

# Alice P. Curtin

PhD Candidate, McGill University  
Vanier Canada Graduate Scholar

## Contact

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## Research Interests

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

## Education

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### 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

- 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

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### McGill University

September 2019 - Present

#### CHIME/FRB

- Investigate high-energy counterparts to fast radio bursts (FRBs), particularly focusing on gamma-ray bursts
- Microsecond time resolution studies of FRBs

- Characterizing Radio Frequency Interference (RFI)

#### CHIME/FRB Outriggers

- Measure precise positions, proper motions, and parallax for 84 pulsars with the Very Long Baseline Array for Outrigger calibration

#### Carleton College

January 2016 - August 2024

Conduct research on galactic magnetic field using Faraday rotation measures for pulsars with Joel Weisberg and Joanna Rankin

#### University of Utah

Summer 2018

Study of high-energy gamma-ray emission from the microquasar SS 433

Supervisors: David Kieda and Anushka Udara Abeysekara

## Awards

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## Recognitions

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<b>Marcel Grossman Award</b> , as part of the CHIME/FRB team	2024
<b>McGill Physics Travel Grant</b> , \$4000	2024, 2023, 2022
<b>McGill Faculty of Science Funding</b> for Science in Space Outreach Initiative, \$5000	2023
<b>Best Talk at CASCA</b> , Penticton, BC	2023
<i>“Calibrating the CHIME/FRB Outriggers using Pulsars and the VLBA”</i>	
<b>Honorable Mention for EPO Poster at CASCA</b> , Penticton, BC	2023
<i>“Science in Space How to Telescope – Designing and building telescopes in Minecraft to encourage belonging and equitable spaces in STEM”</i>	
<b>McGill Department of Physics Community Building Award</b> , \$1000	2023
<b>Vanier Canada Graduate Fellow</b> , NSERC, McGill University, \$150000	2022-2025
<b>2022 Brockhouse Canada Prize</b> , as part of the CHIME team	2022
<b>Lancelot M. Berkeley – New York Community Trust Prize</b> , as part of the CHIME/FRB team	2022
<b>AAS Berkeley Prize</b> , as part of the CHIME/FRB team.	2022
<b>McGill University McPhee Fellowship</b> , \$10,000	2020
<b>Governor General’s Innovation Award</b> , as part of the CHIME team	2020
<b>Distinction in Physics &amp; Astronomy Bachelor Degree</b> , Carleton College	2019
<b>Distinction on Physics Thesis</b> , “ <i>Jets in Active Galactic Nuclei</i> ,” Carleton College	2019
<b>Honorable Mention for Research on SS 433</b> , University of Utah	2018
<b>Mike Ewers Award</b> , Minnesota Space Grant Consortium, Carleton College, \$1000	2018
<b>Minnesota Space Grant Consortium Award</b> , Carleton College, \$1000	2016

## Publications

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## Lead Author

1. **Curtin, A.P.**, et al., *Constraining Near-Simultaneous Radio Emission from Short Gamma-ray Bursts using CHIME/FRB*, Accepted in ApJ (2024)
2. **Curtin, A.P.**, Weisberg, J., Rankin, J., *Determining the Magnetic Field in the Galactic Plane from New Arecibo Pulsar Faraday Rotation Measurements*, Accepted ApJ (2024)
3. **Curtin, A. P.**, “*Limits on Fast Radio Burst-like Counterparts to Gamma-Ray Bursts Using CHIME/FRB*”, ApJ, vol. 954, no. 2, IOP, 2023

## Other

Total of 20 submitted or published articles with 1032 citations.

