

# CURRICULUM VITAE - ASHLEY M. STOCK

PhD Candidate, David A. Dunlap Department for Astronomy and Astrophysics

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## Research Interests

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- Interstellar Medium
- Propagation Effects
- Compact Objects
- Very Long Baseline Interferometry
- Radio Transients
- Radio Frequency Instrumentation

## Education

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### University of Toronto

Toronto, Canada

PhD (direct entry) in astronomy

2019-2025

- **Thesis:** Investigating Scintillation Screen Formation and Properties
- **Supervisors:** Dr. Marten van Kerkwijk, Dr. Ue-Li Pen

### University of Saskatchewan

Saskatoon, Canada

BE in engineering physics, great distinction (92%)

2014-2019

- Graduated top of class
- **Capstone:** Dual Frequency Radio Telescope Receiver (2nd Place, Product Design)
- **Supervisors:** Dr. Glenn Hussey

### University of Saskatchewan

Saskatoon, Canada

BSc in physics, great distinction (94%)

2014-2019

- Graduated top of class
- **Thesis:** Neutrino Transport in Strong Gravity (96%)
- **Supervisors:** Dr. Gordon Sarty, Dr. Kinwah Wu

## Publications ( NASA ADS Library)

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1. **Stock, A.**, & van Kerkwijk, M.H. (accepted). “Associations Between Scattering Screens and Interstellar Medium Filaments”. The Astrophysical Journal,
2. Pandhi, A., Hutschenreuter, S., West, J.L., Gaensler, B.M. & **Stock, A.** (2022). “A method for reconstructing the Galactic magnetic field using dispersion of fast radio bursts and Faraday rotation of radio galaxies”. Monthly Notices of the Royal Astronomical Society, Volume 516, Issue 4.
3. Schoen, E., Leung, C., Masui, K., Michilli, D., Chawla, P., Pearlman, A.B., Shin, K., **Stock, A.** and CHIME/FRB Collaboration. (2021). “Scintillation Timescales of Bright FRBs Detected by CHIME/FRB”. Research Notes of the AAS, Volume 5, Issue 11 (4pp).

## Research Appointments

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### PhD Student - Graduate Research

University of Toronto, Toronto, Canada

2019-2020

- **Scintillation of double pulsar, J0737-3039A** with Dr. Marten van Kerkwijk
- **Modelling the Galactic magnetic field with IMAGINE** with Drs. Bryan Gaensler and Jennifer West

### Undergraduate Summer Student

University of Saskatchewan, Saskatoon, Canada

2019

- **Neutrino time-of-arrival in Kerr space-time** with Drs. Kinwah Wu and Gordon Sarty

University College London, Dorking, United Kingdom

2018

- **Covariant neutrino transport in strong gravity** with Drs. Kinwah Wu and Gordon Sarty

SNOLAB, Laurentian University, Sudbury, Canada

2017

- **Simulating alpha background in He-3 counter tubes** with Dr. Clarence Virtue

University College London, Dorking, United Kingdom

2016

- **General relativistic radiative transfer near Kerr black holes** with Drs. Kinwah Wu and Gordon Sarty

University of Saskatchewan, Saskatoon, Canada

2019

- **Joule heating of atmosphere above 800 km** with Dr. Raymond Spiteri

## Observing Programs

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- **Investigating relation between neutral hydrogen filaments and scintillation**

13.75 hours, NRAO Very Large Array (Priority B)

*PI: Ashley Stock, Co-Is: Marten van Kerkwijk, James McKee*

- **Measuring the scintillation of bright, isolated pulsars with VLBI**

14 hours, Giant Metrewave Radio Telescope and Algonquin Radio Observatory

*PI: Ashley Stock, Co-I: Visweshar Ram Marthi*

- **Resolving the scintillation of bright, slow pulsars in CHIME**

85+ hours, Canadian Hydrogen Intensity Mapping Experiment and Algonquin Radio Observatory

