

Lindsay (“Libby”) Berkhout

Curriculum Vitae

Trottier Space Institute
McGill University
☎ 438-406-5742
✉ libby.berkhout@mcgill.ca
📁 [lmberkhout.github.io](https://github.com/lmberkhout)

Education

- 2019–2024 **PhD in Exploration Systems Design (Instrumentation)**, *Arizona State University*.
School of Earth and Space Exploration
- 2015–2019 **B.A. in Astronomy & Astrophysics with Honors**, *The University of Chicago*.

Honors & Awards

- 2024–Present **Trottier Space Institute Postdoctoral Fellowship**, McGill University
- 2021 **Graduate Excellence Scholarship**, Arizona State University
- 2020 **National Science Foundation Graduate Research Fellowship**, Arizona State University
- 2020 **Summer Exploration Graduate Fellowship**, Arizona State University

Committees & Service

- 2026 Science at Low Frequencies Conference 2026 Scientific Organizing Committee (SOC)
- 2025–Present Collaboration for Astronomy Signal Processing and Electronics Research (CASPER) Advisory Board Member
- 2025–Present McGill Trottier Space Institute Lunch Talk Organizer
- 2023–2024 ASU School of Earth and Space Exploration Equity in Qualifying Exams Committee
- 2022–2024 HERA ombudsman and Diversity, Equity, & Inclusion committee member

Selected Publications

- 2024 **Hydrogen Epoch of Reionization Array (HERA) Phase II Deployment and Commissioning.**
Lindsay M. Berkhout et al. In *Publications of the Astronomical Society of the Pacific* 136.4 (Apr. 2024), p. 045002 <https://iopscience.iop.org/article/10.1088/1538-3873/ad3122>
- 2023 **The Completely Hackable Amateur Radio Telescope (CHART) project.**
Lindsay M. Berkhout et al. In *Physics Education* 59.1 (Nov. 2023), p. 015020. <https://iopscience.iop.org/article/10.1088/1361-6552/ad0542/meta>
- 2023 **Demodulation demonstration using the LightCube CubeSat.**
Lindsay M. Berkhout et al. In *Proceedings of the GNU Radio Conference* 8.1 (2023). <https://pubs.gnuradio.org/index.php/grcon/article/view/138>

Postdoctoral Research Experience

- July 2024–Present **Trottier Space Institute Fellow**, *McGill University*.
- Member of the Canadian Hydrogen Observatory and Radio Transient Detector (CHORD) collaboration, researching auxiliary tools for improving instrument performance.
 - Developed an external radio frequency interference (RFI) monitor that correlates with the CHORD instrument to provide high signal to noise RFI flagging.
 - Investigating a technique to use the Global Navigation Satellite System (GNSS) signals to map the CHORD dish beams, and ultimately subtract the GNSS satellites from the data, uncovering tens of Megahertz worth of previously inaccessible data.

Graduate Research Experience

2019–2024 **Graduate Researcher, NSF Fellow**, *Arizona State University, Low Frequency Cosmology Lab*.

- As a part of the Hydrogen Epoch of Reionization Array (HERA) collaboration, I developed and tested instrumentation for a radio interferometer targeting measurements of the formation of the first astronomical objects and tracing their evolution.
- I led the ground communications system for the LightCube small-sat mission, launched from the ISS on April 24th, 2023.
- In partnership with NASA's Jet Propulsion Laboratory (JPL), I developed a real time backend for the Goldstone Apple Valley Radio Telescope (GAVRT). The GAVRT project uses a retired Deep Space Network (DSN) antenna for secondary school education, targeting radio astronomy as a science case.
- In collaboration with the Ira A. Fulton Schools of Engineering, I helmed a study on the impact of early intervention engineering courses on the self-efficacy of undergraduate students.

Teaching

Fall 2025 **Guest Instructor: PHYS182- Our Evolving Universe**, *McGill University*.

Developed and taught 5 lectures for an introductory astronomy course at McGill on the topics of the Electromagnetic Spectrum, Telescopes, and the Dark Sector.

Summer 2025 & **ALPHA Immersion Instructor**, *Advanced Laboratory Physics Association*.

2026 The ALPHA association offers advanced laboratory immersions for undergraduate educators. I led an immersion in 2025 and 2026, teaching undergraduate instructors an advanced radio astronomy lab.

Summer 2022 & **Workshop Instructor**, *Winona State University*.

2025 Co-led and taught a week long workshop for middle and high school educators on building and operating a low cost radio telescope.

Fall & Spring 2023 **TA, SES 410: Senior Exploration Project I**, *Arizona State University*.

Capstone course for seniors in the School of Earth and Space Exploration, in which students work in teams to plan and complete a research project.

Spring 2023 **Lead Developer & Teacher, Radio Astronomy Bootcamp**, *Arizona State University*.

Developed and taught a weeklong evening class taught in the Spring semester, free for undergraduate students. Spring 2023 had over 30 students attend.

Spring 2019 **TA, ASTR 13300: Introduction to Astrophysics**, *The University of Chicago*.

Introductory course for Astrophysics majors.

Outreach & Mentoring

Projects

- Co-lead of the Completely Hackable Amateur Radio Telescope (CHART, astrochart.github.io) project. CHART provides tutorials for building and operating a low cost radio telescope targeted at the high school and early undergraduate level. I mentor undergraduate students on the development side of the project, and teach a number of workshops for high school and undergraduate educators.
- Led a mentorship program for summer undergraduates involved in the Hydrogen Epoch of Reionization Array (HERA) project. This program pairs undergraduates with a graduate student in the collaboration for weekly mentorship meetings. We also organized a talk series for the students, covering topics such as career paths in physics and strategies for managing research projects.

Mentees

- Samuel Gultom (Undergraduate) – Trottier Space Institute Summer Fellowship, 2025
- Kaitlyn Ashcroft (Undergraduate) – Arizona State University, summer internship, 2023
- Eyan Weissbluth (Undergraduate) – Arizona State University, summer internship, 2023
- Arib Islam (Undergraduate) – Arizona State University, summer internship, 2022
- Diana Morales (Undergraduate) – Cal-Bridge summer Research Program, 2022