

# Raina Irons

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## ABSTRACT

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I am a current undergraduate student at the University of Toronto at Mississauga working towards the Specialist in Astronomical Sciences, Physics Major, and Minor in Mathematics. I enjoy participating in projects that strengthen my experience as a researcher and learner. Currently, I am researching dwarf galaxy discovery and classifications as part of summer undergraduate research. In my free time I conduct public observations as the President of the UofT Amateur Astronomer's Society (UTAAS) as the club's President, and enjoy working with the Astronomy department at UofT on outreach events and education.

## EDUCATION

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### University of Toronto

Mississauga, ON

*Honors Bachelor of Science, Astronomical Sciences Specialist, Physics Major, Mathematics Minor*

2019 - 2024

- **UofT Amateur Astronomer's Society President (2022 - 2024):** Organize club and outreach activities centered around astronomy for UofT students and the public.
- **UTM Physics Club Event Director (2022 - 2023):** Facilitate and organize events for the Physics Club. Outreach directed towards the public and peers across disciplines.
- **UTM Physics Club Event Director Associate (2021 - 2022):** Work with executives of the Physics Club to promote and run events on campus or online.

## RESEARCH EXPERIENCE/PROJECTS

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### SURP Research Fellowship

May 2023 - Aug. 2023

*Dunlap Institute of Astronomy and Astrophysics*

- **Project:** Study of Infant-Phase Young Supernovae and Peculiar Optical Transients, supervised by Dr. Dae-Sik Moon.

### Practical Astronomy (AST326)

Sept. 2022 - April 2023

*University of Toronto*

*Select projects*

- **Astronomical Photometry:** Analysis of Type Ia Supernova KSP-OT-201509b. Handling FITS files and using statistical principles and how to use standard stars in photometric calibration to extract supernova light curve.
- **Detecting Exoplanet Transits:** Data reduction of GJ 1214 star over a four hour observation period by William Herschel Telescope. Analysis of transit lightcurve through high-precision differential photometry.
- **Determination of Orbital Parameters for Asteroid 26 Proserpina:** Utilizing Laplace's method to determine the six Keplerian elements of asteroid 26-Proserpina. Four independent observations of the body were conducted by the Dunlap Institute Telescope located at Mt. Joy, New Mexico.

### Computational Physics (PHY407)

Fall 2022

*University of Toronto*

- Scientific computing course covering function analysis, ODE's, PDE's, eigenvalue problems, non-linear equations and Monte Carlo techniques. Projects can be found on Github under the course code.

## AWARDS & SCHOLARSHIPS

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### CLFN Scholarship

Sept. 2019 - April 2023

*Full-ride tuition scholarship awarded by Curve Lake First Nations (CLFN).*

### Aurora Borealis Fellowship

April 2023

*Awarded to Indigenous students in a research position with the University of Toronto.*

### Indspire Scholarship

Awarded: Jan., Oct.2022,

*Scholarship to high-achieving Indigenous students in their field of study.*

## TECHNICAL SKILLS

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**Languages:** Python, MATLAB, L<sup>A</sup>T<sub>E</sub>X, C#, Bash, Git

**Libraries:** Numpy, Scipy, Pandas, Astropy, Matplotlib, Seaborn

**Applications:** Microsoft Excel, Outlook, Teams, Office

## WORK EXPERIENCE

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### **Tutor**

April 2022 - Present

*Tutorbright*

*Remote*

- \* Work with students to build the fundamentals of Mathematics and the Sciences and gain confidence in problem solving. Serving as both a teacher and mentor for young minds.

### **Mathematics and Physics Tutor**

March 2020 - Feb. 2021

*Self employed*

*Remote*

- \* Grade 8 to Grade 12 Mathematics, and Grade 9 physics. Understanding and development of skills and problem solving abilities to approaching problems.

## LEADERSHIP & COMMUNITY INVOLVEMENT

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### **AstroTours Demonstration Volunteer**

June 2022 - Present

*Monthly public outreach conducted by Dunlap Institute. Educate public and run demonstrations.*

### **Perseid Meteor Shower Excursion to Earl Rowe Organizer**

August 12 2022, 2023

*Inter-campus event run by UTAAS for the Perseid Meteor Shower.*

### **Public science educator, CBC**

November 7, 2022

*Interviewed by CBC on the November 8th for the total lunar eclipse in Toronto.*