ETHAN ROSS

Canadian Citizen
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EDUCATION

University of Alberta *September 2012-April 2016*
Bachelor of Science with Honours

University of Toronto *September 2018 - September 2019*
Masters of Science

University of Toronto *September 2019- December 2024 (expected)*
PhD (expected)

RESEARCH EXPERIENCE

Undergraduate Researcher, University of Alberta *August - May 2015 and 2016*
Studied combinatorial structures from supersymmetry called Adinkras under Dr. Charles Doran. Produced classes of Quantum Error Correcting Codes from these Adinkras.

Undergraduate Researcher, SSTPRS *June - August 2015*
Computed properties of supersymmetric systems under Dr. Sylvester James Gates. Published a paper about our findings.

Master's Project, University of Toronto *May - September 2019*
Synthesized various proofs of the Kostant-Souriau pre-quantization condition under Dr. Lisa Jeffrey.

PhD Research, University of Toronto *September 2019 - Present*
Independently researched various topics in symplectic geometry including geometric quantization, stratified spaces, and singular foliations. I have two published papers and am currently working on two more.

ORGANIZATIONAL EXPERIENCE

2024 Bird's Eye Conference March 2023
Food supervisor.

University of Toronto Symplectic Geometry Seminar 2023-2024
Organizer.

2024 Bird's Eye Conference March 2024
Topology and Geometry co-chair.

PUBLICATIONS

1. Gates, S.J., Ross, E., et al. *A Lorentz covariant holoraumy-induced gadget from minimal off-shell 4D, $\mathcal{N} = 1$ supermultiplets* Journal of High Energy Physics, vol 113, 2015. https://doi.org/10.1007/JHEP11(2015)113

2. Ethan Ross. *Invariance of Polarization Induced by Symplectomorphisms.* Toric Topology and Polyhedral Products. Fields Institute Communications, vol 89, 2024. https://doi.org/10.1007/978-3-031-57204-3_14

3. Ethan Ross. *Stratified Vector Bundles: Examples and Constructions.* Journal of Geometry and Physics, vol 198, 2024. https://doi.org/10.1016/j.geomphys.2024.105114

TALKS GIVEN

1. *Stratified Quantization*

   UWaterloo Geometry and Topology Seminar (July 2024)

2. *Stratified Quantization*

   Workshop on Hamiltonian Geometry and Quantization (July 2024)

3. *Singular Riemannian Foliations and Foliate Vector Fields*

   Canadian Mathematical Society Summer Meeting (June 2024)

4. *Singular Reduction of Polarizations*

   Geometry and Topology Seminar at UQAM (January 2024)

5. *Singular Reduction of Polarizations*

   Canadian Mathematical Society Winter Meeting (December 2023)

6. *Stratified Vector Bundles*

   University of Toronto Symplectic Seminar (March 2023)

7. *Stratified Vector Bundles*

   Gone Fishing (March 2023)

8. *Stratified Vector Bundles*

   Canadian Mathematical Society Winter Meeting (December 2022)

9. *Invariance of Polarization Induced by Symplectomorphisms*

   Local Poisson Seminar (January 2022)

TEACHING EXPERIENCE

Course Instructor, University of Toronto *2021-present*

1. MAT135: Calculus I (Summer 2021)
   - Designed and built the course.
   - Wrote and assigned homework problem sets and exams.
   - Wrote and performed lectures.
   - Managed TAs by assigning them tutorials, grading, and office hours.
2. MAT224: Linear Algebra (Summer 2022)
   - Designed and built course.
   - Wrote and assigned homework problem sets and exams.
   - Managed TAs by assigning them tutorials, grading, and office hours.

- Incorporated Computer Science material into the course materials.

3. MAT136: Calculus II (Winter 2023)
   - This course was coordinated by Dr. Bernardo Galvo-Sousa.
   - Incorporated active learning techniques like polling and problem sessions into my lectures
   - Wrote exam problems.
   - Managed regrade requests.
4. MAT136: Calculus II (Summer 2023)
   - Designed and built course.
   - Still maintained active learning elements.
   - Designed tutorial worksheets for the students.
   - Wrote and assigned homework problem sets and exams.
   - Managed TAs by assigning them tutorials, grading, and office hours.
5. MAT136: Calculus II (Winter 2024)
   - This course was coordinated by Dr. Lindsey Shorser.
   - Incorporated active learning techniques like polling and problem sessions into my lectures
   - Wrote exam problems.
6. MAT301: Groups and Symmetries (Summer 2024)
   - Designed and built course.
   - Wrote all material for lectures, assignments, tutorials, and exams.
   - Managed all aspects of the course including TAs and student problems.
7. MAT135: Calculus I (Fall 2024)
   - This course was coordinated by Dr. Sarah Mayes-Tang.
   - Incorporated active learning techniques like polling and problem sessions into my lectures
   - Accommodations Officer: managed the administration of student accommodations including coordinating with university staff and the students.

Teaching Assistant, University of Toronto *2018-Present*

- Courses
  - MAT133: Calculus and Linear Algebra for Commerce Students.
  - MAT135: Calculus I
  - MAT136: Calculus II
  - MAT334: Complex Variables.
  - MAT235: Multivariable Calculus.
  - MAT301: Groups and Symmetries.
  - MAT327: Introduction to Topology

- Held tutorial sessions where I guided students through standard mathematical techniques for problem solving.
- Graded quizzes and exams.

AWARDS

Jason A. Lang Scholarship 2014-2016

NSERC Undergraduate Student Research Award 2015-2016

Graduated with First Class Honors 2016

Domestic Graduate Entrance Award 2019

Department Of Mathematics Graduate Program Award 2019

Blyth Fellowship 2019

Ontario Graduate Scholarship 2020-2024

MEMBERSHIPS

Canadian Mathematical Society
American Mathematical Society