CanaDAM 2023

Tao Gaede

June 4, 2023

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1 Monday:

1.1 Morning

8:30 IS (MET): Hypergraphs, topology and resource allocation. Matchings in hypergraphs using topological methods.

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10:00 CM24 (1L04): Second largest eigenvalue of trees. Extremal trees of order n and diameter d that maximize second largest eigenvalue. Probably relevant my work on distances in trees.

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10:30 IM2: Intersecting families of sets are typically trivial. Improved bound $k > k_0$ for k-intersecting families whereby the families tend to be stars (trivial). Interesting to get background on intersecting families. While stars may be common, what types of intersecting families are uncommon? Is there a common uncommon intersecting family, or do we not know much about the uncommon ones? Maybe get a better sense for what other structure is needed to make them applicable to tone networks.

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*11:00 CM24: Packings of Partial Difference Sets. Might be over my head, but I'm curious about difference sets.

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*11:00 CT: The exact threshold for zero sum cycles in complete diagraphs. They find the exact smallest number n such that for every Zq - arc labelling of a complete digraph of order n, there is a directed cycle whose arc labels sum to 0. I feel like this could have relevence to handling distance summation issues that arrise in edge-labelled graphs.

11:30 IM2: The Burning Number Conjecture holds asymptotically. The burning number refers to smallest k such that a graph G of order n can be covered by balls of radii 0, 1, ..., k. This interval of radii condition is slightly similar to the interval multiplicity condition in crescent configurations. Perhaps there's overlap.

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Timetable

Sunday Evening, June 4, 2023

19:30-23:00	Registration and Informal Gathering,	Tavern United	345 Graham Ave.
17.00 20.00	Registration and informal cathering,	iaveiii Oilitea	o is Grananii / wc.

Registration materials available only until 9:30pm.

(Those attending have the option of purchasing food and beverages.)

Monday Morning, June 5, 2023

8:00-8:20		Registration	
8:20-8:30		Welcome remarks	
8:30-9:25	IS	Penny Haxell (University of Waterloo) "Hypergraphs, topology and resource allocation"	MET
9:30-10:00		Walk to U of W Coffee Break	
10:00-12:30	IM	IM1: Games and Learning Simina Brânzei and Ruta Mehta, Organizers [Hartline, Panageas, Poster Session, Hajiaghayi, Gergatsouli]	1L13 Lockhart Hall
	IM	IM2: Combinatorics and Algebra Alexey Pokrovskiy, Organizer [Noel, Li, Ogden, Turcotte, Behague]	1L12 Lockhart Hall
	IM	IM11: Structural Graph Theory Sang-il Oum and Sebastian Wiederrecht, Organizers [Wollan, Kurkofka, Kreutzer, Wiederrecht, Yoo]	1L11 Lockhart Hall
	СМ	CM24: Trends in Association Schemes Allen Herman, Organizer [Kumar, Klawuhn, Li, Seong, Herman]	1LO4 Lockhart Hall
	СТ	Contributed Talks Homomorphisms and Minors [MacGillivray, Kidner, Brewster, Krill, Chaniotis]	1LO6 Lockhart Hall
	СТ	Contributed Talks Number Theory and Algebraic Connections [Bright, Karam, Hendrey, Park,]	1L07 Lockhart Hall
		Free Working Space	1M28
12:30-14:00		Lunch	
12:30-13:15		ICA AGM (1L12 Lockhart Hall)	

- The Registration desk will be open 8am-6pm on June 5 and 9:00am-3:30pm on June 6-8 in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Refreshments (coffee, tea, water and something to eat) will be served twice a day (9:30am 10:00am and 3:00pm 3:30pm) on each day of the conference in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Annual General Meeting of the Institute of Combinatorics and its Applications 12:30pm-1:15pm in 1L12 Lockhart Hall.
- Welcoming Reception, 6:30pm-8:30pm, Riddell Hall and Atrium. (FYI, the reception includes one free drink and passed canapés but it is not a full dinner.)

