(n,m)$ denote the set of triangle-free graphs on n vertices and m edges. The asymptotic enumeration of $F(n,m)$ has garnered much attention, notably with Will Perkins using methods from statistical physics to analyze the most difficult regime. The key structural result for approaching this problem is that a graph chosen uniformly at random from $F(n,m)$ is asymptotically almost surely (a.a.s) not bipartite when $m << n^{3/2}\sqrt{\log n}$, is a.a.s bipartite when $m >> n^{3/2}\sqrt{\log n}$, and is a.a.s. close to being bipartite when m is close to $n^{3/2}\sqrt{\log n}$. We look to establish similar results for the asymptotic structure of a graph $\boldsymbol{G}$ chosen uniformly at random from the set of triangle-free graphs on a degree sequence $\boldsymbol{d}$. Let $\boldsymbol{M}$ be the sum of degrees in $\boldsymbol{d}$. In this talk, we discuss showing that $\boldsymbol{G}$ is a.a.s not bipartite if $\boldsymbol{M} << n^{3/2}$ for "near regular" degree sequences $\boldsymbol{d}$. If time permits, we will also discuss showing that $\boldsymbol{G}$ is a.a.s "close to being bipartite" if $\boldsymbol{M} = \Omega(n^{3/2})$.

This talk is based on ongoing work with Jane Gao.

Speaker: Xinyue Fan, University of Waterloo

Title: Critical graphs for excluding an induced even cycle

Abstract:

For graphs G and H, we say that G is H-free if G has no induced subgraph isomorphic to H, and that G is critically H-free if G is H-free with at least one edge, but for every e in E(G), the graph obtained from G by removing e is not H-free. This is a natural notion that, although similar to the well-studied notion of "induced H-saturated" graphs, seems to have been overlooked. Note, for instance, that there is no critically H-free graph if H is a complete graph; however, there is no example of a non-complete graph H with this property. We conjecture that critically H-free graphs exist for every non-complete graph H. This conjecture has now been verified for a variety of graphs H, and the proof for the case where H is an even cycle is by far the most non-trivial of all. In this talk, we present a construction of critically H-free graphs for every even cycle H and discuss the details of the proof as much as time permits.

This is joint work with Sahab Hajebi, Sepehr Hajebi, and Sophie Spirkl.

Speaker: Jędrzej Hodor, Jagiellonian University

Title: Planarity and dimension

Abstract:

Dimension is arguably the best-known measure of complexity of posets (partially ordered sets). The dimension of a poset is the least integer d such that the poset is a subposet of the d-dimensional Euclidean space equipped with the product order. A canonical structure that forces dimension up is called a standard example. However, there are families of posets with large dimension and no standard examples. A long-standing open problem was determining if large dimension forces large standard examples in the case of planar posets. We confirm this statement. The goal of this talk is to introduce all the concepts necessary to understand this result and to discuss some related problems.

This is joint work with Heather Blake, Piotr Micek, Michał Seweryn, and William T. Trotter.

Speaker: Marshall Kaatz, University of Manitoba

Title: An acyclic spin on the classical Ramsey numbers

Abstract:

Ramsey numbers have gained notoriety over the last century for the difficulty of computing exact values or even improving known bounds, and have given rise to a large family of Ramsey-type problems. The classical theorem of Ramsey can be rephrased in terms of independent sets: in large enough graphs, either the graph or its complement will have a large independent set.

In this talk, I present a natural analogous problem to that of the classical Ramsey numbers. Observing that an independent set is a special case of an acyclic set in a graph – that is, a set of vertices which induces no cycles – we instead study how in large enough graphs, either the graph or its complement will have a large acyclic set. In addition to presenting key theorems and constructions, I will discuss some small non-trivial exact values and best-known bounds.

