# Aram Dermenjian

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Curriculum vitae

# Research Interests

My area of interest lies primarily in combinatorics and discrete geometry where I study Coxeter groups and their generalisations. In particular, I study the structure of Coxeter groups (including related structures) and its various properties through an order theoretic lense.

	Education	
•	<b>Ph.D. in Mathematics</b> , Université du Québec à Montréal, Montreal, Canada	2015 - 2019,
	<b>Supervisors</b> : Christophe Hohlweg (Université du Québec à Mon and Vincent Pilaud (École Polytechnique, Paris, France) <b>Thesis</b> : Facial weak order, Coxeter groups and oriented matroids	tréal, Montreal, Canada)
•	M. Sc. Pure Mathematics and Mathematical Logic, University of Manchester, Manchester, UK Dissertation: Non-crossing partitions of Coxeter groups	2013 - 2014,
•	Bachelor of Science Mathematics,	2004 - 2008,
	<ul> <li>O The final year (2007-2008) was completed at Leeds University, under a study abroad program.</li> </ul>	Leeds, United Kingdom,
	Academic Work Experience	
•	<b>Heilbronn Fellow in Mathematics</b> , University of Manchester, Manchester, UK	Oct 2021 - Sep 2023,
•	<b>Postdoctoral Fellow</b> , York University, Toronto, Canada	Sep 2019 - Aug 2021,
	Research Visits	
•	Visiting Researcher, Arizona State University, Phoenix, Arizona, USA	Apr 2024 - Present,
•	<b>Visiting Researcher</b> , University of Crete, Crete, Greece	Nov 2022 - Nov 2022,
•	<b>Visiting Researcher</b> , Université du Québec à Montréal (LACIM), Montreal, Cana	May 2015 - Jun 2015, ada
•	<b>Visiting Researcher</b> , L'École Polytechnique (LIX), Paris, France	Feb 2015 - Apr 2015,

#### Teaching

Lecturer,	
University of Manche	ester, Manchester, UK
Sem. 2 of 2022/2023	MATH20222 Introduction to Geometry (taught in English - Coteacher Class type: (Hybrid) Lectures – 150 students, undergraduate cou
Lecturer,	
York University, Tor	onto, Canada
Summer 2021	MATH2030A Elementary Probability (taught in English) Class type: (Online) Lectures – 250 students, undergraduate cour
Sem. 2 of 2019/2020	MATH1013M Applied Calculus I (taught in English) Class type: Lectures – 250 students, undergraduate course
Lecturer,	
Université du Québe	c à Montréal, Montreal, Canada
Sem. 1 of 2018/2019	MAT0344 Integration Calculus (taught in French)
,	Class type: Lectures – 13 students, undergraduate course
Sem. 1 of 2017/2018	MAT1600 Matrix Algebra - for computer scientists (taught in French) Class type: Lectures – 80 students, undergraduate course
Teaching Assistan	ıt,
Université du Québe	c à Montréal, Montreal, Canada
Sem. 2 of 2016/2017	INF1130 Discrete Mathematics (taught in French)
,	<b>Class type:</b> Tutorials – 60 students, undergraduate course
Sem. 2 of 2016/2017	ANG3005 English Language and Literature I (taught in English)
	<b>Class type:</b> Tutorials – 30 students, undergraduate course
Sem. 1 of 2016/2017	INF1130 Discrete Mathematics (taught in French)
	<b>Class type:</b> Tutorials – 60 students, undergraduate course
Sem. 1 of 2016/2017	ANG4152 Pronunciation III (taught in English)
0 1 00010/0017	Class type: Tutorials – 30 students, undergraduate course
Sem. 1 of 2016/2017	ANG5052 Speaking II (taught in English)
	Class type: Tutorials – 50 students, undergraduate course

# Articles in Preparation

• K. Calvert, A. Dermenjian, A. Fink, B. Smith Quadratic exchange equations for Coxeter matroids (2025)

#### Preprints and submitted articles

- A. Dermenjian Thin MC left regular bands (2024) 18pp. arXiv: 2410.13130
- A. Dermenjian, E. Flight, T. Tanasa *The* OrientedMatroids *package for* SageMath (2024)

#### Publications

- A. Dermenjian, A. Evetts Conjugacy class growth in virtually abelian groups Groups, Complexity, Cryptology 17, 1 (2025) 11pp. DOI: https://doi.org/10.46298/ jgcc.2025.17.1.13459
- A. Dermenjian, E. Tzanaki Enumerating regions of Shi arrangements per Weyl Cone European J. Combin. 122 (2024) 37pp. DOI: https://doi.org/10.1016/j.ejc. 2024.104002

