

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: Standard Siren Cosmology with Gravitational Waves

September 2024 - August 2025

Canadian Institute for Theoretical Astrophysics

- Research assistant for Professor Maya Fishbach.
- Forecasted how well next-generation gravitational wave detectors can constrain cosmological parameters.
- Built a model that can simultaneously fit for the cosmological and astrophysical evolution of the binary black hole mass distribution.
- Received Summer Undergraduate Research Fellowship to continue this project over summer 2025.
- Work will likely be published in a peer-reviewed journal.

Undergraduate Thesis II: 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.

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.

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

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

WORK EXPERIENCE

Teaching Assistant <i>University of Toronto, Department of Mathematics & Department of Astronomy</i>	2023 - 2025
• 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 <i>Ontario Storm Prediction Centre, Environment Canada</i>	Summer 2023
• 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 <i>Centre for Jewish Studies, University of Toronto</i>	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 <i>Toronto</i>	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.	

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.