Speaker: Yakob Kahane, UQAM

Title: Differential transcendence of walks on self similar walks

Abstract:
Symmetrically self-similar graphs are an important type of fractal graph. Their Green functions satisfy order one iterative functional equations. We show when the branching number of a generating cell is two, either the graph is a star consisting of finitely many one-sided lines meeting at an origin vertex, in which case the Green function is algebraic, or the Green function is differentially transcendental over C(z). The proof strategy relies on a recent work of Di Vizio, Fernandes and Mishna. The result adds evidence to a conjecture of Krön and Teufl about the spectrum of this family of graphs.

Speaker: Thomas Karam, University of Oxford

Title: The amount and type of structure of a function in terms of its small images

Abstract:
"It is well known that if G is an abelian group and A is a finite subset of G which minimises the size of $A + A$ for a fixed size of A, then A must essentially be as close as possible to being a coset of some subgroup of G: for instance, if G is finite then the set A must be a coset in G (provided that G has subgroups with size $|A|$), and if $G = Z$ then the set A must be an arithmetic progression. One may wish to describe an extension of this phenomenon to more arbitrary functions than addition on abelian groups. If X is a set and $F : X \times X \to X$ is a function, then can the structure of F (to the extent that there is some) be read from the structure of the subsets A of X minimising the size of the image $F(A, A)$ for a fixed size of A, and can the "amount of stucture" of F be read from how quickly that minimal size grows with the size of A? We will discuss the progress that has been made in this direction, starting with the results of Elekes-Ronyai, and what remains to be understood."

Speaker: Lukas Klawuhn, Paderborn University

Title: Designs of perfect matchings

Abstract:

It is well-known that the complete graph K_{2n} on $2n$ vertices can always be decomposed into perfect matchings, called a 1-factorisation. In such a decomposition, every edge of K_{2n} appears in exactly 1 perfect matching. This was generalised by Jungnickel and Vanstone to hyperfactorisations. These are sets of perfect matchings such that every pair of disjoint edges of K_{2n} appears in a constant number of perfect matchings. Hyperfactorisations are examples of Cameron's partition systems and were rediscovered by Stinson who called them hyperresolutions. We generalise all these ideas to λ-factorisations of K_{2n} and characterise them algebraically as Delsarte designs in an association scheme using the theory of Gelfand pairs. We use this characterisation to derive divisibility conditions and non-existence results. Furthermore, we explore a connection to finite geometry, giving rise to explicit constructions of λ-factorisations.

This is joint work with John Bamberg. It is based on ideas developed together with Kai-Uwe Schmidt.

Speaker: Thomas Lee, University of Waterloo

Title: Asymptotics of the number of lattice points in the transportation polytope

Abstract:

Counting the number of lattice points of the transportation polytope is of interest in a variety of domains, including statistics, group theory, design theory, and graph theory. In this talk, we discuss how earlier bounds derived by Brändén, Leake, and Pak (2023) are log-asymptotically correct under given conditions. When symmetry exists, improved conditions are given for log-asymptotic correctness. Finally, we show examples where our conditions either hold, do not hold but log-asymptotic correctness holds, or do not hold and log-asymptotic correctness fails.

Speaker: Hermie Monterde, University of Manitoba

Title: s-pair state transfer on graphs

Abstract:
In this talk, we will discuss the combinatorics of s-pair state transfer, a type of quantum transport phenomenon on graphs that represents the accurate transmission of entangled vertex states. This is joint work with B. Ahmadi, A. Chan, S. Kim, S. Kirkland, S. Plosker and X. Zhang.

Speaker: Theodore Morrison, University of Waterloo

Title: Satisfying random linear equations over a commutative ring

Abstract:
A constraint satisfaction problem (CSP) consists of a set of n variables, and a set of m constraints on subsets of those variables. In our randomised CSP setting, our goal is to study the high probability properties of a randomly drawn CSP in the limit where n, m go to infinity and where m/n is fixed.

