

Shayla Redlin Hume

Combinatorics and Optimization Department
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Education

- Ph.D. in Combinatorics and Optimization Anticipated graduation: April 2023
- **University of Waterloo**
 - Supervisor: Dr. Peter Nelson
- M.Math. in Combinatorics and Optimization 2018
- **University of Waterloo**
 - Supervisor: Dr. Luke Postle
- B.Sc. (Honours) Combined Mathematics and Computer Science (Work Experience) 2016
- **University of Victoria**
 - Honours Project Supervisor: Dr. Gary MacGillivray

Research Interests

Matroid theory, graph theory, graph colouring, graph/combinatorial algorithms and complexity, math education, data analysis

Teaching Experience

- Instructor (*University of Waterloo, Waterloo, ON, Canada*) 2021-2022
- MATH 239: Introduction to Combinatorics (Jan-Apr 2022)
 - MATH 135: Algebra for Honours Mathematics (Nov-Dec 2021)
- Completed the “Certificate in University Teaching” Program (Centre for Teaching Excellence, *University of Waterloo, Waterloo, ON, Canada*) 2020-2022
- Teaching Assistant (*University of Waterloo, Waterloo, ON, Canada*) 2016-present
- MATH 249: Introduction to Combinatorics (Advanced Section) (Sep-Dec 2022)
 - CO 446/646: Matroid Theory (May-Aug 2021)
 - MATH 682 Online: History of Mathematics: Antiquity (Jan-Apr 2021)
 - CO 250: Introduction to Optimization (May-Aug 2020)
 - CO 456: Introduction to Game Theory (Sep-Dec 2019, Sep-Dec 2020, Sep-Dec 2021)

- CO 480: History of Mathematics (May-Aug 2019)
- MATH 674.005: Special Topics in Mathematical Connections: Graph Theory (Sep-Dec 2018)
- CO 342: Introduction to Graph Theory (Sep-Dec 2017, May-Aug 2018, Sep-Dec 2020, May-Aug 2022)
- MATH 239: Introduction to Combinatorics (May-Aug 2017, Jan-Apr 2018, Jan-Apr 2019, Jan-Apr 2020)
- CS 136: Elementary Algorithm Design and Data Abstraction (Jan-Apr 2017)
- MATH 116: Calculus 1 for Engineers (Sep-Dec 2016)

Completed the “Fundamentals of University Teaching” Program (Centre for Teaching Excellence, *University of Waterloo*, Waterloo, ON, Canada) 2018-2020

“Peer Observation Group” participant (*University of Victoria*, Victoria, BC, Canada) 2016

Teaching Assistant (*University of Victoria*, Victoria, BC, Canada) 2014-2016

- Tutorial Instructor for MATH/PHYS 248: Computer Assisted Mathematics and Physics (Jan-Apr 2016)
- Assistance Centre Tutor (Sep 2015 - Apr 2016)
- Marker for the following courses:
 - MATH 100: Calculus I (Jan-Apr 2015, Sep-Dec 2015)
 - MATH 151: Finite Mathematics (Sep-Dec 2014, Jan-Apr 2015)
 - MATH 120: Precalculus Mathematics (Sep-Dec 2014)

