

# 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.

Updated: Saturday 16<sup>th</sup> August, 2025

## RELEVANT COURSEWORK

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### 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** 2025  
*York University* 
- **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*

## WORK EXPERIENCE

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### 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.

## SKILLS

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- **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

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- **The Three Hundred Collaboration** *October, 2024 - Present*
- **The Recording Academy** *June, 2019 - Present*

## ADDITIONAL INFORMATION

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**Languages:** English (native), French (intermediate), Russian (intermediate), German (beginner)

**Interests:** World history, baseball, travel, chess, politics, music.