Many models of random CSPs are know to undergo transitions in satisfiability and solution space structure as the proportionality constant m/n increases. These include random equations over a finite field, where changes in satisfiability and the "clustering" of solutions occur at known threshold values of m/n. We build on this work by studying random equations over a finite commutative ring. In this talk, we will show that equations over general rings can be reduced to studying local rings, and that some information about satisfiability over local rings can be recovered by studying equations over their residue fields. We will also discuss how the structure of the solution space over a ring compares to the structure of solutions over a field in terms of the "clustering" and "separation" of solutions.

This talk is based on joint work with Jane Gao.

Speaker: Jack Neubecker, The University of Queensland

Title: How to build the factor-critical partial Steiner triple system of your dreams

Abstract:
A partial Steiner triple system (V,B) consists of a set V of points and a collection B of 3-element subsets (called triples) of V such that any two distinct points occur together in at most one triple. We say a partial Steiner triple system (V,B) is factor critical if for all x in V, there exists a set of mutually disjoint triples which covers every point except x. We will illustrate various techniques for constructing factor-critical partial Steiner triple systems, and discuss their distinct merits in contributing to an existence theorem.

Speaker: Smrati Pandey, Indian Institute of Technology (BHU)

Title: Eccentricity matrix of corona of two graphs

Abstract:

The eccentricity matrix, $\varepsilon(G)$, of a graph G is derived from the distance matrix by letting the uv-th element to be equal to the distance between two vertices u and v, if the distance is the minimum of their eccentricities and zero otherwise. In this article, we study the spectrum of $\varepsilon(G)$ and establish an upper bound for its ε-spectral radius when G is a self-centered graph. Further, we explore the structure of $\varepsilon(G \circ H)$, where $G \circ H$ is the corona product of a self-centered graph G and a graph H. We characterize the irreducibility of $\varepsilon(G \circ H)$ and, in this process, find that it is independent of $\varepsilon(H)$, which allows us to construct infinitely many graphs with irreducible eccentricity matrix. Moreover, we compute the complete spectrum of $\varepsilon(G \circ H)$ including its ε-eigenvectors, ε-energy, and ε-inertia. Finally, we conclude that several non-isomorphic ε-co-spectral graphs can be generated using the corona product of two graphs.

Speaker: Johnna Parenteau, University of Regina

Title: Avoiding root coincidences in the weighted matching polynomial

Abstract:

Historically, the characteristic polynomial has primarily been the object used to drive spectral information about a graph; however, the *weighted matching polynomial*, denoted by $m_w(G, x)$, has recently been a topic of interest due to its inherent connection to k-matchings and other graphical properties. It is well known the roots of the weighted matching polynomial enjoy an interlacing property with respect to a vertex deleted subgraph. A natural question is for which graphs G does strict interlacing hold among the roots of $m_w(G, x)$ and $m_w(G \setminus \{v\}, x)$? A classical example of such a graph is one that contains a Hamilton path. In this talk, we consider extending the class of such graphs, called SRSI graphs, and demonstrate how these graphs can be constructed inductively. Additionally, we determine the only trees that are SRSI for all weightings and with respect to all vertices are K_2 and P_4.

Speaker: Prangya Parida, University of Ottawa

Title: Constructions of Cover-free families on Paths and Cycles using a mixed-radix Gray code

Abstract:

A family of subsets of a t-set is called a *d-cover-free family* (d-CFF) if no subset in the family is contained in the union of any d other subsets. A 2-CFF can be generalized by introducing a graph G, where the vertices correspond to subsets in the family. A *cover-free family on a graph* G is a set system such that, for each edge in G, the corresponding pair of subsets are not contained in one another, and their union does not contain any other subset in the system. We denote by $t(G)$ the minimum integer t for which such a family exists.

On the other hand, a *binary Gray code* of length n is an ordered sequence of binary n-tuples in which successive codewords differ in exactly one digit. A *mixed-radix Gray code* generalizes this concept by allowing each coordinate to take values from a different base, with successive entries differing in only one digit. Donald Knuth discusses *reflected* and *modular* mixed-radix Gray codes in The Art of Computer Programming, Volume 4A and presents loopless algorithms for their generation.

