

ISAAC ROSENBERG

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Toronto, Ontario, Canada

EDUCATION

• University of Toronto

Honours Bachelor's of Science

September 2021 - May 2025

Toronto, Canada

- Astronomy and Astrophysics Specialist, Mathematics Minor
- GPA: 3.84/4.00

RESEARCH EXPERIENCE

Undergraduate Thesis I: The Impacts of AGN Feedback on Galaxy Clusters

September 2024 - April 2025

Department of Astronomy, University of Toronto

- Research assistant for Professor Renée Hložek and Dr. Martine Lokken.
- Ran hydrodynamic simulations with the 300 collaboration of galaxy clusters to understand how galactic feedback affects large-scale structure.
- Built packages to compare the pressure, density, temperature distributions and filament morphology across simulations.
- Conducted a literature review and presented findings to colleagues internationally.
- Work will likely be published in a peer-reviewed journal. This project was completed as part of a bachelor's thesis.

Undergraduate Thesis II: Standard Siren Cosmology with Gravitational Waves

September 2024 - August 2025

Canadian Institute for Theoretical Astrophysics

- Research assistant for Professor Maya Fishbach.
- Explored methods of recovering the redshift-distance relation from simulated gravitational-wave catalogs of redshifted masses and distances.
- Developed methods of recovering the Hubble constant from gravitational waves, applicable to real events.
- Received Summer Undergraduate Research Fellowship to continue this project over summer 2025.
- Work will likely be published in a peer-reviewed journal. This project was completed as part of a second bachelor's thesis, by special request.

Summer Research, ATLAS Experiment

Summer 2024

CERN, Switzerland

- Worked under Professors Nikolina Ilic and Richard Teuscher on the ATLAS experiment at CERN for 12 weeks, in person.
- Investigated yearly spatial variations in jet distributions of the $H \rightarrow ZZ$ particle decay.
- Ran Monte Carlo particle simulations to compare with observed results.
- Summarized findings in a report.

WORK EXPERIENCE

Teaching Assistant

2023 - 2025

University of Toronto, Department of Mathematics & Department of Astronomy

- Teaching assistant for [MAT186 \(Calculus I\)](#), [MAT187 \(Calculus II\)](#), [MAT188 \(Linear Algebra\)](#), and [AST251 \(Life on Other Worlds\)](#).
- Led three tutorials per week, marked assignments, invigilated exams, and held office hours for university calculus, linear algebra, and astronomy courses with over 4,000 students combined.

Summer Student

Summer 2023

Ontario Storm Prediction Centre, Environment Canada

- Created a Python script to automate the collection of weather alerts from an online database.

- Built an interactive dashboard in PowerBI to view and sort historical storm reports on a map, used by meteorologists across Canada.
- Wrote detailed event summaries following extreme weather events, categorizing reports for media briefings used by major news organizations.

Events Assistant

Centre for Jewish Studies, University of Toronto

September 2022 - April 2023

- Helped with event logistics and on-site coordination of workshops, lectures, and conferences.
- Worked closely with undergraduate and graduate students, faculty, lecturers, and community members.

Vocalist, Yiddish Glory

Toronto

2016 - Present



- [Grammy-nominated](#) lead vocalist on the album "Yiddish Glory: The Lost Songs of World War II".
- Performed dozens of concerts worldwide, including in Canada, Germany, Austria, and Czechia.
- Sang newly discovered music written by Holocaust survivors and victims in the Soviet Union.

RELEVANT COURSEWORK

Mathematics and Computer Science

- Analysis, Multivariable Calculus, Linear Algebra I & II, Differential Equations, Complex Analysis, Introduction to Computer Programming, Neural Networks.

Physics

- Quantum Mechanics I & II, Classical Mechanics I & II, Electromagnetism I & II, Thermal Physics, High Energy Physics, Computational Physics, Physics Laboratory.

Astrophysics

- Stars and Planets, Galaxies and Cosmology, Introduction to Astrophysics, Astrophysics Laboratory, Cosmology (*PhD-level course*).

HONORS AND AWARDS

- **Summer Undergraduate Research Fellowship**

Canadian Institute for Theoretical Astrophysics

Received \$9,500 to continue my research on gravitational waves.

Summer, 2025 \$9,500
- **Regents Admission Scholarship**

Victoria College, University of Toronto

2021, \$5,000
- **Regents In-course Scholarship I**

Victoria College, University of Toronto

2022, \$1,000
- **Prof. William Kingston and Dr. John Kingston Scholarship**

Victoria College, University of Toronto

2023, \$1,000
- **John Hamilton Watson Award for International Study**

Victoria College, University of Toronto

2024, \$3,000
- **CIE International Experience Award**

Centre for International Experience, University of Toronto

2024, \$1,500
- **Helen Mae Woodliffe Scholarship**

Victoria College, University of Toronto

2024, \$1,000

SKILLS

- **Programming Languages:** Python, C, C++, Perl, Java, MATLAB, ROOT
- **Operating Systems:** Windows, Mac, Linux
- **Hydrodynamic Simulations (and related tools):** GIZMO, GADGET, CAESAR, YT
- **Python Packages:** NumPy, SciPy, Matplot, Pandas, AstroPy

PROFESSIONAL MEMBERSHIPS

- [The Three Hundred Collaboration](#)

October, 2024 - Present
- [The Recording Academy](#)

June, 2019 - Present

ADDITIONAL INFORMATION

Languages: English (native), French (intermediate), Russian (intermediate), German (beginner)
Interests: World history, baseball, travel, chess, politics, music.