Alice P. Curtin

PhD Candidate, McGill University
Vanier Canada Graduate Scholar

Contact

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Research Interests

Fast radio bursts, Pulsars, Radio Telescopes, Magnetars, Galactic Magnetic Field, Very Long Baseline Interferometry, Compact Object Mergers

Education

Doctor of Philosophy, Physics, McGill University Fall 2021 - Present
Advisor: Victoria Kaspi
General GPA: 4.0

Master of Science, Physics, McGill University Fall 2019 - Fall 2021
Thesis: *The Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst Project: Monitoring the Interference Environment and Studying the Bursting Behaviour of SGR 1935+2154*
Advisor: Victoria Kaspi
General GPA: 4.0

Bachelor of Arts Degree, Physics & Astronomy, Carleton College Fall 2015 - June 2019
Thesis: *Jets in Active Galactic Nuclei*
Advisor: Joel Weisberg
General GPA: 3.75

Research Experience

McGill University Sept. 2019 - Present
As part of the CHIME/FRB & CHIME/Outriggers Collaborations

Carleton College January 2016 - August 2024
Under Joel Weisberg & Joanna Rankin

University of Utah Summer 2018

Under David Kieta as a part of VERITAS & HAWC

Awards and Recognitions

Marcel Grossman Award, as part of the CHIME/FRB team 2024
McGill Physics Travel Grant, *$4000 (total)* 2024, 2023, 2022
McGill Faculty of Science Funding for Science in Space Outreach Initiative, *$5000* 2023
Best Talk at CASCA, Penticton, BC 2023
"*Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA"*
Honorable Mention for EPO Poster at CASCA, Penticton, BC 2023
"*Science in Space How to Telescope – Designing and building telescopes in Minecraft to encourage belonging and equitable spaces in STEM"*
McGill Department of Physics Community Building Award, *$1000* 2023
Vanier Canada Graduate Fellow, NSERC, McGill University, *$150000* 2022-2025
2022 Brockhouse Canada Prize, as part of the CHIME team 2022
Lancelot M. Berkeley – New York Community Trust Prize, 2022
as part of the CHIME/FRB team
AAS Berkeley Prize, as part of the CHIME/FRB team. 2022
McGill University McPhee Fellowship, *$10000* 2020
Governor General's Innovation Award, as part of the CHIME team 2020
Distinction in Physics & Astronomy Bachelor Degree, Carleton College 2019
Distinction on Physics Thesis, "*Jets in Active Galactic Nuclei,"* Carleton College 2019
Honorable Mention for Research on SS 433, University of Utah 2018
Mike Ewers Award, Minnesota Space Grant Consortium, Carleton College, *$1000* 2018
Minnesota Space Grant Consortium Award, Carleton College, *$1000* 2016

Publications

Lead Author

1. **Curtin** et al. (2024), Morphology of 20 Repeating Fast Radio Burst Sources at Microsecond Time Scales with CHIME/FRB, Submitted to ApJ
2. **Curtin,** Weisberg, and Rankin (2024) Determining the Magnetic Field in the Galactic Plane from New Arecibo Pulsar Faraday Rotation Measurements, ApJ, 975, 215
3. **Curtin** et al. (2024), Constraining Near-simultaneous Radio Emission from Short Gamma-Ray Bursts Using CHIME/FRB, ApJ, 972, 125.
4. **Curtin** et al. (2023), Limits on Fast Radio Burst-like Counterparts to Gamma-Ray Bursts Using CHIME/FRB, ApJ, 954, 154.