In this talk, we present two recursive constructions of mixed-radix modular Gray codes and show that they are the same objects generated by the Greedy Algorithm proposed by Williams. We further show how mixed-radix modular Gray codes can be used to construct CFFs on paths (P_n) and cycles (C_n) with n vertices. This leads to the upper bound in $\log(n) \leq t(G) \leq 1.89 \log(n)$, where G is either P_n or C_n.

This is joint work with Lucia Moura.

Speaker: Blake Shirman, York University

Title: Embedding decision trees to solve bivariate recurrence relations

Abstract:

We start by showing how repeated iterations of Pascal's recurrence can generate a binary decision tree. Embedding this tree into the integer lattice in a particular way reveals the familiar grid of NE (North, East) lattice paths. While this is not a novel transformation, it begs the question: what other recurrence relations can be similarly transformed into a lattice grid? We begin our search, appropriately, with a small modification of NE lattice paths. We rotate our grid clockwise by 45 degrees and only count those paths that reach a certain high-point, but no higher. Counting these "high-point paths" we see a similar recurrence to Pascal's, but more resistant to other methods of analysis. After repeating our decision-tree-embedding method on this new recurrence, we only need to perform a reflection and rotation to see our familiar NE lattice, deriving a nice closed form for the number of high-point paths! We close by considering some other bivariate sequences to see which might be amenable to our method. Results on high-point paths comes from work on a recent publication by Acton, Petersen, Shirman, and Tenner (https://www.combinatorics.org/ojs/index.php/eljc/article/view/v32i1p15).

Speaker: Kianoosh Shokri, University of Ottawa

Title: What theorems may come: From clues in finite geometry to a construction of a $\mathrm{CA}(3q^4 - 2; 4, \frac{q^2+1}{2}, q)$

Abstract:

A *strength-t covering array*, denoted by $\mathrm{CA}(N; t, k, v)$, is an $N \times k$ array over a v-set such that in any t-set of columns, each t-tuple occurs at least once in a row.

Almost every theorem in mathematics has interesting stories of success and failure in the development process, which shed light on the challenges along the way and how to overcome them. We start from early observations and clues, which lead us to explore extending a construction of a $\mathrm{CA}(2q^3 - 1; 3, q^2 + q + 1, q)$ given by Raaphorst, Moura, and Stevens (2014) to a construction of a strength-4 covering array.

A systematic construction we designed seemed to always lead to a $\mathrm{CA}(3q^4 - 2; 4, \frac{q^2+1}{2}, q)$, when q was a prime power. While trying to develop a proof for the theorem, we examine possible approaches and finally focus on the geometric approach. The existence of three truncated Möbius planes with restrictions on the intersection of their circles would pave our way to the final proof.

This is joint work with Lucia Moura and Brett Stevens.

Speaker: Sooa Song, Université du Québec à Montréal

Title: Representations and linear extensions of (unit) interval orders

Abstract:

Unit interval orders (UIOs), which are more generally interval orders (IO), are certain partially ordered sets that are related to symmetric functions and knot theory. UIOs have two encodings as Dyck paths; one based on incomparable pairs and another via part listings. These encodings are related by Haglund's zeta map, as shown by Gélinas-Segovia-Thomas. On the other hand, interval orders have two well-known encodings: ascent sequences and Fishburn matrices. We present three results: (1) an enumeration of height- and width-restricted UIOs, revealing connections to the zeta map, (2) an algorithm for counting linear extensions of UIOs using these encodings, and (3) a related algorithm to compute linear extensions of interval orders through Fishburn matrices.

