

# 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*

May 2025 - August 2025

National Research Council Canada, Victoria, BC

### **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 Github<sup>1</sup>.
- 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 applications of visibility modelling that will be continued by a Master's student at the University of Victoria in Fall 2025.

*Astrophysics Research Assistant*

January 2024 - August 2024

University of Lethbridge, Lethbridge, AB

### **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 report<sup>2</sup> of my process and findings. A complete set of products is available on Github<sup>1</sup>.
- Funded by the highly competitive ULehbridge 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 poster<sup>3</sup> 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 poster<sup>3</sup> to members of the public, fellow undergraduate researchers, and their supervisors.

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

## Professional Experience

### *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**<sup>4</sup>, 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) <sup>5</sup>	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

- Introduced prospective students and their families to the University of Lethbridge, highlighting experiences in physics and astronomy, as well as in 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 an introductory circuitry lab.

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