Other

Total of 30 cited works with 1300 citations

1. Shah et al. **incl. Curtin** (2024), A repeating fast radio burst source in the outskirts of a quiescent galaxy, arXiv e-prints, arXiv:2410.23374
2. Andrew et al. **incl. Curtin** (2024), A VLBI Calibrator Grid at 600MHz for Fast Radio Transient Localizations with CHIME/FRB Outriggers, arXiv e-prints, arXiv:2409.11476.
3. Cassanelli et al. **incl. Curtin** (2024), A fast radio burst localized at detection to an edge-on galaxy using very-long-baseline interferometry, Nature Astronomy
4. Sand, **Curtin** et al. (2024), Morphology of 137 Fast Radio Bursts down to Microseconds Timescales from The First CHIME/FRB Baseband Catalog, arXiv e-prints, arXiv:2408.13215.
5. Cook et al. **incl. Curtin** (2024), Contemporaneous X-ray Observations of 30 Bright Radio Bursts from the Prolific Fast Radio Burst Source FRB 20220912A, ApJ, 974, 170
6. **Curtin, A. P.** and CHIME/FRB Collaboration (2024) "CHIME/FRB Updated Position for Repeating Source FRB 20240316A", ATel16780
7. Lanman et al. **incl. Curtin** (2024), CHIME/FRB Outriggers: KKO Station System and Commissioning Results, AJ, 168, 87.
8. Dong, Clarke, **Curtin** et al. (2024), The discovery of a nearby 421~s transient with CHIME/FRB/Pulsar, Submitted Nature
9. CHIME/FRB Collaboration et al. **incl. Curtin** (2024), Updating the First CHIME/FRB Catalog of Fast Radio Bursts with Baseband Data, ApJ, 969, 145.
10. Nimmo et al. **incl. Curtin** (2024), Magnetospheric origin of a fast radio burst constrained using scintillation, Accepted Nature
11. Pandhi et al. **incl. Curtin** (2024), Polarization Properties of 128 Nonrepeating Fast Radio Bursts from the First CHIME/FRB Baseband Catalog, ApJ, 968, 50.
12. Mckinven et al. **incl. Curtin** (2024), A pulsar-like swing in the polarisation position angle of a nearby fast radio burst, Submitted to Nature.
13. Faber et al. **incl. Curtin** (2023), Morphologies of Bright Complex Fast Radio Bursts with CHIME/FRB Voltage Data, ApJ, 974, 274
14. Giri et al. **incl. Curtin** (2023), Comprehensive Bayesian analysis of FRB-like bursts from SGR 1935+2154 observed by CHIME/FRB, Submitted to ApJ
15. Rankin, Venkataraman, Weisberg and **Curtin** (2023), Polarization measurements of Arecibo-sky pulsars: Faraday rotations and emission-beam analyses, MNRAS, 524, 5042.
16. Sand et al. **incl. Curtin** (2023), A CHIME/FRB Study of Burst Rate and Morphological Evolution of the Periodically Repeating FRB 20180916B, ApJ, 956, 23.

17. Pearlman et al. **incl. Curtin** (2023), Multiwavelength Constraints on the Origin of a Nearby Repeating Fast Radio Burst Source in a Globular Cluster, Accepted Nature Astronomy
18. Lin et al. **incl. Curtin** (2023), Do All Fast Radio Bursts Repeat? Constraints from CHIME/FRB Far Sidelobe FRBs, ApJ, 975, 75
19. CHIME/FRB Collaboration et al. **incl. Curtin** (2023), CHIME/FRB Discovery of 25 Repeating Fast Radio Burst Sources, ApJ, 947, 83.
20. Cook et al. **incl. Curtin** (2023), An FRB Sent Me a DM: Constraining the Electron Column of the Milky Way Halo with Fast Radio Burst Dispersion Measures from CHIME/FRB, ApJ, 946, 58.
21. CHIME/FRB Collaboration et al. **incl. Curtin** (2023), Erratum: "The First CHIME/FRB Fast Radio Burst Catalog" (2021, ApJS, 257, 59), ApJS, 264, 53.
22. CHIME/FRB Collaboration et al. **incl. Curtin** (2022), Sub-second periodicity in a fast radio burst, Nature, 607, 256.
23. CHIME/FRB Collaboration et al. **incl. Curtin** (2021), The First CHIME/FRB Fast Radio Burst Catalog, ApJS, 257, 59.
24. Josephy et al. (2021), No Evidence for Galactic Latitude Dependence of the Fast Radio Burst Sky Distribution, ApJ, 923, 2.
25. CHIME/FRB Collaboration et al. **incl. Curtin** (2020), A bright millisecond-duration radio burst from a Galactic magnetar, Nature, 587, 54.
26. **Curtin** et al. (2019), VERITAS Observations of Very High Energy Gamma-rays from Microquasar SS 433, AAS, 233, 243.34.

