

# Jessica Speedie

PhD Student, Department of Physics & Astronomy, University of Victoria

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## EDUCATION

<b>University of Victoria</b> Ph.D. Student, Department of Physics & Astronomy, GPA: 8.25/9.0	Sep. 2020 - [Aug. 2025] Victoria, BC, Canada
<b>McMaster University</b> B.Sc., Honours Integrated Science (Physics), GPA: 11.6/12.0, <i>Summa Cum Laude</i>	Sep. 2016 - Apr. 2020 Hamilton, ON, Canada
<b>Humber College of Creative &amp; Performing Arts</b> B.Mus. ( <i>Not Completed</i> ), Jazz Performance (Guitar), GPA: 90%	Sep. 2015 - Apr. 2016 Toronto, ON, Canada
<b>Humber College of Creative &amp; Performing Arts</b> College Certificate, Introduction to Commercial Jazz (Guitar), GPA: 90%	Sep. 2014 - Apr. 2015 Toronto, ON, Canada

## EMPLOYED RESEARCH POSITIONS

indicates number of 1st-author papers resulting from research position; for published, for undergraduate-refereed

<b>Department of Physics &amp; Astronomy, University of Victoria</b> Graduate Student Researcher. Advisor: Dr. Ruobing Dong	Sep. 2020 - Present Victoria, BC, Canada
<b>Department of Physics &amp; Astronomy, McMaster University</b> Undergraduate Research Assistant. Advisor: Ralph Pudritz	May - Jul. 2020 Hamilton, ON, Canada
<b>Canadian Institute for Theoretical Astrophysics (CITA), University of Toronto</b> Summer Undergraduate Research Program (SURP). Advisor: Dr. J. J. Zanazzi	May - Aug. 2019 Toronto, ON, Canada
<b>Institute for Research on Exoplanets (iREx), University of Montréal</b> Trottier Summer Intern. Advisor: Dr. David Lafrenière	May - Aug. 2018 Montréal, QC, Canada
<b>Department of Physics &amp; Astronomy, McMaster University</b> Undergraduate Research Assistant. Advisor: Dr. Laura Parker	Jul. - Aug. 2017 Hamilton, ON, Canada

## PUBLICATIONS

(As lead author)

4. **Speedie, J.** & Dong, R. (2022). Testing Velocity Kinks as a Planet Detection Method: Do velocity kinks in surface gas emission trace planetary spiral wakes in the midplane continuum? *The Astrophysical Journal Letters*, 940(2), L43.
3. **Speedie, J.**, Booth R.A. & Dong, R. (2022). Observing Planet-driven Dust Spirals with ALMA. *The Astrophysical Journal*, 930, 40 (22pp).
2. **Speedie, J.**, Pudritz R.E., Cridland A.J., Meru F. & Booth, R.A. (2022). Turbulent Disk Viscosity and the Bifurcation of Planet Formation Histories. *Monthly Notices of the Royal Astronomical Society*, 510(4), 6059-6084.
1. **Speedie, J.** & Zanazzi, J. J. (2020). The Structure and Stability of Extended, Inclined Circumplanetary Disk or Ring Systems. *Monthly Notices of the Royal Astronomical Society*, 497(2), 1870–1883.

(Undergraduate refereed journals)

2. **Speedie, J.** & Lafrenière, D. (2018). Improved Surface Gravity and Mass Constraints for Substellar Objects from Spectral Line Profile Measurements at High Resolution in the Near-Infrared. *The iScientist*, 4(1), 3-14.
1. **Speedie, J.** & Parker, L.C. (2017). Star Formation and Morphology of Galaxies in Local Compact Groups. *The iScientist*, 3(1), 3-12.

(Non-refereed contributions & white papers)

6. Benneke, B., Cowan, N., Rowe, J. et al. (including **Speedie, J.**), (2019). Exoplanet instrumentation in the 2020s: Canada's pathway towards searching for life on potentially Earth-like exoplanets. *Canadian Long Range Plan for Astronomy and Astrophysics White Papers, LRP2020*.
5. Cappalietto, N., Hosein, H., Pasquariello, M., **Speedie, J.** (2018). Manipulating Wine Colour. Terroir (Wine Science Magazine). *MacSphere: iSci Undergraduate Publications*.

