

Timothy Miller

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EDUCATION

- **PhD Candidate | Combinatorics & Optimization | University of Waterloo** 2025 (Expected)
 - All requirements other than thesis completed.
 - Advisor: Kevin Purbhoo, co-supervised by Oliver Pechenik.
 - Grade percentage: 94%.
- **MMath | Combinatorics & Optimization | University of Waterloo** 2020
 - Thesis title: "On Combinatorics, Integrability and Puzzles."
 - Advisor: Kevin Purbhoo.
 - Grade percentage: 90.8%.
- **BMath | Computational and Applied Mathematics and Statistics | Carleton University** 2018
 - Graduated with High Distinction, Dean's Honour List.
 - Awarded Senate Medal for Outstanding Academic Achievement.
 - 11.5/12 CGPA.
- **BCom | Finance with Concentration in Statistics | Carleton University** 2013
 - Graduated with Highest Honours.
 - 10/12 CGPA.

RESEARCH

- **Work in Progress** 2025 (Expected)
 - Working title: "Vertex Models for the Product of a Schur and Demazure Polynomial."
- **URA | Carleton University** Summer 2018
 - Research project on m -ary integer partitions and generalizations to "multi-ary" partitions.
 - Advisor: Daniel Panario.

WORK EXPERIENCE

- **Teaching Assistant | University of Waterloo** 2018 - Present
 - Performed TA duties for graduate and undergraduate level math courses.
 - Conducted lectures, drafted assignments and exams, held workshops and office hours, proctored exams and graded students.
 - Awarded Outstanding TA award.
 - Classes included: Algebraic Enumeration (CO 630), Applied Cryptography (CO 687), Combinatorial Enumeration (CO 330), Introduction of Optimization (CO 250), Introduction to Combinatorics (MATH 239), Mathematical Discovery and Invention (CO 380), History of Mathematics (CO 480), Calculus 1 and 2 for Engineers (MATH 116 and MATH 119), Linear Algebra 1 (MATH 136), Reading Writing and Discovering Proofs (MATH 692).
- **Teaching Assistant | Carleton University** 2016 - 2018
 - Performed TA duties for undergraduate computer science courses.
 - Held workshops and office hours, proctored exams and graded students.
- **Research Interviewer | Nielsen | Ottawa, Ontario** 2014 - 2016
 - Conducted interviews for market, political and academic research
 - Contributed to survey design with clients.
 - Hosted focus groups.
- **Tutor | MyTutor | Ottawa, Ontario** 2013 - 2014

- Tutored Carleton and Ottawa University students in calculus, linear algebra, finance, statistics and accounting.

OTHER POSITIONS

- **Seminar Coordinator | University of Waterloo** **Winter 2023**
 - Coordinated and hosted algebraic combinatorics seminar.

TALKS

- **"Vertex Models for the Product of a Schur and Demazure Polynomial."** Applied Algebra Seminar, York University, February 26, 2024.
- **"Vertex Models for the Product of a Schur and Demazure Polynomial."** Algebraic Combinatorics Seminar, University of Waterloo, February 15, 2024.
- (Poster) **"Vertex Models for the Product of a Schur and Demazure Polynomial."** CAAC 2023 Conference, LACIM (UQAM), January 26, 2024.
- **"Vertex Models Applied to Symmetric Function Theory."** Applied Algebra Seminar, York University, October 31, 2022.
- **"Integrable Vertex Models for Combinatorial Polynomials."** URA Seminar, University of Waterloo, June 23, 2022.
- **"Factorial Schur Functions and Quantum Integrability."** Algebraic Combinatorics Seminar, University of Waterloo, July 2, 2020.
- **"From Modelling Fermions to the Puzzle Rule."** Algebraic Combinatorics Seminar, University of Waterloo, June 27, 2019.

CONFERENCES AND WORKSHOPS ATTENDED

- **Combinatorial Algebra meets Algebraic Combinatorics (CAAC 2024).** LACIM (UQAM), January 2024.
- **Schubert Summer School 2023.** UIUC, June 2023.
- **Combinatorial Algebra meets Algebraic Combinatorics (CAAC 2023).** University of Waterloo, January 2023.
- **The Los Angeles Workshop on Representations and Geometry (LAWRGe 2022).** University of Southern California, June 2022.
- **Combinatorial and Algebraic Enumeration.** University of Waterloo, May 2022.
- **Open Problems in Algebraic Combinatorics (OPAC 2022).** University of Minnesota, May 2022.
- **26th Ontario Combinatorics Workshop.** University of Waterloo, May 2022.
- **2019 Canadian Mathematical Society (CMS) Winter Meeting.** Toronto, December 2019.