- A. Dermenjian Maximal degree subposets of ν-Tamari lattices Electron. J. Combin.
   30, 2 (2023) 40 pp. DOI: https://doi.org/10.37236/11571
- A. Dermenjian, C. Hohlweg, T. McConville, V. Pilaud. *The facial weak order* on hyperplane arrangements Disc. Comp. Geo. **39** (2021), 34 pp. DOI: https://doi.org/10.1007/s00454-021-00312-5
- N. Bergeron, A. Dermenjian, J. Machacek. Sign variation and descents Electron. J. Combin. 27, 4 (2020), 11 pp. DOI: https://doi.org/10.37236/9801
- A. Dermenjian, C. Hohlweg, V. Pilaud. The facial weak order and its lattice quotients Trans. Amer. Math. Soc. 370 (2018), 1469-1507 DOI: https://doi.org/10.1090/ tran/7307

# **Conference Proceedings**

- N. Bergeron, A. Dermenjian, J. Machacek. *Sign variation and descents*, Proceedings of the 33rd FPSAC, Séminaire Lotharingien de Combinatoire FPSAC 2021. **85B** (Ramat Gan, January 2021) 12pp.
- A. Dermenjian, C. Hohlweg, T. McConville, V. Pilaud. *The facial weak order on hyperplane arrangements*, Proceedings of the 32nd FPSAC, Séminaire Lotharingien de Combinatoire FPSAC 2020. **84B** (Online, July 2020) 11pp.
- A. Dermenjian, C. Hohlweg, V. Pilaud. *The facial weak order in finite Coxeter groups*, Proceedings of the 28th FPSAC (Vancouver, July 2016) 12pp.

### Thesis

• Aram Dermenjian, *Facial weak order, Coxeter groups and oriented matroids*, Thesis, Université du Québec à Montréal, October 2019, 200 pages.

# Research Funds

- Focused Research Grant, Heilbronn Institute for Mathematical Research, £1,500, (2023)
- International Internship, Fonds de recherche du Québec Nature et technologies, CA\$15,000, (2018)
- Merit scholarship program for foreign students, Fonds de recherche du Québec Nature et technologies, CA\$26,667, (2017)
- International Scholarship, Armenian General Benevolent Union, CA\$1,900, (2017)
- ISM Graduate Scholarship, Institute of Mathematical Sciences, CA\$12,833, (2016)
- Fee exemption Scholarship, UQAM, (2015)
- ISM Graduate Scholarship, Institute of Mathematical Sciences, CA\$14,000, (2015)
  - Awards and Recognitions
- Received the *Research Staff Excellence Award* for best outstanding contribution to the research staff environment in the faculty of science and engineering at the University of Manchester in the 2022/2023 academic year.
- Recognized and highlighted as one of 30 LGBTQ+ mathematicians on a poster made by Spectra (the LGBTQ+ organization for mathematicians around the world) at the joint math meeting of the American Mathematical Society in 2022.

• Rated one of the top three lecturers by students in the mathematics department at York university in Summer 2021.

Scientific Activity

Enumerative Combinatorics Summer School,	Jul 2023,
Summer school, Arusha, Tanzania	
o Turned down invitation	I 0000
Summer school Borota, Colombia	Jun 2022,
O Sago Sossions	
Invited/Contributed Talks	
Enumerating Weyl Cones of Shi Arrangements	
• Three talks in Combinatorics, Barcelona Spain (Jan 2024)	
o 89th Séminaire Lotharingien de Combinatoire, Bertinoro, Ital	y (Mar 2023)
o Various Guises of Reflection Arrangements, Edinburgh, UK (	Mar 2023)
Conjugacy class growth in affine Coveter groups	
90th Séminaire Lotharingien de Combinatoire, Bad Boll, Ger	many (Sep 2023)
The facial weak order in simplicial hyperplane arrangements	/
The factor weak order in simplicial hyperplane arrangements Flags galleries and reflection groups Sydney Australia (Aug	2019)
7 7th Canadian Discrete and Algorithmic Mathematics Confi	erence. Vancouver
Canada (May 2019)	
Graduate students in combinatorics conference 2019.	Philadelphia, PA
USA (Apr 2019)	<b>1</b> /
The facial weak order in finite Coxeter groups	
o 10th Ottawa Mathematics Conference, Ottawa, Canada (June	e 2017)
FPSAC 2016, Vancouver, Canada (Jul 2016)	/
2016 CMS Summer Meeting, Edmonton, Canada (Jun 2016)	
19th Panquebec student colloquium of the ISM, Montréal, Ca	anada (May 2016)
The facial weak order and its lattice quotients	
AMS Sectional Meeting - Cluster algebras and related top	ics. Hartford. CT
USA (Apr 2019)	,,
Algebraic Combinatorics and Group Actions, Herstmonceux Ca	stle, UK (Jul 2016)
Séminaire Lotharingien de Combinatoire, Strasbourg, France	(Apr 2016)
Introduction to Python	
Sage Days 78: Combinatorics, Vancouver, BC, Canada (Jun 2	2016)
Sominon Tollica	,
Thin MC Left Decryler Dende	
THIII MO LEIL REGULAT DAILUS D Discrete Math Seminar Arizona State University Pheenix A	7 USA (Dec 2024)
Discrete Wath Seminar, Arizona State University, Phoenix, A	2, USA (Dec 2024)
Enumerating Weyl Cones of Shi Arrangements	
Discrete Math Seminar, Arizona State University, Phoenix, A	Z, USA (Apr 2024)
Maximal degree subposets of $\nu$ -Tamari lattices	
o Algebra Seminar, Leeds University, Leeds, UK (Nov 2022)	
The importance of being <i>straight</i>	
in importance of bonng straight	

