

SHANNON BOWES

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Education

University of Toronto <i>PhD student in Astronomy & Astrophysics</i>	Sep. 2024 – Present
Mount Allison University <i>BSc Honours in Physics, Minors in Mathematics and Astronomy</i> <i>First Class Honours with Distinction</i>	Sep. 2020 – May 2024

Research Experience

University of Toronto <i>Supervisor: Prof. Maria Drout</i>	Apr. 2025 – Present
• Searching for partially stripped stars through the characterization of variability in Yellow Supergiants in the Large and Small Magellanic Clouds	
University of Toronto <i>Supervisor: Prof. Chris Matzner</i>	Sep. 2024 – Apr. 2025
• Investigating the role of thermal feedback in massive star formation, specifically in proto-globular cluster starburst sites, to develop approximate solutions to the radiative transfer equation	
Mount Allison University <i>Supervisor: Prof. Catherine Lovekin</i>	May 2023 – May 2024
• Analysed the binarity and pulsation of an eclipsing binary system, λ Scorpii, constraining physical parameters with a focus on convective core overshoot; completed pulsation analysis of spectroscopic binary ω Eridani	
Canadian Institute for Theoretical Astrophysics (CITA) <i>Supervisor: Prof. Peter Martin</i>	May – August 2022
• Developed calculation and wrote a modular pipeline in Python to perform on varying dust and ISRF models and locations of cirrus; found that polarization of scattered light from Galactic cirrus can be used as a new diagnostic test to further constrain models of both interstellar dust and radiation fields	
Mount Allison University <i>Supervisor: Prof. Catherine Lovekin</i>	May – August 2021
• Studied convection and pulsation in Cepheid variable stars with multiple modes and varying amplitudes	

Publication

Bowes & Martin, “Diagnostics from polarization of scattered optical light from Galactic infrared cirrus”, 2023, [ApJ](#), 959, 40.

Awards

Faculty of Arts & Science Top (FAST) Doctoral Award (\$104,000 over 4 years)	2024 – Present
• Entrance award for a top incoming domestic student	
Ontario Graduate Scholarship (OGS) (\$15,000)	2025 – 2026
Canada Graduate Scholarship - Master's (CGS-M) (\$27,000)	2024 – 2025
Mary And Ron Martin Graduate Fellowship In Astrophysics (\$1,000)	2024
Bell Scholar (\$44,000 over 4 years)	2020 – 2024
• Awarded the Bell Family Achievement Award, one of the highest and most prestigious awards for undergraduate students at Mount Allison University; Bell Scholars balance academic excellence with extracurricular and community involvement	
Varma Scholar (\$1,600)	2023 – 2024
• Prestigious award conferred on one senior Mount Allison Physics student each year, to honour and recognize their achievement in academics and enthusiastic participation in the promotion of Physics	
Donald G. MacGregor Scholarship (\$4,600)	2023
• Awarded annually to a deserving student majoring or honouring in Physics entering their third or final year, based on the recommendation of the Mount Allison Physics Department	

NSERC USRA Award (MtA Independent Student Research Grant) (\$8,000)	2023
Varma Academic Enhancement Award (\$200)	2022
• Awarded to the student with the highest overall GPA at the end of their second year of the Mount Allison Physics program	

Donald Arthur Anderson Prize in Physics (\$500)	2022
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Teaching

Stars and Planets (AST 221) Teaching Assistant	UofT, Sep. 2025 – Dec. 2025
• I run office hours and manage an online discussion forum for answering student's questions.	
Stars and Galaxies (AST 201) Teaching Assistant	UofT, Jan. 2025 – Apr. 2025
• I taught students how to observe using SeeStar telescopes during nighttime observing tutorials and proofread homework assignments for scientific accuracy.	
The Sun and Its Neighbours (AST 101) Teaching Assistant	UofT, Sep. 2024 – Dec. 2024
• I held weekly office hours, conducted oral quizzes, did marking, and invigilated exams.	
Physics for Life Sciences Teaching Assistant	MtA, Jan. 2024 – Apr. 2024
• As In-class TA, I was responsible for answering questions, marking, and recording grades on an online learning platform.	
Varma Scholar Teaching Intern	MtA, Sep. 2023 – Apr. 2024
• As Varma Scholar, I was responsible for providing a service to the MtA Physics department through leadership of physics-related events and teaching. Included giving lectures, public speaking, planning and hosting events	
Observatory Assistant	MtA, Sep. 2022 – Apr. 2024
• As the only student Gemini Observatory Assistant at Mount Allison, I educated the public on objects being viewed during open observing nights and private group events spanning a range of ages. I was also responsible for helping with operating and maintaining the Observatory, including repairing the telescopes and upkeep of other equipment	
General Physics I Teaching Assistant	MtA, Sep. – Dec. 2023
• As In-class TA, I was responsible for answering questions, especially related to in-class assigned questions.	
General Physics II Teaching Assistant	MtA, Jan. – Apr. 2023
• As Lab TA, I was responsible for aiding students with experiments by answering questions about theory, helping with demonstrations, and marking lab reports independently	
Calculus II Teaching Assistant	MtA, Jan. – Apr. 2022
• As Tutorial TA, I was responsible for leading tutorials independently, answering students questions, establishing and following a grading scheme, and marking assignments	

