

Emily Carver

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Education

B.Sc. Physics

University of Lethbridge, Lethbridge, AB

September 2022 - Present

3.95/4.00 GPA

Research Experience

Co-op Work Term: Radio Astronomy Researcher

National Research Council Canada, Victoria, BC

May 2025 - August 2025

Visibility Modelling of Galactic Star-Forming Regions at Millimetre Wavelengths

Supervisors: Dr. Doug Johnstone, Dr. Toby Brown

- Applied visibility modelling techniques to star-forming regions of galaxies observed with the Atacama Large (Sub-)Millimetre Array (ALMA) to demonstrate the applicability of existing visibility generation tools used to study protoplanetary disks. A summary of this work is available on Github¹.
- Identified limitations in the existing code available for generating simulated visibilities, informing future modelling efforts and necessary software development.
- This co-op contributed to an ongoing project in visibility modelling applied to galaxies that will be continued by a Master's student at the University of Victoria in Fall 2025.

Astrophysics Research Assistant

University of Lethbridge, Lethbridge, AB

January 2024 - August 2024

Investigating the Evolution of Black Hole Jets at Millimetre Wavelengths

Supervisor: Dr. Alexandra Tetarenko

- Investigated time and frequency-based variations in the flux of black hole X-ray binaries GX 339-4 and GRS 1915+105 by analyzing data from ALMA using the python-based CASA software.
- Produced a written report² of my process and findings. A complete set of products is available on Github¹.
- Funded by the highly competitive ULethbridge Chinook Summer Research Award.
- Results of this project will be used in a theoretical modelling effort by international colleagues and will be included in a future publication that I will co-author.

Research Presentations

Oral Presentations

Herzberg Astronomy and Astrophysics Science Tea

August 22, 2025

- Presented the results of my co-op project, "Visibility Modelling of Galactic Star-Forming Regions at Millimetre Wavelengths" to an audience of NRC researchers and fellow students at both Dominion Astrophysical Observatory and Dominion Radio Astrophysical Observatory.

Canadian Conference for Undergraduate Women and Gender

*Minorities in Physics (CCUW*IP)*

February 1, 2025

- Won second place for my presentation of my research project "Investigating the Evolution of Black Hole Jets at Millimetre Wavelengths" at CCUW*IP 2025 hosted by the University of Calgary and University of Alberta

Poster Presentations

Astrophysics Undergraduate Research Mini-Symposium

September 27, 2024

- Presented my research project "Investigating the Evolution of Black Hole Jets at Millimetre Wavelengths" and accompanying poster³ to faculty and students in the Department of Physics and Astronomy, as well as university community members from the wider Faculty of Arts and Science.

University of Lethbridge Summer Research Showcase

August 15, 2024

- Presented my research project and accompanying poster³ to members of the public, fellow undergraduate researchers, and their supervisors.

Professional Experience

¹ <https://github.com/emcarver> ² The report can be viewed here. ³ A digital copy of the poster is available here.

Undergraduate Research Advocate

October 2024 - Present

- Developed and currently leading a program to strengthen communication on undergraduate research opportunities, especially those in physics and astronomy.

Department of Physics and Astronomy Student Representative

July 2024 - Present

- Chosen by the Physics and Astronomy department head to act as student representative for the 2024/2025 and 2025/2026 academic years.

High School Physics Tutor

December 2024 - January 2025

- Volunteered as a private tutor for a local Physics 30 student, working specifically on preparation for the Alberta Physics Diploma Exam.

Scholarships and Awards

I have received the **Dean's Honour List Award** each of my six completed semesters at ULeithbridge. I was also selected as a 2024/2025 **ULeithbridge Shining Student**⁴, which recognizes exceptional students at the University of Lethbridge for their academic achievements and community involvement.

Further, I have received numerous merit-based scholarships totalling more than **\$23 500 CAD** over the last four years.

Louise McKinney Post-Secondary Scholarship (\$2500 CAD)	2025
Don and Judi Hall Scholarship in Physics & Mathematics (\$2000 CAD)	2025
Joe Rood Memorial Scholarship in Physics (\$500 CAD) ⁵	2025
Alberta Women in STEM Scholarship (\$2500 CAD)	2025
Jason Lang Scholarship (\$1000 CAD)	2024
Dickinson Memorial Scholarship (\$1850 CAD)	2024
Chinook Summer Research Award (\$6000 CAD)	2024
University of Lethbridge Scholarship (\$1300 CAD)	2023
Jason Lang Scholarship (\$1000 CAD)	2023
University of Lethbridge Achievement Scholarship (\$1500 CAD)	2022
Board of Governors Admission Scholarship (\$1000 CAD)	2022
Government of Alberta Rutherford Scholarship (\$2500 CAD)	2022
NSERC Undergraduate Student Research Award (\$8730 CAD awarded, declined)	2025
Chinook Summer Research Award (\$6000 CAD awarded, declined)	2025

Outreach

University of Lethbridge Observatory

October 2024 - Present

- Team member of an ongoing project to create an observatory at the University of Lethbridge campus to be used for both public outreach and hands-on learning in undergraduate classes.

Astronomy Observing Field Trip Volunteer

November 7, 2024; October 18, 2025

- Assisted in running the ASTR2020 - Modern Astronomy observing field trip, hosted by Dr. Alex Tetarenko and the Lethbridge Astronomy Society.

University of Lethbridge Open House Volunteer

October 26, 2024; October 25, 2025

- Spoke with prospective students and their families about University of Lethbridge, highlighting experiences in physics and undergraduate research.

Shad Canada Lab Assistant

July 15, 2024

- Shad Canada is a science and entrepreneurship program for high school students, hosted at Canadian universities over the summer months.
- Answered student questions on math and circuit theory, and guided construction of a simple filter and amplifier circuit to assist in a circuitry lab designed to introduce high school participants to experimental physics at a post-secondary level.

⁴ My interview can be read here. ⁵ Recipient selected based on outstanding academic achievement in physics and *the greatest potential for research in the physical sciences*.