1. Mckinven, R.... **Curtin, A.P.**, .... *A pulsar-like swing in the polarisation position angle of a nearby fast radio burst*, Submitted to Nature (2024)
2. Pandhi, A.... **Curtin, A.P.**, .... *Polarization properties of the 128 non-repeating fast radio bursts from the first CHIME/FRB baseband catalog*, Accepted in ApJ (2024)
3. Faber, J., ... **Curtin, A.P.**, *Morphologies of Bright Complex Fast Radio Bursts with CHIME/FRB Voltage Data*, Accepted in ApJ (2024)
4. CHIME/FRB Collaboration: .. **Curtin, A.P.**, .... *Updating the first CHIME/FRB catalog of fast radio bursts with baseband data*, Accepted in ApJ (2024)
5. Pearlman, A.B., ... **Curtin, A.P.**, *Multiwavelength Constraints on the Origin of a Nearby Repeating Fast Radio Burst Source in a Globular Cluster*, Accepted Nature Astronomy (2024)
6. Casannelli, T. & Leung, C., ... **Curtin, A.P.**, *A fast radio burst localized at detection to a galactic disk using very long baseline interferometry*, Submitted to Nature Astronomy (2023)
7. Lin, H.H., ... **Curtin, A.P.**, ... *Constraints on the Intergalactic and Local Dispersion Measure of Fast Radio Bursts with the CHIME/FRB far side-lobe events*, Submitted to ApJ (2023)
8. Lin, H.H., ... **Curtin, A.P.**, ... *Do All Fast Radio Bursts Repeat? Constraints from CHIME/FRB Far Side-Lobe FRBs*, Submitted to ApJ (2023)
9. Sand, K., ... **Curtin, A.P.**, ..., *A CHIME/FRB Study of Burst Rate and Morphological Evolution of the Periodically Repeating FRB 20180916B*, APJ (2023)
10. CHIME/FRB Collaboration: ... **Curtin, A.P.**, ..., *CHIME/FRB Discovery of 25 Repeating Fast Radio Burst Sources*, AJ, (2023)
11. Cook, A.M., ... **Curtin, A.P.**, ..., *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)
12. CHIME/FRB Collaboration: ... **Curtin, A.P.**, ..., *Sub-second periodicity in a fast radio burst*, Nature, (2021)

# Proposals

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**VLBA** – “*Precise Pulsar Positions for CHIME/FRB Outrigger Calibration*”, **A.P. Curtin**,  
Jane Kaczmarek, Victoria Kaspi, Emmanuel Fonseca, et al. (2024), Hours Acquired: 80

**VLBA** – “*Precise Pulsar Positions for CHIME/FRB Outrigger Calibration*”, **A.P. Curtin**,  
Jane Kaczmarek, Victoria Kaspi, Emmanuel Fonseca, et al. (2023), Hours Acquired: 180

**VLBA** – “*Precise Pulsar Positions for CHIME/FRB Outrigger Calibration*”, **A.P. Curtin**, Jane  
Kaczmarek, Victoria Kaspi, Emmanuel Fonseca, et al. (2022), Hours Acquired: 42

## Invited & Contributed Talks

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**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 with collaborators) 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

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**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

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**Co-lead of SOC for FRB 2025**

Fall 2024 - Present

**Co-founder and convenor of Joint CHIME/F4/DSA Journal Club**

Fall 2023 - Present

**Pipeline Expert & Admin, CHIME/FRB**

Fall 2023 - Present

<b>Co-founder and principal coordinator of Science in Space Outreach Initiative, McGill University, Trottier Space Institute, Dell Technologies</b>	Spring 2022 - Present
<b>Convenor of McGill Transient Discussion, McGill</b>	Spring 2022 - Present
<b>Lead of Data Quality Monitoring Group, CHIME/FRB</b>	Fall 2021 - Present
<b>Graduate student coordinator for Physics Outreach, McGill University</b>	Fall 2021 - Present
<b>Writer for Astrobites, Astrobites</b>	Feb 2021 - Present
<b>CIBC Spring Break Camp on Space, Toronto, ON</b>	Spring 2024
<b>Mentorship Panelist for Graduate School, Montreal</b>	Fall 2023
<b>Speaker Astro on Tap, Montreal</b>	Spring 2023
<b>Judge &amp; Delegate Selection Committee Member for CCUWiP Conference</b>	Winter 2024
<b>Speaker at Astronomy on Tap, Montreal</b>	Fall 2023
<b>Multi-National Outreach Alliance, McGill University</b>	Fall 2020
<b>Student Volunteer for Goodsell Observatory, Carleton College</b>	Summer 2016 - Summer 2019
<b>Science Summer Educator, Berkshire Museum, Pittsfield, MA</b>	Summer 2017
<b>Student Leader for Young Summer Astronomy Experience, Carleton College</b>	Summer 2016

## Committee

## Memberships

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<b>McGill Physics Outreach Committee Graduate Student Member</b>	Spring 2020 - Present <sup>1</sup>
<b>CASCA Climate Committee</b>	Summer 2024 - Present
<b>Astrobites Admin Committee Member, Astrobites</b>	Fall 2023 - Fall 2024
<b>Astrobites Social Media Chair, Astrobites</b>	Fall 2021 - Fall 2024
<b>Astrobites Climate Change Committee Member, Astrobites</b>	Fall 2021 - Fall 2024
<b>Action Plan Task Force for EDI Committee, McGill University</b>	Summer 2020 - Spring 2021
<b>Values Statement Task Force for EDI Committee, McGill University</b>	Summer 2020
<b>Physics Department Curriculum Committee, Carleton College</b>	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

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<sup>1</sup> Longest standing graduate student member.

- 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
- 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

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Reviewer for MNRAS

2023 - Present

## Skills

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**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

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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*