ISAAC ROSENBERG

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Toronto, Ontario, Canada

Education

- **Erasmus Mundus Joint Master in Astrophysics** *September 2025 – July 2027*
  Master of Science in Astrophysics Multiple Countries (Italy, France, Germany, Serbia)
  - Two-year joint program across European universities focused on astrophysics and space science
  - Participating institutions: University of Rome Tor Vergata, University of Belgrade, University of Bremen, and Université Côte d'Azur

- **University of Toronto** *September 2021 - May 2025*
  Honours Bachelor's of Science 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.

Conferences and Publications

C=Conference, J=Journal, T=Thesis

[C.1] Rosenberg, et al. (2025). **Fitting for the Hubble constant with spectral sirens**. In *STATSTRO*, May 14, 2025, Toronto, Canada.

[C.2] Rosenberg, et al. (2025). **The impacts of AGN feedback on galaxy clusters and their surroundings**. At *CASCA*, June 5, 2025, Halifax, Canada.

[C.3] Rosenberg, et al. (2025). **Constraining Cosmology with Next-Generation Gravitational Wave Detectors**. At *EXPLORE*, August 12, Toronto, Canada.

[T.1] Rosenberg, et al. (2025). **The impacts of AGN feedback on galaxy clusters and their surroundings**. University of Toronto, Honours Bachelor of Science thesis.

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 *September 2022 - April 2023*
Centre for Jewish Studies, University of Toronto

- 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 *2016 - Present*
Toronto [♫]

- 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

- **Erasmus Mundus Joint Masters Scholarship** *2025 - 2027 €34,000*
  Erasmus MASS program
- **Summer Undergraduate Research Fellowship** *Summer, 2025 $9,500*
  Canadian Institute for Theoretical Astrophysics [🌐]
  ◦ Received $9,500 to continue my research on gravitational waves.
- **Regents Admission Scholarship** *2021, $5,000*
  Victoria College, University of Toronto
- **Regents In-course Scholarship I** *2022, $1,000*
  Victoria College, University of Toronto
- **Prof. William Kingston and Dr. John Kingston Scholarship** *2023, $1,000*
  Victoria College, University of Toronto
- **John Hamilton Watson Award for International Study** *2024, $3,000*
  Victoria College, University of Toronto
- **CIE International Experience Award** *2024, $1,500*
  Centre for International Experience, University of Toronto
- **Helen Mae Woodliffe Scholarship** *2024, $1,000*
  Victoria College, University of Toronto

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.