1.2 Afternoon

2:00 IS (MET): A random Hall-Paige Conjecture. About transversals in group multiplication tables. Uses probabilistic methods.

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3:30 CM13 (1L11): Turan and Ramsey-type problems for affine structures. I haven't seen a lot of this before, but it involves some extremal questions on finite fields, which seems interesting.

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4:00 CM21 (1L08): The one-visibility localization game. To get my feet wet in some cops and robbers. The robber is invisible, and a set of cops try to find the location of the robber.

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4:30 CM20 (1L07): A balancing act on matrices. Integer matrices and decompositions. I'm curious about graph decomposition problems and I'm interested to learn more about properties of integer matrices.

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5:00 CT (1L06): Graph-theoretical questions arising from DNA self-assembly. Presents combinatorial representations of DNA structures, which could give me a better sense for how to link my interest in biochemistry with combinatorics and graph theory.

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5:30 CM13 (1L11): Unit and distinct distances in typical norms. Directly related to Erdos distinct distances problem in the plane.

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Monday Afternoon, June 5, 2023

12:30-14:00		Lunch	
14:00-14:55	IS	Alexey Pokrovskiy (University College London) "A random Hall-Paige Conjecture"	MET
15:00-15:30		Walk to U of W Coffee Break	
15:30-18:00	IM	IM4: Discrete Mathematics in Quantum Information Processing Markus Grassl and Petr Lisonek, Organizers [Nemec, Dastbasteh, Amirzade, López, Yard]	1LO4 Lockhart Hall
	СМ	CM12: Computer-Assisted Mathematics Curtis Bright, Organizer [Codel, Kaplan, Rampersad, Brysiewicz, Stevens]	1L13 Lockhart Hall
	СМ	CM13: Extremal Combinatorics and Beyond Jonathan Noel, Organizer [Frederickson, Spiro, Mani, Lee, Bucić]	1L11 Lockhart Hall
	СМ	CM20: Movement and Symmetry in Graphs Venkata Raghu Tej Pantangi and Mahsa N. Shirazi, Org	1L07 Lockhart Hall
	СМ	CM21: Pursuit-Evasion Games on Graphs JD Nir, Brittany Pittman, Trent Marbach, Organizers [S. Finbow, Molnar, Marcoux, Virgile, Ojakian]	1L08 Lockhart Hall
	СТ	Contributed Talks Random Graphs / Biology & Chemistry [Šámal, Ahn, Selig, Ferrari, Slobodin]	1L06 Lockhart Hall
		Free Working Space	1M28
18:30-21:00	Welcoming Reception (6:30pm-8:30pm, Riddell Hall and Atrium)		

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- Refreshments (coffee, tea, water and something to eat) will be served 3:00pm 3:30pm in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Welcoming Reception, 6:30pm-8:30pm, Riddell Hall and Atrium. (FYI, the reception includes one free drink and passed canapés but it is not a full dinner.)

2 Tuesday:

2.1 Morning

 $8:\!30$ IS (MET): Sampling and high-dimensional expansion

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*10:00 CT (1L06): Time delayed Cops and Robber.

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*10:00 CM22 (1L04): Perfect state transfer on trees with small diameter. Maybe I'll learn something about quantum information theory.

*10:30 CM22 (1L04): Classes of trees without perfect state transfer. More QIT.

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*10:30 IM9 (1L12): Combinatorial characterization of the exact rank of sparse random matrices. What is the rank of the adjacency matrix of G(n,p)?

*10:30 CT (1L06): Perfect 1-factorisations of hypergraphs.

11:00 CT (1L06): Large k-sparse sets in triangle-free graphs.