4. **Speedie, J.**, Mahataji, K., D'Ercole, J., Raufdeen, F. (2018). Climate Model Diversity: Future Climate Predictions from the CMIP5 Multi-Model Ensemble. *MacSphere: iSci Undergraduate Publications*. [↗](#)
3. **Speedie, J.**, Mahataji, K., D'Ercole, J., Raufdeen, F. (2018). Motions and Notions - How to Love Uncertainty in Climate Science. *MacSphere: iSci Undergraduate Publications* (Podcast). [↗](#)
2. **Speedie, J.** & Simon, C. (2018). Earthism in Planetary Science. *History of the Earth*, 8(1), 86-91. [↗](#)
1. **Speedie, J.** (2018). The Map that Changed the World of Mars. Synopsis (interdisciplinary science blog). [↗](#)

## FUNDING & AWARDS

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\$105,000 CAD · <b>NSERC Canada Graduate Scholarship (Doctoral)</b> , University of Victoria	2022
3x \$5,000 CAD · <b>President's Research Scholarship</b> , University of Victoria	2020, 2022 & 2023
2x \$1,500 CAD · <b>University of Victoria Graduate Award</b> , University of Victoria	2021 & 2022
\$5,125 CAD · <b>The R. M. Petrie Memorial Fellowship</b> , University of Victoria	2021
\$5,200 CAD · <b>NSERC Michael Smith Foreign Study Supplement</b> , University of Victoria	2021
\$17,500 CAD · <b>NSERC Canada Graduate Scholarship (Master's)</b> , University of Victoria	2020
\$15,000 CAD · <b>British Columbia Graduate Scholarship</b> (superseded by NSERC CGSM), University of Victoria	2020
<b>Nominated for Chancellor's Gold Medal</b> by Department of Physics & Astronomy, McMaster University	2019
\$800 CAD · <b>The University Senate Scholarship</b> , McMaster University	2019
\$625 CAD · <b>The Boyd McLay Scholarship in Physics</b> , McMaster University	2019
\$9,500 · <b>NSERC Undergraduate Student Research Award</b> , University of Toronto	2019
\$8,400 CAD · <b>NSERC Undergraduate Student Research Award</b> (declined), McMaster University	2019
\$1,600 CAD · <b>The Gladys A. Young Scholarship</b> , McMaster University	2018
\$600 CAD · <b>The Gerald and Verna Simpson Memorial Scholarship</b> , McMaster University	2018
\$6,000 CAD · <b>Trottier Excellence Grant for Summer Interns</b> , University of Montréal	2017
\$500 CAD · <b>Peter Harris Memorial Award</b> , Humber College of Creative & Performing Arts	2016
\$300 CAD · <b>CJA Sousa Liberal Studies Achievement Award</b> , Humber College of Creative & Performing Arts	2015
\$2,500 CAD · <b>Academic Award of Excellence</b> , Humber College of Creative & Performing Arts	2015
\$1,750 CAD · <b>RBC Scholarship for Emerging Artists</b> , Merriam School of Music	2014

## SUCCESSFUL PROPOSALS FOR TELESCOPE OBSERVING TIME

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13.4 hours · <b>ALMA Radio Telescope (Chile)</b> . PI: <b>Speedie, J.</b> Program ID: 2022.1.01266.S (C ranked)	2022
9.1 hours · <b>ALMA Radio Telescope (Chile)</b> . Co-I's including: <b>Speedie, J.</b> (B-ranked)	2022

## INVITED SEMINARS

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<b>Center for Integrative Planetary Science (CIPS)</b> , University of California Berkeley, CA (online)	Mar. 2023
<b>National Radio Astronomy Observatory (NRAO) / UVa</b> , TUNA Lunch Talk, Charlottesville, VA	Nov. 2022
<b>Institute of Astronomy, University of Cambridge</b> , Cambridge, UK	Aug. 2022
<b>Department of Physics &amp; Astronomy, University College London</b> , London, UK	Aug. 2022
<b>Astronomy &amp; Astrophysics Group, University of Warwick</b> , Coventry, UK	Jul. 2022
<b>Department of Physics &amp; Astronomy, Queen Mary University</b> , London, UK	Jul. 2022
<b>Stars &amp; Planets Group, Imperial College London</b> , London, UK	Jul. 2022
<b>Astrophysics Seminar, University of Leicester</b> , Leicester, UK	Jun. 2022
<b>Department of Astronomy, Institute for Advanced Study, Tsinghua University</b> , Beijing, China (online)	Jun. 2022
<b>Jets and Accretion Discs Study Group, Joint ALMA Observatory</b> , Santiago, Chile (online)	May 2022
<b>Planet Formation Group, Center for Computational Astrophysics, Flatiron Institute</b> , New York (online)	Mar. 2022
<b>Center for Astrophysics, Harvard &amp; Smithsonian</b> , Cambridge, Massachusetts (online)	Nov. 2021
<b>University of Victoria Astronomy Summer Seminar</b> , Victoria, BC (online)	Aug. 2021