Awards and Scholarships

Ontario Graduate Scholarship, <i>University of Waterloo</i> , \$15,000	2022-2023
President’s Graduate Scholarship, <i>University of Waterloo</i> , \$10,000	2022-2023
NSERC Canada Graduate Scholarship - Doctoral, <i>University of Waterloo</i> , \$105,000	2019-2022
President’s Graduate Scholarship, <i>University of Waterloo</i> , \$10,000	2021-2022
President’s Graduate Scholarship, <i>University of Waterloo</i> , \$10,000	2020-2021
President’s Graduate Scholarship, <i>University of Waterloo</i> , \$10,000	2019-2020
Mathematics Domestic Doctoral Scholarship, <i>University of Waterloo</i> , \$7,500	2019-2020
Math Provost Doctoral Entrance Award for Women, <i>University of Waterloo</i> , \$5,000	2018-2019
Mathematics Domestic Doctoral Scholarship, <i>University of Waterloo</i> , \$7,500	2018-2019
Math Domestic Graduate Student Award, <i>University of Waterloo</i> , \$6,000	2018-2019
Ontario Graduate Scholarship, <i>University of Waterloo</i> , \$15,000	2017-2018
President’s Graduate Scholarship, <i>University of Waterloo</i> , \$10,000	2017-2018
NSERC Canada Graduate Scholarship - Master’s, <i>University of Waterloo</i> , \$17,500	2016-2017
President’s Graduate Scholarship, <i>University of Waterloo</i> , \$10,000	2016-2017

UVic Excellence Scholarship, <i>University of Victoria</i> , \$26,000	2011-2015
Jamie Cassels Undergraduate Research Award, <i>University of Victoria</i> , \$1,500	2014-2015
Clara Evelyn Wilson Scholarship, <i>University of Victoria</i> , \$2,028	2015
Robert and Norah Wallace Commemorative Scholarship, <i>University of Victoria</i> , \$1,972	2015
Betty and Gilbert Kennedy Scholarship in Mathematics, <i>University of Victoria</i> , \$500	2013
Angus & Annie MacKay Scholarship, <i>University of Victoria</i> , \$700	2012
Excellence in Math Scholarship, <i>University of Victoria</i> , \$2,750	2011

Publications

Published Articles

- P. Nelson, S. Redlin, J. van der Pol. *Enumeration of extensions of the cycle matroid of a complete graph*. *Adv. in Appl. Math.*, 138:102343, 2022, <https://doi.org/10.1016/j.aam.2022.102343>.
- S. Bard, G. MacGillivray, S. Redlin. *The Complexity of Proper Frugal Colouring*. *Arab. J. Math.*, 10:51-57, 2021, <https://doi.org/10.1007/s40065-021-00311-7>.
- G. MacGillivray, S. Redlin. *The Firefighter Problem on Orientations of the Cubic Grid*. *Bull. ICA*, 88:22-29, 2020.

Referee Activity

Referee for *Discrete Mathematics* and *Discrete Applied Mathematics*.

Invited Conference Presentations

- “*Enumeration of extensions of the cycle matroid of a complete graph*”; 53rd Southeastern International Conference on Combinatorics, Graph Theory, and Computing; Florida Atlantic University; Boca Raton, Florida, USA — Mar 7-11, 2022. (Invited to Special Session on Matroid and Rigidity Theory.)
- “*Acyclic Colouring of Graphs on Surfaces*”; 2018 SIAM Conference on Discrete Mathematics; University of Colorado, Denver; Denver, Colorado, USA — Jun 4-8, 2018. (Invited to Mini-Symposium on Graph Colouring.)

Other Conference Presentations

- “*Improving Learner Self-Efficacy in STEM*”; 13th Annual University of Waterloo Teaching and Learning Conference; University of Waterloo; Waterloo, ON, Canada — Apr 27, 2022.
- “*The Firefighter Problem for All Orientations of the Hexagonal Grid*”; Canadian Undergraduate Mathematics Conference; University of Victoria; Victoria, BC, Canada — Jul 13-17, 2016.

Seminar Presentations

“Extensions of the cycle matroid of a complete graph”; Undergraduate Research Seminar; University of Waterloo; Waterloo, ON, Canada — May 26, 2022.

“Extensions of the cycle matroid of a complete graph”; Discrete Math Seminar; University of Victoria; Victoria, BC, Canada — November 25, 2021.

“Extensions of cliques”; Graphs and Matroids Seminar; University of Waterloo; Waterloo, ON, Canada — July 5, 2021. <https://youtu.be/NWTHsnv9oME>

“Counting Antichains in the Boolean Lattice”; Joint Pure Math/C&O Joint Colloquium; University of Waterloo; Waterloo, ON, Canada — Jun 10, 2021.

