

# 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: 3.85/4.00

## 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.