## PRESS

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<b>Canadian Astronomical Society (CASCA), Graduate Student Highlight</b> <a href="#">🔗</a>	Sep. 2022
Monthly article in which CASCA selects one outstanding Canadian graduate student and highlights their research	Canada
<b>National Radio Astronomy Observatory (NRAO), ngVLA Science Showcase, eNews Article</b> <a href="#">🔗</a>	Apr. 2022
Article Title: <i>An ngVLA Avenue to Measure the Planet Formation Budget</i>	Charlottesville, VA
<b>McMaster Department News, 1st Prize Best Talk, Canadian Conference for UGrad. Women in Phys.</b> <a href="#">🔗</a>	Jan. 2019
Talk Title: <i>Telling giant planets from brown dwarfs: an observational test with SPIRou</i>	Ottawa, ON
<b>Institute for Research on Exoplanets, Summer Internship Text Interview</b> <a href="#">🔗</a>	Sep. 2018
Trottier Research Project and Experience Q&A-style interview	Montréal, QC

## CONFERENCE TALKS

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<b>Disks and Planets Across ESO Facilities</b> , European Southern Observatory Garching, Germany (online) <a href="#">📄</a>	Nov. 2022
<b>CITA Planet Day</b> , Canadian Institute for Theoretical Astrophysics, University of Toronto, ON	Aug. 2022
<b>Canadian Astronomical Society Annual General Meeting</b> , University of Waterloo, ON (online)	May 2022
<b>Planet-forming Disks: From Surveys to Answers</b> , Leiden, The Netherlands (online) <a href="#">▶</a>	Sep. 2021
<b>Five Years After HL Tau: A new era in planet formation</b> , Euro. Southern Observatory, Chile (online) <a href="#">▶</a>	Dec. 2020
<b>Synthesis Undergraduate Research Symposium</b> , McMaster University, Hamilton, ON	Apr. 2019
<b>Canadian Conference for Undergraduate Women in Physics</b> , Uni. of Ottawa, ON <b>*1st prize best talk</b>	Jan. 2019
<b>Synthesis Undergraduate Research Symposium</b> , McMaster University, Hamilton, ON	Apr. 2018

## CONFERENCE POSTERS

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<b>Canadian Astronomical Society Annual General Meeting</b> , Dominion Radio A. Observatory, BC (online) <a href="#">📄</a>	May 2021
<b>Circumplanetary Disks &amp; Satellite Formation Conference II</b> , ETH Zürich, Switzerland (online) <a href="#">📄</a>	Mar. 2021
<b>Five Years After HL Tau: A new era in planet formation</b> , Euro. Southern Observatory, Chile (online) <a href="#">📄</a>	Dec. 2020
<b>Physics Undergraduate Conference</b> , Western University, London, ON <a href="#">📄</a> <b>*Runner-up best poster</b>	Mar. 2018

## PUBLIC OUTREACH & EDI EFFORTS

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<b>Indigenous Plan Implementation Project</b>	Apr. 2022 - Present
Graduate representative during departmental implementation of strategies in UVic 2022 Indigenous Plan	University of Victoria
<b>Verna J. Kirkness Program for Indigenous Youth</b>	May 2021
Promoting Post-Secondary Education in Astronomy (online presentation)	University of Victoria
<b>McMaster Undergraduate Academic Astronomy Club Research &amp; Industry Symposium</b>	Mar. 2021
Promoting Graduate Research in Planet Formation (online presentation)	McMaster University

