Alice P. Curtin

PhD Candidate, McGill University
Vanier Canada Graduate Scholar

Contact

Email: alice.curtin@mail.mcgill.ca
Website: https://curtina.github.io
AstroBites Articles: https://astrobites.org/author/acurtin/
ORCID: https://orcid.org/0000-0002-8376-1563

Education

Doctor of Science, Physics, McGill University, *Fall 2019-Present*

- McGill University, Montreal, Canada
- Supervisor: Victoria Kaspi
- Thesis: *Precise Pulsar Positions for CHIME/FRB Outrigger Calibration & Limits on Fast Radio Burst-like Counterparts to Gamma-ray Bursts using CHIME/FRB*

Master of Science in Physics with a focus in Astronomy, *Fall 2019-Fall 2021*

- McGill University, Montreal, Canada
- Thesis: *The Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst Project: Monitoring the Interference Environment and Studying the Bursting Behavior of SGR 1935+2154*
- Supervisor: Victoria Kaspi
- General GPA: 4.0

Bachelor of Arts Degree, Major in Physics and Astronomy, *Fall 2015-June 2019*

- Carleton College, Northfield,, MN
- Major in Physics and Astronomy, *cum laude*
- General GPA: 3.75 | Physics and Math GPA: 3.80
- Thesis: *Jets in Active Galactic Nuclei*
- Advisor: Joel Weisberg

Research Interests

Fast radio bursts, Pulsars, Radio Telescopes, Magnetars, Galactic magnetic field, Very Long Baseline Interferometry

Research Experience

McGill University, *September 2019 - Present*

- CHIME/FRB
    - Co-lead of Canadian Hydrogen Mapping Experiment Fast Radio Burst Project (CHIME/FRB) data quality monitoring team
    - CHIME/FRB team expert on radio frequency interference
    - Investigate high-energy counterparts to fast radio bursts, particularly focusing on gamma-ray bursts whether fast radio bursts and gamma-ray bursts are related
    - Developed an algorithm to constrain radio emission from transients above the horizon at CHIME/FRB
    - Investigate repeating fast radio bursts at high time resolution using raw voltage data at CHIME/FRB
- CHIME/Outriggers
    - Pulsar Calibration: Measure precise positions for ~100 pulsars using the Very Long Baseline Array for calibration of the CHIME/Outriggers. Measure proper motions and parallaxes for ~80 pulsars, largest yet published sample.

Carleton College, *January 2016 - Present*

- Conduct research on galactic magnetic field using Faraday rotation measures for pulsars under the supervision of Joel Weisberg and Joanna Rankin

University of Utah, *Summer 2018*

- Study of high-energy gamma-ray emission from the microquasar SS 433 under David Kieda and Anushka Udara Abeysekara
- Presented research at American Astronomical Society meeting in January of 2019

Awards and Recognitions

Best Talk at CASCA 2023, CASCA, 2023
Honorable Mention for EPO Poster at CASCA 2023, CASCA, 2023
McGill Department of Physics Community Building Award, McGill University, 2023, $1000
McGill Physics Travel Grant, McGill University, 2023, *$1000*
Vanier Canada Graduate Fellow, McGill University, 2022-2025, *$150000*
2022 Brockhouse Canada Prize*,* as part of the CHIME team, 2022
2022 Lancelot M. Berkeley – New York Community Trust Prize, as part of the CHIME/FRB team, 2022
McGill Physics Travel Grant, McGill University, 2022, *$1000*
McPhee Fellowship, McGill University, 2020, *$10,000*
Governor General's Innovation Award*,* as part of the CHIME team, 2020
Distinction in Physics, Carleton College, 2019
Distinction on Physics Thesis, Carleton College, 2019
Honorable Mention for Research on SS 433, University of Utah, Salt Lake City, UT, 2018
Mike Ewers Award, Minnesota Space Grant Consortium, Carleton College, 2018, *$1000*
Minnesota Space Grant Consortium Award, Carleton College, 2016, *$1000*