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 $\textbf{11:30 CT (1L06):} \quad \text{On the decomposability of codes with embedded (6L-2, 2L, L)-designs.}$

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12:00 (1L06): Subdivision and adjacency spectra of graphs. Subdividing a subset of edges of a graph, and proving things about the eigenvalues of the adjacency matrix for the resulting graph. The sequence St of the k-th eval for the graph with subdivision lengths t, is shown to be Cauchy. It could be interesting to see some analysis relating to graphs.

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Tuesday Morning, June 6, 2023

8:30-9:25	IS	Nima Anari (Stanford University)	MET
0.00 7.23	13	"Sampling and high-dimensional expansion"	14121
9:30-10:00		Walk to U of W Coffee Break	
40.00.40.00		IM1: Games and Learning	1L13 Lockhart
10:00-12:30	IM	Simina Brânzei and Ruta Mehta, Organizers [Kleinberg, Chowdhury, Poster Session, Derakhshan, Vlatakis]	Hall
		IM6: Extremal and Probabilistic Combinatorics	1L08 Lockhart
	IM	Felix Joos, Organizer [Bohman, Garbe, Morrison, Gao, Hancock]	Hall
		IM7: Generalizations of the Chromatic Polynomial	1L07 Lockhart
	IM	Farid Aliniaeifard and Steph van Willigenburg, Org [, A. Foley, Orellana, S. Wang, Sagan]	Hall
		IM9: Random Matrix Theory and Connections	1L12 Lockhart
	IM	Vishesh Jain, Organizer [Michelen, Glasgow, Benigni, O'Rourke,]	Hall
	IM	IM11: Structural Graph Theory	1L11 Lockhart
		Sang-il Oum and Sebastian Wiederrecht, Organizers [Kim, Liu, Spirkl, Steiner, Gollin]	Hall
		CM22: Quantum Information on Graphs	1LO4 Lockhart
	CM	C. van Bommel, H. Monterde, S. Kim, X. Zhang, Org [Kirkland, van Bommel, Monterde, S. Kim, Problem Session]	Hall
		Contributed Talks	1L06 Lockhart
	СТ	Assorted Topics [Clarke, Mitchell, Gimbel, Esfahani, Pragada]	Hall
		Free Working Space	1M28
12:30-14:00		Lunch	
12:45-13:45	12:45–13:45 Networking Luncheon for those identifying as women (1L07)		

- The Registration desk will be open 9:00am-3:30pm on June 6 in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Refreshments (coffee, tea, water and something to eat) will be served 9:30am 10:00am in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Networking Luncheon for those identifying as women: 12:45pm-1:45pm, 1L07. (Click here for details.)

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2.20 IS (MET): On the simplex method and diameter of 0/1 polytopes
*3:30 IM10 (1L12): Complexes of nearly maximum diameter.
*3:30 CM21 (1L08): Firefighting with a distance-based restriction.
*4:00 (1L06): Distance-preserving graph compression techniques. Might provide insight on how to add/remove edges of trees while minimizing changes in distance multiplicities.
*4:00 CM21 (1L08): A two player graph burning game.
4:30 CM21 (1L08): Extending graph burning to hypergraphs.
5:00 CM21 (1L08): Herding cats stuck in trees.
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Things to look into

5:30 CM21 (1L08): The watchman's walk problem on Cayley graphs.