“Halfway to Rota’s Basis Conjecture”; Graphs and Matroids Seminar; University of Waterloo; Waterloo, ON, Canada — Nov 14, 2019.

“Acyclic Colouring of Graphs on Surfaces”; University of Bordeaux - LaBRI; Talence, France — Nov 5, 2018.

“Acyclic Colouring of Graphs on Surfaces”; Graphs and Matroids Seminar; University of Waterloo; Waterloo, ON, Canada — Jul 26, 2018.

Panels

Panelist for the *“From TA to Course Instructor”* Workshop hosted by the Centre for Teaching Excellence; University of Waterloo; Waterloo, ON, Canada — Aug 3, 2022.

Organizer and Moderator for the *“Equity, Diversity, and Inclusion in Mathematics Research”* Panel hosted by the Women in Mathematics Committee; University of Waterloo; Waterloo, ON, Canada — Apr 19, 2022.

Conferences and Workshops Attended

13th Annual University of Waterloo Teaching and Learning Conference; University of Waterloo; Waterloo, ON, Canada — Apr 27-28, 2022.

53rd Southeastern International Conference on Combinatorics, Graph Theory, and Computing; Florida Atlantic University; Boca Raton, Florida, USA — Mar 7-11, 2022.

2021 SIAM Conference on Discrete Mathematics (SIAM DM '21); Virtual Conference — Jul 20-23, 2021.

Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM), Online Meeting — May 25-28, 2021.

Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM), Simon Fraser University, Vancouver, BC, Canada — May 28-31, 2019.

2018 SIAM Conference on Discrete Mathematics (SIAM DM '18); University of Colorado, Denver; Denver, Colorado, USA — Jun 4-8, 2018.

Workshop on Structure in Graphs and Matroids (SiGMa), University of Waterloo, Waterloo, ON, Canada — Jul 17-21, 2017.

Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM), Ryerson University, Toronto, ON, Canada — Jun 12-15, 2017.

Summer School on Random Graphs and Probabilistic Methods, Fields Institute (University of Toronto), Toronto, ON, Canada — May 29 - Jun 9, 2017.

Canadian Undergraduate Mathematics Conference (CUMC), University of Victoria, Victoria, BC, Canada — Jul 13-17, 2016.

Additional Research Experience and Awards

Bordeaux-Waterloo Joint Research Grant member	2018
Research Assistant (<i>University of Victoria, Victoria, BC, Canada</i>)	2015-2016
Research Assistant (<i>Canadian Centre for Climate Modelling and Analysis (CCCma) - Environment Canada, Victoria, BC, Canada</i>)	2015-2016
Jamie Cassels Undergraduate Research Award (JCURA) recipient (<i>University of Victoria, Victoria, BC, Canada</i>)	2014-2015

Service

Co-organizer of “Graphs and Matroids Seminar” (<i>University of Waterloo, Waterloo, ON</i>)	2021-2022
Note-taker for AccessAbility Services (<i>University of Waterloo, Waterloo, ON</i>)	2019-2020
Volunteer Marker for the Euclid Mathematics Contest (<i>University of Waterloo, Waterloo, ON</i>)	2019-present
Women in Math (WiM) Committee member (<i>University of Waterloo, Waterloo, ON</i>)	2018-present
Volunteer Marker for the Canadian Senior Mathematics Contest (<i>University of Waterloo, Waterloo, ON</i>)	2018-present
High School Mathematics and Science Tutor (Victoria, BC)	2009-2016
Organizing Committee for the Canadian Undergraduate Mathematics Conference 2016 (<i>University of Victoria, Victoria, BC</i>)	2015-2016
Note-taker for the Resource Centre for Students with a Disability (RCSD) (<i>University of Victoria, Victoria, BC</i>)	2013-2016
Computer Science Course Union member (<i>University of Victoria, Victoria, BC</i>)	2014-2015