- Dalhousie University Honours Seminar, Online (Jan 2022)
- $\odot$ Graduate Online Combinatorics Colloquium, Online (Apr 2021)

- Sign variations and descents
  - o Discrete Geometry Seminar, FU Berlin, Online (Jun 2021)
  - o Algebra, Geometry and Combinatorics Online Seminar, Online (Jan 2021)
  - Algebra and Discrete Mathematics Seminar, University of California, Davis, Online (Jan 2021)
  - o Combinatorics Seminar, University of Minnesota, Online (Dec 2020)
  - o Combinatorics Seminar, University of Copenhagen, Online (Nov 2020)
  - o Discrete Math Seminar, University of Massachusetts, Amherst, Online (Nov 2020)
  - Algebra and representation theory seminar, University of Oklahoma, Online (Oct 2020)
  - Algebraic (and enumerative) combinatorics seminar, University of Waterloo, Online (Sep 2020)
  - Rocky Mountain Algebraic Combinatorics Seminar, Colorado State University, Online (Sep 2020)
- The facial weak order in simplicial hyperplane arrangements
  - o Algebra Seminar, University of Manchester, Manchester, UK (Mar 2022)
  - o University of Queensland seminar, Brisbane, Australia (Aug 2019)
  - o Algebra and discrete mathematics seminar, UC Davis, Davis, CA, USA (Jun 2019)
  - o University of Minnesota seminar, Minneapolis, MN, USA (May 2019)
  - Algebra and combinatorics seminair, North Carolina State University, Raleigh, NC, USA (Apr 2019)
  - o Applied Algebra Seminar, York University, Toronto, Canada(Nov 2018)
- The facial weak order in finite Coxeter groups
   Séminaire du LaCIM, UQAM, Montréal, Canada(Nov 2016)

#### Posters

- Sign Variation and Descents
   o FPSAC 2021, Online (Jan 2022)
- The facial weak order on hyperplane arrangements
  FPSAC 2020, Online (Jul 2020)
  Summer school on geometric and algebraic combinatorics, Paris, France (Jun 2019)
- The facial weak order in finite Coxeter groups
   Journées Nationales 2018 du GDR Informatique Mathématique, Paris, France (Apr 2018)

# Community Services

### Conference organization

- Queer and Trans Mathematicians in Combinatorics, London, UK (Jul 2023) Lead organizer - Organizing committee
- Matroids, Ordered structures, Arrangements in Combinatorics, Manchester, UK (Jul 2022)
   Organizing committee
- Queer and Trans Mathematicians in Combinatorics, Toronto, Canada (Jun 2021) Lead organizer - Organizing committee
- Student research session at the 2017 CMS Winter Meeting, Waterloo, Canada (Dec 2017) Co-organizer

• Student research session at the 2017 Mathematical Congress of the Americas, Montreal, Canada (Jul 2017) *Co-organizer* 

# Seminar Organization

- Organizer of the Applied Algebra seminar at York University. (2020-2021)
- Organizer of the Algebraic Combinatorics seminar at the Fields Institute. (2020-2021)
- Organiser of the Postgraduate student seminar in mathematics at UQAM. (2015 2017)
- Organiser of the summer mathematics seminar at UQAM. (2015 2017)

# Referee

• Algebra Universalis, Annals of Combinatorics, Asian-European Journal of Mathematics, Combinatorial Theory, International Journal of Applied and Computational Mathematics, Journal of Combinatorics

# Mentorship

• Two undergraduate students at the University of Manchester with the "Summer Experience Internships" program.

**Project title:** "Integrating mathematics with programming using open source software"

o Tudor Tanasa (3rd year)

- Elizabeth Flight (2nd year)
- A Masters student at the University of Manchester under the "Maths Mentoring Scheme for Women and Minority Gender students".

## Panels

- Panelist Maintaining Mathematical Community Spectra LGBTQ+ Mathematics Conference 2023 (Sep 2023)
- Panelist Academic Panel Manchester Interdisciplinary Mathematics Undergraduate Conference (Mar 2023)

# Other

- Core member of the equality, diversity, inclusion and accessibility group in the mathematics department at the University of Manchester (2021 2023)
- Stonewall Workplace Equality liason at the University of Manchester (2021 2022)
- Co-chair of the Canadian Mathematical Society Student Committee. (2016 2018)
- Representative in postgraduate program committee for mathematics at UQAM. (2015 2017)
- Treasurer for postgraduate students in mathematics association at UQAM. (2015 2016)
- Volunteer for the environmental committee of the science student association at UQAM. (2015 2018)
- Represented the pure mathematics students as a representative on the postgrad student staff liaison board at the University of Manchester.

# Languages

English C2 Primary language.

French C1 Advanced Level.

Catalan A2 Basic Level. Armenian B2 Mother tonque.

Spanish B2 Intermediate Level.