Tuesday Afternoon, June 6, 2023

12:30-14:00		Lunch		
		Laura Sanità (Bocconi University)		
14:00-14:55	IS	"On the simplex method and diameter of	MET	
		0/1-polytopes"		
15:00-15:30		Walk to U of W Coffee Break		
		IM4: Discrete Mathematics in Quantum Information	41.041111	
15:30-18:00	IM	Processing	1LO4 Lockhart	
		Markus Grassl and Petr Lisonek, Organizers [Martin, Bors, Slofstra, Trandafir, Bright]	Hall	
		IM10: Random Structures and Random Processes	1L12 Lockhart	
	IM	Jane (Pu) Gao and Xavier Pérez Giménez, Organizers [Bohman, Dudek, Bennett, Molloy, Michaeli]	Hall	
		CM15: Graph Structure: Algorithms and Complexity	1L13 Lockhart	
	CM	Kathie Cameron, Organizer [K. Cameron, Sintiari, LaGrange, Belavadi, Suzan]	Hall	
		CM17: Graphs and Matroids	1L11 Lockhart	
	CM	Jim Geelen, James Oxley, Zach Walsh, Organizers [Funk, McGuinness, Campbell, Grace, Rivera Omaña]	Hall	
	C) 4	CM20: Movement and Symmetry in Graphs	1L07 Lockhart	
	CM	Venkata Raghu Tej Pantangi and Mahsa N. Shirazi, Org	Hall	
		CM21: Pursuit-Evasion Games on Graphs	1L08 Lockhart	
	CM	JD Nir, Brittany Pittman, Trent Marbach, Organizers [Burgess, Kellough, Jones, Ashmore, Howell]	Hall	
	СТ	Contributed Talks	1L06 Lockhart	
	СТ	Dimension, Density, and Distance [Caoduro, Madani,, R. Wang,]	Hall	
		Free Working Space	1M28	
18:00	Conference Photo, Wesley Hall entrance (6pm sharp!)			
18:30-20:30		Student & Postdoc Networking Dinner, (Riddell Hall)		

- The Registration desk will be open 9:00am-3:30pm on June 6 in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Refreshments (coffee, tea, water and something to eat) will be served 3:00pm 3:30pm in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Conference Photo, 6:00pm (sharp) on the stairs at the Wesley Hall entrance. (In case of inclement weather, please report instead to Leatherdale Hall.)
- Networking Dinner for Students and Postdocs, 6:30pm-8:30pm, Riddell Hall

3 Wednesday:

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3.1 Morning
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8:30 IS (MET): The sharp power law of local search on expanders.

10:00 CM16 (1L11): Separating the edges of a graph by a linear number of paths.

10:30 CM16 (1L11): Improved bounds for cross-Sperner systems.

11:00 IM9 (1L12): A simple and sharper proof of the hypergraph Moore bound.

*11:30 IM6 (1L08): The existence of subspace designs.

*11:30 CM16 (1L11): Invertibility of digraphs and tournaments.

12:00 CT (1L06): Rainbow 3-partite graphs.
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Wednesday Morning, June 7, 2023

8:30-9:25	IS	Simina Brânzei (Purdue University)	MET
0.30-7.23	13	"The sharp power law of local search on expanders"	IVILI
9:30-10:00		Walk to U of W Coffee Break	
10.00.10.00		IM1: Games and Learning	1L13 Lockhart
10:00-12:30	IM	Simina Brânzei and Ruta Mehta, Organizers [Vetta, Golowich, Poster Session, Mehta, Kulkarni]	Hall
		IM6: Extremal and Probabilistic Combinatorics	1L08 Lockhart
	IM	Felix Joos, Organizer [Pfenninger, Kelly, Mohar, Sah, Joos]	Hall
		IM7: Generalizations of the Chromatic Polynomial	1L07 Lockhart
	IM	Farid Aliniaeifard and Steph van Willigenburg, Org [Crew, V. Wang, McDonald, Kaul, Dahlberg]	Hall
		IM9: Random Matrix Theory and Connections	1L12 Lockhart
	IM	Vishesh Jain, Organizer [Zhu, Leake, Hsieh, Sawhney, Problem Session]	Hall
		CM16: Graphs and Hypergraphs: Probabilistic,	
	СМ	Structural, and Extremal Results	1L11 Lockhart
		Natasha Morrison, Organizer [Botler, Wright, Smith-Roberge, Savery, Heath]	Hall
		CM22: Quantum Information on Graphs	1L04 Lockhart
	CM	C. van Bommel, H. Monterde, S. Kim, X. Zhang, Org	Hall
		Contributed Talks	1L06 Lockhart
	СТ	Colouring, Domination, and Genus [Beaton, Carr, Clow, Contreras-Mendoza, Czygrinow]	Hall
		Free Working Space	1M28
12:30-14:00		Lunch	
12:30-13:15		ICA Medal Awards Ceremony, Room 1L12 Lockhar	t Hall

