

ISAAC ROSENBERG

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Rome, Italy

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 Hlozek 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.

Updated: Monday 1st December, 2025

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

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| • 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

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|---|-----------------------------|
| 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.