## SERVICE TO MY INSTITUTION IN ROLES OF LEADERSHIP

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<b>Canadian Astronomical Society (CASCA): Graduate Student Council (GSC)</b>	2022-Present
Society of 25+ institutions across the country	Canada
◦ <b>University of Victoria Co-Representative</b> <i>Sep. 2022 - Present</i>	
<b>Graduate Student Society (GSS): Graduate Representative Council (GRC)</b>	2021-2022
University of Victoria	Victoria, BC
◦ <b>Department of Physics &amp; Astronomy Representative</b> <i>Sep. 2021 - Aug. 2022</i>	
<b>Physics &amp; Astronomy Graduate Student Association (PAGSA)</b>	2020-2022
University of Victoria	Victoria, BC
◦ <b>Vice Chair (elected role)</b> <i>Sep. 2021 - Aug. 2022</i>	
◦ <b>Student Affairs Officer (elected role)</b> <i>Sep. 2020 - Aug. 2021</i>	
<b>McMaster Undergraduate Academic Astronomy Club (MUAAC)</b>	2016-2020
McMaster University	Hamilton, ON
◦ <b>Co-President (elected role)</b> <i>held for 2 years, Sep. 2018 - Apr. 2020</i>	
◦ <b>Vice President of Functions (elected role)</b> <i>Sep. 2017 - Apr. 2018</i>	
◦ <b>First-year Representative</b> <i>Sep. 2016 - Apr. 2017</i>	

## SERVICE TO MY PROFESSION

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- Academic Journal Referee** since Mar. 2022  
*Monthly Notices of the Royal Astronomical Society* (1)
- Grant Program External Reviewer** since Dec. 2021  
UK National High Performance Computing Resources, DiRAC HPC (1)

## TEACHING RECORD (AS A GRADUATE STUDENT)

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- University of Victoria** Sep. 2020 - Apr. 2021  
Teaching Assistant, Department of Physics & Astronomy (*Total: 8 months*)  
*Victoria, BC*
- o **Concepts in Modern Astronomy (ASTR 150; 20 students)** with Dr. Sara Ellison (*Jan.-Apr. 2021*). Prepared and led 3hr online demonstrations of astronomy lab experiments; marked lab reports.
  - o **Introductory Physics (PHYS 110; 30 students)** with Drs. Travis Martin & Mark Laidlaw (*Sep.-Dec. 2020*). Prepared and taught 1.5hr online demonstrations of physics lab experiments 3 times weekly to 50+ students; proctored online quizzes.



## TEACHING RECORD (AS AN UNDERGRADUATE STUDENT)

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- McMaster University** Sep. 2018 - Apr. 2020  
Teaching Assistant, School of Interdisciplinary Science (*Total: 16 months*)  
*Hamilton, ON*
- o **Advanced Calculus (ISCI 2A18; 50 students)** with Dr. George Dragomir (*Sep. 2019 - Apr. 2020*). Prepared and taught bi-weekly 1hr blackboard tutorials; marked assignments, quizzes and exams; substituted for class lectures.
  - o **Advanced Calculus (ISCI 2A18; 55 students)** with Dr. George Dragomir (*Sep. 2018 - Apr. 2019*). Prepared and taught bi-weekly 1hr blackboard tutorials to class of 50+ students; marked assignments, quizzes and exams.

## PROFESSIONAL DEVELOPMENT & CERTIFICATIONS

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- ALMA Data Reduction Workshop** Oct. 2022  
Calibration, cleaning, clean masking, by ALMA Ambassador Dr. Allison Towner  
*University of Florida (online)*
- Intro to Coding with HTML & CSS, Certificate**  Sep. 2022  
University of Victoria Libraries – Digital Scholarship Commons  
*University of Victoria, BC*
- ALMA Data Reduction Virtual Workshop** Sep. 2020  
Tools for analysis of protoplanetary disks by Dr. Nienke van der Marel & Dr. Logan Francis   
*University of Victoria, BC*
- Teaching Assistant Development Workshop** Sep. 2019  
TA Professionalism, Academic Integrity, Marking Effectively  
*McMaster University, ON*
- ALMA Proposal Writing Workshop** Apr. 2019  
Interferometry Basics, Proposal Prep. & OT Overview, by ALMA Ambassador Dr. Toby Brown  
*University of Toronto, ON*