- The Registration desk will be open 9:00am-3:30pm on June 7 in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Refreshments (coffee, tea, water and something to eat) will be served 9:30am 10:00am in the hallway of Lockhart Hall adjacent to the breakout rooms.
- ICA Medal Awards Ceremony: 12:30pm-1:15pm, in Room 1L12 Lockhart Hall.

Things to look into

5:30 IM8 (1L08): Rigidity expander graphs.

Wednesday Afternoon, June 7, 2023

12:30-14:00		Lunch	
14:00-14:55	IS	Ferdinand Ihringer (Universiteit Gent) "Quadratic forms and clique-free graphs"	MET
15:00-15:30		Walk to U of W Coffee Break	
15:30-18:00	IM	IM3: Design Theory and Coding Theory Thaís Bardini Idalino, Jonathan Jedwab, Shuxing Li, Org [Stinson, Nelson, Gu, Kölsch, Stevens]	1L07 Lockhart Hall
	IM	IM8: Geometric Combinatorics R. Amzi Jeffs, Organizer [Wellner, Bezdek, Simon, Liu, Lew]	1LO8 Lockhart Hall
	IM	IM10: Random Structures and Random Processes Jane (Pu) Gao and Xavier Pérez Giménez, Organizers [Warnke, Arman, Gunderson, Makai, MacRury]	1L12 Lockhart Hall
	СМ	CM15: Graph Structure: Algorithms and Complexity Kathie Cameron, Organizer [Hoàng, Robin, B. Cameron, Hajebi, Hernández-Cruz]	1L13 Lockhart Hall
		CM17: Graphs and Matroids	1L11 Lockhart
	CM	Jim Geelen, James Oxley, Zach Walsh, Organizers [Bowler, Gut, Singh, Kim, van der Pol]	Hall
		CM18: Many Perspectives on Hopf Algebras in	41.041
	СМ	Combinatorics	1LO4 Lockhart
		Karen Yeats, Paul Balduf, Lucas Gagnon, Organizers [van Willigenburg, Balduf, Olson-Harris, Huang, Discussion]	Hall
	СТ	Contributed Talks	1L06 Lockhart
	СТ	Combinatorics on Words and Connections [Kreitzer, Mol, Pervin, Zaguia,]	Hall
		Free Working Space	1M28
18:30-19:15		Public Lecture Reception ME	Τ
19:30-20:30		Laura A. Albert (University of Wisconsin)	MET

- The Registration desk will be open 9:00am-3:30pm on June 7 in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Refreshments (coffee, tea, water and something to eat) will be served 3:00pm 3:30pm in the hallway of Lockhart Hall adjacent to the breakout rooms.
- We will have a reception prior to the public lecture. This will begin at 6:30pm at the Metropolitan Entertainment Centre, 281 Donald Street. (The reception will include a free drink and some passed canapés, but not dinner.)
- Public Lecture: "How discrete optimization helps us tackle our world's biggest challenges" by Laura Albert (University of Wisconsin), Metropolitan Entertainment Centre, 281 Donald Street, beginning at 7:30pm.