Proposals

2024**: VLBA,** PI Curtin, “Precise Pulsar Positions for CHIME/FRB Outrigger Calibration”, Hours Acquired: 80
2023: **VLBA,** PI Curtin, “Precise Pulsar Positions for CHIME/FRB Outrigger Calibration”, Hours Acquired: 180
2022: **VLBA,** PI Curtin, “Precise Pulsar Positions for CHIME/FRB Outrigger Calibration”, Hours Acquired: 42

Invited & Contributed Talks

MIT, Seminar (Invited) Boston, MA, 2024
Fast Radio Bursts: Insights from CHIME/FRB and Future Prospects with the CHIME/FRB Outriggers

FRB 2024 Thailand, 2024

Micro-second Morphology and Polarization Analysis of 32 Repeating FRBs with CHIME/FRB

Institut d'Astrophysique Spatiale, Seminar (Invited) Paris, France, 2024
Fast Radio Bursts: Insights from CHIME/FRB and Future Prospects with the CHIME/FRB Outriggers

CIERA, Northwestern University, Seminar Evanston, IL, 2024
Fast Radio Bursts: Insights from CHIME/FRB and Future Prospects with the CHIME/FRB Outriggers

Canadian Astronomical Society Annual Meeting Toronto, ON, 2024
Building more equitable spaces in STEM through game-based learning

Caltech, Seminar Pasadena, CA, 2024
Fast Radio Bursts: Insights from CHIME/FRB and Future Prospects with the CHIME/FRB Outriggers

UC Berkeley Berkeley, CA, 2024
"Constraining FRB-like Emission from SGRBs using CHIME/FRB"

McGill University, Seminar, Invited Montreal, QC, 2023
"Building Connections: Science Outreach in the McGill Department of Physics and Trottier Space Institute"

FRB 2023 Online, 2023
"*A High-Time Resolution Study of 24 Repeating FRBs with CHIME/FRB*"

WVU Astronomy Journal Club Online, 2023
"Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA"

Canadian Astronomical Society Annual Meeting Penticton, BC, 2023
"Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA"

Northwestern CIERA Observer's Group Meeting Online, 2023
"Calibrating the CHIME/Outriggers for Fast Radio Burst Localizations"

FRB 2022 Busan, SK, 2022
"Searching for FRB-like Counterparts to GRBs using the First CHIME/FRB Catalog"

Centre for Research in Astrophysics of Quebec Annual Meeting Quebec, 2022
"Searching for FRB-like Counterparts from GRBs using the First CHIME/FRB Catalog"

RFI 2022 Online, 2022
"Radio Frequency Interference at the Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst Project"

RFI 2022 Online, 2022
"A New Pipeline for Characterizing and Recording Radio Frequency Interference for the Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst Project"

Dominion Radio Astrophysical Observatory Tech Talk (Invited)
Online, 2021
"Characterizing and Recording Radio Frequency Interference at the Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst Project"

Posters

Canadian Astronomical Society Annual Meeting Toronto, ON, 2024
"Constraining Simultaneous FRB-like Radio Emission from SGRBs using CHIME/FRB"

FRB 2023 Online**,** 2023
"Constraining FRB-like Radio Emission from 28 SGRBs using CHIME/FRB"

Canadian Astronomical Society Annual Meeting Penticton, BC, 2023
"Science in Space: How to Telescope – building telescopes in Minecraft to encourage belonging and equitable spaces in STEM"

FRB 2022 Busan, SK, 2022
"Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA"

FRB 2021 Online, 2021
"Constraining FRB-like Counterparts from GRBs with the First CHIME/FRB Catalog"

American Astronomical Society Annual Meeting Seattle, WA, 2019
"VERITAS Observations of Very High-Energy Gamma-rays from the Microquasar SS 433"

Leadership and Community Involvement

Co-chair of Scientific Organizing Committee for FRB 2025 Fall 2024 - Present
Co-organizer, Graduate-level AstroStatistics Reading Course, Fall 2023
McGill University
Co-founder and convenor of FRB Early Career Researcher Journal Club Fall 2023 - Present
Pipeline Expert & Admin, CHIME/FRB Fall 2023 - Present
Co-founder and principal coordinator of Science in Space Outreach Initiative, McGill University, Spring 2022 - Present
Trottier Space Institute, Dell Technologies/Girls Who Game
Convenor of McGill Transient Discussion, McGill Spring 2022 - Present
Lead of Data Quality Monitoring Working Group, CHIME/FRB Fall 2021 - Present
Graduate student coordinator for Physics Outreach, McGill University Fall 2021 - Present
Writer for Astrobites, Astrobites Feb 2021 - Present
CIBC Spring Break Camp on Space, Toronto, ON Spring 2024
Mentorship Panelist for Graduate School, Montreal Fall 2023
Judge & Delegate Selection Committee Member for CCUWiP Conference Winter 2024