Leadership and Community Involvement

Co-founder of Science in Space: How to Telescope, McGill University, Trottier Space Institute, Dell Technologies, *Spring 2022 - Present*
Writer for Astrobites, Astrobites, *Feb 2021 - Present*
Coordinator for Physics Matters including major content development and coordination of the *Space Explorers* program, McGill University, *Fall 2021 - Present*
Multi-National Outreach Alliance*,* McGill University*, Fall 2020-present*
Student Volunteer for Goodsell Observatory, Northfield, MN, *Summer 2016 - June 2019*
Science Summer Educator, Berkshire Museum, Pittsfield, MA, *Summer 2017*
Student Leader for Young Summer Astronomy Experience, Northfield, MN**,** *Summer 2016*

Committee Memberships

McGill Physics Outreach Committee Graduate Student Member, *Spring 2020 - Present*
Co-chair Social Media, Astrobites, *Fall 2021 - Present*
Committee Member for Climate Change Committee, Astrobites, *Fall 2021 - Present*
Action Plan Task Force on Equity, Diversity, and Inclusion for Equity, Diversity, and Inclusion Committee, McGill University, *Summer 2020-Present*
Values Statement Task Force for Equity, Diversity, and Inclusion Committee, McGill University, *Summer 2020*
Student Member of Physics Department Curriculum Committee, Carleton College, *Fall 2018 - June 2019*
Committee member of Women in Physics +, Northfield, MN, *Fall 2016 – June 2019*

Teaching Experience

Undergraduates

- **Summer Undergraduate Supervisor,** 2023, Student: Sloane Sirota, Project: Investigate possible association between FRBs and GRBs, Co-supervised with Victoria Kaspi
- **Summer Undergraduate Supervisor,** 2022, Student: Sandhya Rotoo, Project: Investigate pulsar positions acquired using the VLBA, Co-supervised with Victoria Kaspi

Labs and Courses

- **Lab Designer, Facilitator and Grader for Introductory Physics Course,** McGill University, *Summer - Fall 2020*
- **Lab Assistant and Grader for Introductory Electricity and Magnetism,** McGill University, *Fall 2019*
- **Lab Assistant and Grader for Introductory Mechanics,** McGill University, *Fall 2019*
- **Grader for Math 341, Fourier Series and Boundary Values Problems,** Carleton College**,** *Spring 2019*

- **Lab Assistant for Physics 165, Electricity and Magnetism,** Carleton College**,** *Winter 2019*
- **Problem Solving Facilitator for First and Second Year Physics,** Carleton College**,** *Winter 2019*

Skills

Computer Skills: Advanced in IDL**;** Advanced in Python; Proficient in Unix, Mathematica and Excel**;** Experience with C++ and ROOT
Language Skills: Spanish (Proficient), French (basic)

Publications

Lead Author

1. **A. P. Curtin**, J. Weisberg, J. Rankin, A. Venkataram, *New Arecibo Pulsar Faraday Rotation Measures and the Magnetic Field in the Galactic Plane*, **in preparation**
2. **A. P. Curtin** et al., *Limits on Fast Radio Burst-like Counterparts to Gamma-ray Bursts using CHIME/FRB*, (2023), Submitted to ApJ