*PI: Ashley Stock*

## Selected Scholarships and Awards

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Queen Elizabeth II Graduate Scholarship in Science and Technology, CAD \$15,000	2021-22, 2022-23, 2023-24
Shirley Jones Fellowship, CAD \$4,400	2019-20, 2020-21
Douglas Durie Memorial Scholarship, CAD \$3,000	2019-20, 2020-21
Canadian Institute for Theoretical Astrophysics Entrance Award, CAD \$5,000	2019-21
Engineering Physics Distinguished Graduate Award, CAD \$500	2019
E.L. Harrington Prize, CAD \$3000	2019
Association of Professional Engineers and Geoscientists of Saskatchewan Gold Medal	2019
National Science and Engineering Research Council Undergraduate Student Research Award, CAD \$6,000	2015-16, 2016-17, 2018-19
Sylvia Fedoruk Scholarship, CAD \$3,500	2015-16, 2016-17, 2017-18

## Conference Participation

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### Contributed Talks (6)

Fields, Flows and Filaments in the Magnetic Interstellar Medium, Stanford, USA	May 2024
Salpeter Interstellar Medium Conference, Ithaca, USA	Dec 2023
Scintillometry Workshop, Taipei, Taiwan	Nov 2023
TomFest, Penticton, Canada	Jun 2023
Canadian Astronomical Society Annual General Meeting, Penticton, Canada	Jun 2023
Scintillometry Workshop, Toronto Canada	Aug 2022

### Poster Presentations (3)

Canadian Astronomical Society Annual General Meeting, Toronto, Canada	June 2024
Canadian Astronomical Society Annual General Meeting, virtual	May 2022
Canadian Conference on Undergraduate Women in Physics, Kingston, Canada	Jan 2018

## Outreach



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### Astromania: The Astronomy Card Game

 [linktr.ee/astrocardgame](https://linktr.ee/astrocardgame)

An educational outreach game developed by Rachel Buttry, Eesha Das Gupta, and Ashley Stock

### Public Talks (5)

AstroTours, Toronto  (Recording)	Aug 2024
Royal Astronomical Society of Canada, Calgary Chapter  (Recording)	Feb 2024
Pint of Science, Winston's Pub Saskatoon	May 2019
University of Saskatchewan International Women's Day Event	May 2019
Royal Astronomical Society of Canada, Saskatoon Chapter	Nov 2017
Royal Astronomical Society of Canada, Saskatoon Chapter	Sept 2016

### Outreach Activities

AstroTours Interactive Demonstrations Coordinator	Monthly 2020-23
AstroTours Refreshments Coordinator	Monthly 2019-20
University of Saskatchewan Observatory Tour Guide	Weekly 2015-19

### Leadership and Service Positions

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#### University of Toronto Graduate Astronomy Student Association

CUPE 3902 Unit 1 (Teaching and Research Assistants) Union Steward	2020-23
Joint Health and Safety Committee Graduate Student Representative	2020-23
Course and Qualifying Exam Committee	2019-20

#### Conference Organizing Committees

Scientific Organizing Committee, Scintillometry Workshop	2023
Local Organizing Committee, Scintillometry Workshop	2022

### Teaching Experience

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#### Teaching Assistant

*David A. Dunlap Department of Astronomy and Astrophysics, University of Toronto*

ASTR 101 "The Sun and its Neighbours"	Fall 2019-21, 2023
ASTR 201 "Stars and Galaxies"	Winter 2020, 2024
ASTR 199 "The Story of the Universe: Cosmology and Narrative"	Fall 2022
ASTR 251 "Life on Other Worlds"	Winter 2021-23

*Department of Physics and Engineering Physics, University of Saskatchewan*

ASTR 113 "Descriptive Introduction to Stellar Astronomy"	Winter 2017-19
PHYS 155 "Introduction to Electricity and Magnetism"	Winter 2019
ASTR 312 "Stars and Stellar Evolution"	Fall 2018
ASTR 213 "Astronomical Photometry"	Fall 2018
ASTR 214 "Astronomical Spectroscopy"	Fall 2017
EP 202 "Electric and Magnetic Fields and Circuits"	Fall 2017