Leadership & Extracurricular

GASA Course and Qualifying Exam Committee	Oct. 2024 – Present
• Responsible for monitoring how graduate students in the Astronomy and Astrophysics department are as an ensemble are progressing with their courses, how well the course offerings are meeting student needs, and connect with the department to help inform course planning for future years.	
Atlantic Undergraduate Physics and Astronomy Conference 2024, Co-Chair	Aug. 2023 – Feb. 2024
• Led a team of students in planning and organizing the annual AUPAC conference; I invite speakers, manage the budget, organize the graduate school fair, and set up student research talk sessions	
MtA Physics Society, Co-President	Sep. 2022 – May 2024
• Led the Physics Society Executive team by delegating tasks, running meetings, planning events, fundraising, ordering and selling merchandise	
• Previously held positions as VP Communications, Underclassmen Representative	
Engage Program, Volunteer	Nov. 2023 – Jan. 2024
• I volunteered with the Engage Program weekly to assist with introductory computer programming activities for middle school students in Sackville, NB; I work directly with the students to guide them through the activities	
• Taught similar activities outside the program to the Tantramar Girls Empowerment Camp	

MtA Physics Department, Student Representative

Sep. 2021 – Apr. 2024

- I held positions as Fourth Year, Third Year, and Second Year Representative. In this role I represented my fellow students and was responsible for voicing their concerns to the faculty at the monthly Physics Department meetings; I also provided feedback on courses.

Academic Mentor

Sep. 2021 – Apr. 2022

- As in-residence Academic Mentor at MtA, I planned and executed 18 academic events for the 145 students of my residence, including organizing and teaching help sessions, hosting professors for salons, and providing resources

MtA Women in Science Club, Physics Representative

Sep. 2020 – Apr. 2021

- Responsible for outreach both within university and local public schools; ran virtual events during the pandemic

Presentations & Public Speaking

Atlantic Undergraduate Physics and Astronomy Conference (AUPAC 2024)

Feb. 2024

- Won Science Communication Award for this talk

Canadian Undergraduate Physics Conference (CUPC 2023)

Oct. 2023

General Physics I Lecture

Sep. 2023

- Instructed a class of 78 students on waves and the Doppler effect

Mount Allison Summer Undergraduate Research Fair 2023

Sep. 2023

Eastern Association for Stellar Astrophysics Meeting

Apr. 2023

Mount Allison Summer Undergraduate Research Fair 2022

Sep. 2022

Canadian Institute for Theoretical Astrophysics SURF Presentations 2022

Aug. 2022

Technical Skills

Language: Python

Specialized software & Simulation codes: DUSTY, PHOEBE, MESA, GYRE, HEALPix, emcee, Lightkurve

Applications and Teaching tools: LaTeX, Crowdmark, Piazza, Word, Excel, Powerpoint

Soft skills: Organized, detail-oriented, problem-solving, public speaking, scientific writing, team member

Selected Workshops and Special Programs

Canadian Astroparticle Summer School (CAPSS 2023)

May 2023

- An intensive week-long undergraduate school hosted at Queen's University and SNOLAB that introduced students to the current topics in the field of astroparticle physics
- Participated in lectures and hands-on activities in particle physics, detector development, neutrino physics, dark matter astrophysics theory and cosmology

Peer Pedagogy Training

Jan. 2022

- Learned methodology and best practices for peer teaching as an undergraduate Teaching Assistant at Mount Allison University

ACENET (Digital Research Alliance of Canada) Basics Workshops

May 2021

- Attended Introduction to High Performance Computing (HPC), Introduction to Linux, Introduction to Shell Scripting, and Job Scheduling with Slurm sessions

Seeds of Change Sexual Violence Prevention Training

Sep. 2021

- Underwent bystander skills training with the intention to transform cultures of sexual violence