Other

1. J. Rankin, A. Venkataraman, J. M. Weisberg, **A. P. Curtin,** *Polarized Measurements of Arecibo Pulsars: Faraday Rotations and Profile Analyses*, (2021) Submitted to MNRAS
2. CHIME/FRB Collaboration: B. C. Andersen, … **A. P. Curtin,** …, *CHIME/FRB Discovery of 25 Repeating Fast Radio Burst Sources,* AJ, (2023)
3. A. M. Cook, … **A. P. Curtin,** …, *An FRB Sent Me a DM: Constraining the Electron Column of the Milky Way Halo with Fast Radio Burst Dispersion Measures from CHIME/FRB*, AJ, (2021)
4. CHIME/FRB Collaboration: B. C. Andersen, … **A. P. Curtin,** …, T*he First CHIME/FRB Fast Radio Burst Catalog,* AJS, (2021)
5. A. Josephy, P. Chawla, **A. P. Curtin**, V. M. Kaspi, No Evidence for Galactic Latitude Dependence of the Fast Radio Burst Sky Distribution, AJ (2021)
6. CHIME/FRB Collaboration: B. C. Andersen, … **A. P. Curtin,** …, *Sub-second periodicity in a fast radio burst,* Nature, (2021)

7. CHIME/FRB Collaboration: B. C. Andersen, … **A. P. Curtin,** … , *A bright millisecond-duration radio burst from a Galactic magnetar,* Nature, (2020)

Proposals

1. *Precise Pulsar Positions for CHIME/FRB Outrigger Calibration,* **A.P. Curtin,** Jane Kaczmarek, Victoria Kaspi, Emmanuel Fonseca, et al.**,** Very Long Baseline Array, Winter 2023/Summer 2023, Hours Acquired: 180,
2. *Precise Pulsar Positions for CHIME/FRB Outrigger Calibration,* **A.P. Curtin,** Jane Kaczmarek, Victoria Kaspi, Emmanuel Fonseca, et al.**,** Very Long Baseline Array, Winter 2022, Hours Acquired: 42

Talks

1. *Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA*, WVU Astronomy Journal Club, 2023,
2. *Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA*, CASCA 2023, Penticton, BC
3. *Calibrating the CHIME/Outriggers for Fast Radio Burst Localizations*, Northwestern CIERA Observer's Group Meeting, May 2023, Remote
4. *A Mysterious Bump in the Night,* Astronomy on Tap, Montreal (public audience)
5. *Searching for FRB-like Counterparts to GRBs using the First CHIME/FRB Catalog*, FRB 2022, Busan, South Korea

Posters

1. *Science in Space: How to Telescope – building telescopes in Minecraft to encourage belonging and equitable spaces in STEM,* CASCA 2023, Penticton, BC
2. *Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA*, FRB2022, Busan, South Korea
3. *Constraining FRB-like Counterparts from GRBs with the First CHIME/FRB Catalog*, FRB2021, Online, *2021*
4. *VERITAS Observations of Very High-Energy Gamma-rays from the Microquasar SS 433*, American Astronomical Society Meeting, Seattle, *2019*

General Public Articles

---

1. *Some "not so fast" fast radio bursts* by Alice P. Curtin, Astrobites, November 2022
2. *An FRB way off in the distance* by Alice P. Curtin, Astrobites, October 2022
3. *Have we found the origins of fast radio bursts?* by Alice P. Curtin, Astrobites, September 2022
4. *Could some short and long gamma-ray bursts have the same parents?* by Alice P. Curtin, Astrobites, May 2022
5. *You'll be a limbo star. How (s)low can you go?* by Alice P. Curtin, Astrobites, February 2022
6. *Let's get building (some terrestrial planets)!*, Alice P. Curtin, Astrobites, December 2021
7. *Another Mysterious Fast Radio Burst Detected… Are We One Step Closer to Discovering their Origins?* by Alice P. Curtin, Astrobites, November 2021
8. *New Radio Source Towards the Center of our Galaxy — Say whaaaat*, Alice P. Curtin, Astrobites, October 2021
9. *A Fast Radio Burst in a Rather Peculiar Location* by Alice P. Curtin, Astrobites, August 2021
10. *If you had $100 million, how would you look for aliens?* by Alice P. Curtin, Astrobites, May 2021
11. *FRBs are spiraling out of control* by Alice P. Curtin, Astrobites, March 2021
12. *Three Little Outliers in a Sea of Planets, Stars, and Brown Dwarfs* by Alice P. Curtin, Astrobites, February 2021