Speaker: Prajwal Dhondiram Udanshive, Western University

Title: Resonance Varieties of Schubert Matroids

Abstract:

Resonance varieties of Orlik-Solomon algebras are cohomologically-defined matroid invariants motivated by geometry. While the resonance in cohomological degree 1 has been extensively studied, understanding the resonance in higher degrees is elusive. In this talk, we see that the cohomology of Schubert matroids admits a decomposition based on the cyclic flats, giving a complete characterization of the jump loci using lattice path combinatorics. Generalizing a result of Hattori, we see that the complex Schubert arrangement complement is a toric complex up to a homotopy equivalence. The talk is based on a joint work with Graham Denham.

Speaker: Chi Hoi (Kyle) Yip, Georgia Institute of Technology

Title: Erdős-Ko-Rado theorems in polynomials over finite fields

Abstract:

Recently, Adriaensen, and Aguglia, Csajbók, and Weiner studied a analogue of the celebrated Erdős-Ko-Rado theorem for one-variable polynomials over finite fields: for two polynomials $f(x)$ and $g(x)$, we naturally say that they intersect if their graphs intersect. In this talk, I will discuss the same problem for multivariable polynomials over finite fields and highlight several interesting phenomenon that are unique to multivariable polynomials. Joint work with Shamil Asgarli and Bence Csajbók.

Participants

Sam Adriaensen	Vrije Universiteit Brussel/Worcester Polytechnic Institute
Masoomeh Akbari	University of Ottawa
Amena Assem	York University
Abdul Basit	University of Windsor
Sapir Ben-Shahar	University of Wisconsin-Madison
Lisa Brown	Carleton University
Stijn Cambie	Ku leuven (kulak)
Ada Chan	York University
Guilherme Zeus Dantas e Moura	University of Waterloo
Homer Franz De Vera	University of Manitoba
Gregory DeCamillis	University of Waterloo
Xinyue Fan	University of Waterloo
Chris Godsil	University of Waterloo
Claude Gravel	Toronto Metropolitan University
Alena Gusakov	University of Waterloo
Jędrzej Hodor	Jagiellonian University
Hussein Houdrouge	Carleton University
Mary Rose Jerade	University of Ottawa
Medet Jumadildayev	Nazarbayev University
Thomás Jung Spier	University of Waterloo
Marshall Kaatz	University of Manitoba
Yakob Kahane	UQAM
Thomas Karam	University of Oxford
Lord Kavi	Concordia University of Edmonton
Lukas Klawuhn	Paderborn University
Hitesh Kumar	Simon Fraser University
Thomas Lee	University of Waterloo
Adrian Lee	University of Guelph
Amirali Madani	Carleton University
Saikat Maity	Ahmedabad University
Roghayeh Maleki	University of Regina
Bill Martin	Worcester Polytechnic Institute
Timothy Miller	University of Waterloo
Bobby Miraftab	Carleton University
Hermie Monterde	University of Manitoba
Theodore Morrison	University of Waterloo
Lucia Moura	University of Ottawa

Andrew Nagarajah	Carleton University
Jack Neubecker	The University of Queensland
Mehri Oghbaeibonab	University of Montreal/Sharif University of Technology
Smrati Pandey	Indian Institute of Technology (BHU)
Johnna Parenteau	University of Regina
Prangya Parida	University of Ottawa
Johann Peters	University of Waterloo
Shivaramakrishna Pragada	Simon Fraser University
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Blake Shirman	York University
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John Stuart	University of Ottawa
Aysa Tajeri	York University
Christino Tamon	Clarkson University
Leo Theocharous	University of Ottawa
Sophie Tomlin	University of Ottawa
Prajwal Dhondiram Udanshive	Western University
Tzvetalin Vassilev	Nipissing University
Mittu Walia	Indian Institute of Technology Roorkee
Chi Hoi (Kyle) Yip	Georgia Institute of Technology
Harmony Zhan	Worcester Polytechnic Institute

Lunch

- On-campus:
  Teraanga Commons Dining Hall (TC) 1125 Colonel By Drive, 3rd Floor Ottawa, ON K1S 5B6
- Off-campus:
  There are restaurants on Bank Street (about 30-minute walk from campus).

Parking: Lot P2