4 Thursday

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4.1 Morning
8:30 IS (MET): Catalanimals.
10:00: CM19 (1L12): The threshold strong dimension of a graph.
*10:30 CM14 (1L08): Approximative cycle double cover.
*10:30 CM19 (1L12): On the threshold strong dimension of the n-cube.
11:00 CM19 (1L12): Metric dimension parameterized by feedback vertex set and other structural parameters.
11:30 CM19 (1L08): Metric dimension of growing infinite graphs.
*12:00 CM16 (1L11): Enumerating graphic sequences.
*12:00 CM14 (1L08): Some new results on vertices belonging to all metric bases.
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Thursday Morning, June 8, 2023

8:30-9:25	IS	Jennifer Morse (University of Virginia) "Catalanimals"	MET
9:30-10:00		Walk to U of W Coffee Break	
10:00-12:30	IM	IM5: Emerging Tools and Applications of Mixed-Integer Optimization Sonia Cafieri, Organizer [, Bastin, Bourguignon, Cafieri,]	1L13 Lockhart Hall
	СМ	CM14: Flows, Colourings, and Decompositions B. Moore, E. Smith-Roberge, M. Kroeker, Organizers [Nurse, Ghanbari, Wdowinski, Turner, Dhawan]	1LO8 Lockhart Hall
	СМ	CM16: Graphs and Hypergraphs: Probabilistic, Structural, and Extremal Results Natasha Morrison, Organizer [Martins, Johnston, Kathapurkar, Hyde, Donderwinkel]	1L11 Lockhart Hall
	СМ	CM19: Metric Dimension and its Variants: Structural and Algorithmic Results Beth Novick and Nadia Benakli, Organizers [Eroh, Novick, Mc Inerney, Biro, Laihonen]	1L12 Lockhart Hall
	СМ	CM22: Quantum Information on Graphs C. van Bommel, H. Monterde, S. Kim, X. Zhang, Org [Tamon, Shi, Lippner, Zhang, McLaren]	1LO4 Lockhart Hall
	СТ	Contributed Talks Data,Communities and Clustering [Berenhaut, Darling, J. Foley, Arora, Kumari]	1LO6 Lockhart Hall
		Free Working Space	1M28
12:30-14:00		Lunch	
12:45-13:45		EDI Discussion, (1L07)	

- The Registration desk will be open 9:00am-3:30pm on June 8 in the hallway of Lockhart Hall adjacent to the breakout rooms.
- Refreshments will be served 9:30am 10:00am in the hallway of Lockhart Hall adjacent to the breakout rooms.
- The EDI Luncheon, a discussion on effective initiatives to promote Equity, Diversity and Inclusion, will occur at 12:30pm on Thursday June 8th in Room 1L07 of Lockhart Hall, University of Winnipeg.

Thursday Afternoon, June 8, 2023

12:30-14:00		Lunch	
14:00-14:55	IS	Igor Pak (UCLA)	MET
11.00 11.55	13	"Poset inequalities"	14121
15:00-15:30		Walk to U of W Coffee Break	
15.20 19.00	IM	IM3: Design Theory and Coding Theory	1L07 Lockhart
15:30-18:00	IIVI	Thaís Bardini Idalino, Jonathan Jedwab, Shuxing Li, Org [Colbourn, Paterson, Meagher, Wiebe, Moura]	Hall
		IM8: Geometric Combinatorics	1L08 Lockhart
	IM	R. Amzi Jeffs, Organizer [Jiang, Richter,, Hinman, Jeffs]	Hall
		IM10: Random Structures and Random Processes	1L12 Lockhart
	IM	Jane (Pu) Gao and Xavier Pérez Giménez, Organizers	Hall
	O) 4	CM17: Graphs and Matroids	1L11 Lockhart
	CM	Jim Geelen, James Oxley, Zach Walsh, Organizers	Hall
		CM18: Many Perspectives on Hopf Algebras in	41.0.41
	СМ	Combinatorics	1LO4 Lockhart
		Karen Yeats, Paul Balduf, Lucas Gagnon, Organizers	Hall
	O) 4	CM23: Ramsey Theory	1L13 Lockhart
	СМ	Joseph Hyde, Organizer [Martins, Naia, Ivan, Pavez-Signé, Winter]	Hall
18:00	End of CanaDAM 2023		

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