Speaker at Astronomy on Tap, Montreal Fall 2023
Multi-National Outreach Alliance, McGill University Fall 2020
Student Volunteer for Goodsell Observatory, Carleton College Summer 2016 - Summer 2019
Science Summer Educator, Berkshire Museum, Pittsfield, MA Summer 2017
Student Leader for Young Summer Astronomy Experience, Carleton College Summer 2016

Committee Memberships

McGill Physics Outreach Committee Graduate Student Member Spring 2020 - Present[1]
CASCA Climate Committee Summer 2024 - Present
Astrobites Admin Committee Member, Astrobites Fall 2023 - Fall 2024
Astrobites Social Media Chair, Astrobites Fall 2021 - Fall 2024
Astrobites Climate Change Committee Member, Astrobites Fall 2021 - Fall 2024
Action Plan Task Force for EDI Committee, McGill University Summer 2020 - Spring 2021
Values Statement Task Force for EDI Committee, McGill University Summer 2020
Physics Department Curriculum Committee, Carleton College Fall 2018 - June 2019

Teaching & Mentorship Experience

Undergraduate Mentees

- **Summer Undergraduate Supervisor** Summer 2023 - Winter 2024
  - Student: Sloane Sirota
  - Project: Investigate possible association between FRBs and GRBs; Co-supervised with Victoria Kaspi
  - *Now graduate student at WVU*
- **Summer Undergraduate Supervisor** Summer 2022
  - Student: Sandhya Rotoo
  - Project: Investigate pulsar positions acquired using the VLBA; Co-supervised with Victoria Kaspi
  - *Still undergraduate student at McGill University*

Labs and Courses

- **McGill University**
  - Lab Designer, Facilitator and Grader for Introductory Physics Course Summer - Fall 2020
  - Lab Assistant and Grader for Introductory Electricity and Magnetism Fall 2019

[1] Longest standing graduate student member.

- Lab Assistant and Grader for Introductory Mechanics Fall 2019
- **Carleton College**
  - Grader for Math 341, Fourier Series and Boundary Values Problems Spring 2019
  - Lab Assistant for Physics 165, Electricity and Magnetism Winter 2019
  - Problem Solving Facilitator for First and Second Year Physics Winter 2019

Academic Service

Reviewer for MNRAS 2023 - Present

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 (Proficient)

Science Communication Articles & Media

1. **A.P. Curtin,** *Some "not so fast" fast radio bursts*, Astrobites, November 2022
2. **A.P. Curtin,** *An FRB way off in the distance*, Astrobites, October 2022
3. **A.P. Curtin,** *Have we found the origins of fast radio bursts?*, Astrobites, September 2022
4. **A.P. Curtin,** *Could some short and long gamma-ray bursts have the same parents?*, Astrobites, May 2022
5. **A.P. Curtin,** *You'll be a limbo star. How (s)low can you go?*, Astrobites, February 2022
6. **A.P. Curtin,** *Let's get building (some terrestrial planets)!*, Astrobites, December 2021
7. **A.P. Curtin,** *Another Mysterious Fast Radio Burst Detected… Are We One Step Closer to Discovering their Origins?*, Astrobites, November 2021
8. **A.P. Curtin,** *New Radio Source Towards the Center of our Galaxy — Say whaaaat*, Astrobites, October 2021
9. **A.P. Curtin,** *A Fast Radio Burst in a Rather Peculiar Location*, Astrobites, August 2021
10. **A.P. Curtin,** *If you had $100 million, how would you look for aliens?*, Astrobites, May 2021
11. **A.P. Curtin,** *FRBs are spiraling out of control*, Astrobites, March 2021
12. **A.P. Curtin,** *Three Little Outliers in a Sea of Planets, Stars, and Brown Dwarfs*, Astrobites, February 2021
13. **A.P. Curtin,** Instagram reel on Nanograv gravitational wave detection, Astrobites, July 2023, *3000 views*
14. **A.P. Curtin,** Instagram reel on renewable energy in the South Pole, Astrobites, December 2023, *1500 views*
15. **A.P. Curtin,** Instagram reel on 7 eclipse facts, Astrobites, April 2024, *260000 views*