## FUNDED RESEARCH VISITS

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- National Radio Astronomy Observatory (NRAO) / North American ALMA Science Center (NAASC)** Nov. 2022  
Data Reduction Visitor. Support team: Dr. Ryan Loomis, Sarah Wood, Tristan Ashton  
*Charlottesville, VA*
- Astrophysics Group, Imperial College London** Jun-Aug. 2022  
Visiting graduate researcher. Host supervisor: Dr. Richard Booth  
*London, UK*

## COMPUTATIONAL EXPERTISE

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- Languages:** python, C/C++,  $\text{\LaTeX}$ , HTML/CSS
- Astronomical Tools:** ALMA Observing Tool (OT), CARTA, SAOImage DS9
- Code Frameworks:** CASA (reduction and imaging of radio interferometry observations)  
FARGO3D (multifluid hydrodynamics code) on GPU clusters, e.g. Speedie et al. (2022b)   
REBOUND (*N*-body code) on CPU parallel, e.g. Speedie & Zanazzi (2020)   
PANDEXO (JWST simulator), e.g. 2nd-year Undergraduate Enrichment Project (2018) 
- High Performance Computers Used:**
- o Canadian Advanced Network for Astronomical Research (CANFAR) Sep. 2022 - Present
  - o Digital Research Alliance of Canada (formerly Compute Canada) Sep. 2019 - Present
  - o Canadian Institute for Theoretical Astrophysics SciNet Sunnyvale cluster May - Nov. 2019

## OBSERVING EXPERIENCE

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### **I'Observatoire du Mont-Mégantic**

May 2018

3 full nights of observations using OMM's 1.6m telescope

*Notre-Dame-des-Bois, QC, Canada*

- **Instruments:** CPaPIR (Caméra PanorAmique Proche Infra-Rouge), PESTO (Planètes Extra-Solaires en Transit et Occultations).
- **Scientific targets:** détermination de l'occurrence du transit de Kepler-88 b (KOI-142); observations profondes de galaxies; et obtenir des belles images pour le calendrier de l'observatoire (OPIOMM).
- **Duties:** Object airmass minimization, filter initialization, telescope positioning, conducting focus and bias, finding chart comparison, launch scripts, dome and sky flats, observation log.

## SCHOOLS & CONFERENCES ATTENDED

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**Flatiron Computational Fluid Dynamics for Astrophysics Summer School**, Flatiron Institute, NY Jul.-Aug. 2023

**1st DUSTBUSTERS School on Protostellar Discs and Planet Formation**, Gargnano del Garda, Italy May 2022

**Distorted Astrophysical Discs: New Insights & Future Directions**, Kavli Institute, Cambridge, UK (online) May 2021

**Exomoon Discussion Event**, Columbia University, New York (online) Nov. 2020

**IMPRS 15th Summer School: Planet Formation in Protoplanetary Disks**, Heidelberg, Germany (online) Aug. 2020

**Exoplanets III**, Max Planck Institute for Astronomy & Center for Astronomy of Heidelberg University (online) Jul. 2020

**Sagan Exoplanet Summer Workshop**, NASA Exoplanet Science Institute, Caltech, Pasadena, CA (online) Jul. 2020

**Canadian Astronomical Society Annual General Meeting**, York University, Toronto, ON (online) May 2020

**Science of Early Life**, The Origins Institute, McMaster University, Hamilton, ON Jun. 2018

**Gravitational Waves Fall Meeting**, American Physical Society, Union College, Schenectady, New York Nov. 2017

## PUBLIC TEACHING

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### **Sherway Academy of Music**

2015 - 2016

Guitar Teacher (Contact: Bill Zufelt)

*85 31st St, Toronto, ON*


- Prepared and taught weekly guitar and electric bass lessons for students ages 14-60; accompanied students during annual recitals.

### **CJ's Skateboard Park & School**

2011-2015

Skateboarding & Inline Skating Instructor (Contact: Jay Mandarin)

*60 Horner Ave, Etobicoke, ON (since relocated)*

- Gave weekly individual and group skateboarding and inline skating lessons to children and adults with and without disabilities (autism, deafness)
- Acted as ambassador for females in skateboarding at live vert ramp demonstrations and on public news television broadcasts (e.g. Breakfast Television , 8:54)