Phil R. Van-Lane

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Profile

I am a 3rd year PhD candidate in the David A. Dunlap Department of Astronomy & Astrophysics at University of Toronto. My research is focused on the application of statistical and machine learning methodologies to improve age constraints for low mass stars, and using those to learn about exoplanet evolution. I am actively engaged within the department and community, having served as Co-President of the Graduate Astronomy Students Association in 2023-2024 and in many other roles. I also work as an instructor for DSI Certificates (a program designed to rapidly upskill people targeting a career in data science and machine learning). Before beginning my PhD, I worked for seven years in data engineering and software development.

Education

University of Toronto — Toronto, ON, Canada

PhD, Astronomy & Astrophysics — 2022-2027 (expected)

Advisors: Prof. Joshua Speagle, Prof. Gwendolyn Eadie, Prof. Ryan Cloutier (McMaster University)

Thesis Title: *From Stars to Statistics: Examining Exoplanet Populations through Stellar Activity with Machine Learning.*

University of Waterloo — Waterloo, ON, Canada

BSc, Earth Science (Geophysics specialization) — 2010-2015

Advisor: Prof. Tony Endres

Thesis Title: *An Examination of GPR Processing and its Effect on Data Interpretation.*

Research

Refereed Publications

1. **Van-Lane, P. R.** et al., 2025, "ChronoFlow: A Data-Driven Model for Gyrochronology" (*accepted by ApJ*), https://arxiv.org/abs/2307.08753.
2. Khandelwal, A., et al. (9 co-authors incl. **Van-Lane, P.**), 2024, "Beyond CCDs: characterization of sCMOS detectors for optical astronomy" (proceedings from the 2024 SPIE Astronomical Telescopes + Instrumentation Workshop), https://arxiv.org/abs/2409.16449.
3. **Van-Lane, P.**, Speagle, J. S., & Douglas, S. 2023, "A Novel Application of Conditional Normalizing Flows: Stellar Age Inference with Gyrochronology" (proceedings from the 2023 ICML Workshop on Machine Learning for Astrophysics), https://arxiv.org/abs/2307.08753.

Presented Talks and Posters

1. Invited talk, UCSD "SMASH" Series — March 2025
2. Invited talk, CfA Seminars — October 2024
3. Contributed talk, 8th TESS/15th Kepler Asteroseismic Science Consortium — July 2024
4. Contributed poster, The 22nd Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun — June 2024
5. Contributed poster, CASCA AGM — June 2024

6. Contributed talk, Globular Clusters and Their Tidal Tails — May 2024
7. Contributed talk, Great Lakes Clusters and Streams — August 2023
8. Contributed talk, 7th TESS/14th Kepler Asteroseismic Science Consortium — July 2023
9. Contributed poster, ICML Workshop on Machine Learning for Astrophysics — July 2023
10. Contributed talk, CASCA AGM — June 2023

Scholarships and Funding

Doctoral Scholarships and Fellowships ($162,500 total funding awarded)

NSERC Postgraduate Scholarship (PGS-D); $120,000 over 3 years	2024-2027
QEII Graduate Scholarship in Science and Technology; $15,000	2023-2024
Robert Shelley Graduate Scholarship; $5,000	2023-2024
NSERC Graduate Scholarship (CGS-M); $17,500	2022-2023
Department of Astronomy & Astrophysics Entrance Award; $5,000	2022-2023

Other Doctoral Awards and Recognitions

Finalist, Astrostatistics Interest Group Student Paper Competition	2025
3rd Place, CoolStars22 Early Career Researcher Poster Competition	2024
”You Lead, We Follow” Dunlap Institute Award	2024

Undergraduate Scholarships and Awards

Dean’s Honours List (every term)	2010-2015
Logan Student Prize	2015
Suncor Emerging Leaders Award in Science	2011-2015
J.P. Bickell Foundation Scholarship	2011-2015
Queen Elizabeth II Aiming for the Top Scholarship	2011-2015
Brantford Lapidary and Mineral Society Inc. Scholarship	2012-2013
UW President’s Research Award	2012
NSERC Undergraduate Research Award	2012
Phillip Hallof Memorial Scholarship	2012
Canadian Exploration Geophysical Society Foundation Scholarship Award	2012
UW President’s Scholarship of Distinction	2010-2011
Conestoga Rover’s and Associates Entrance Scholarship	2010-2011

Service and Academic Leadership

Department Leadership

**DADDAA refers to roles held with the David A. Dunlap Department of Astronomy & Astrophysics*
**GASA refers to roles held with the Graduate Astronomy Students’ Association at U of T*

Co-President, GASA — 2023-2024

- Negotiated a ≈10% raised to the guaranteed funding package for graduate students, and an increased top-up for major awards.
- Managed the activities of all GASA committees, coordinated prospective student visits, and aligned GASA feedback for a faculty search.

Training and Mentoring Committee, DADDAA — 2022-2023

- Organized and coordinated training and mentorship activities for all department members.

Mediation Committee, GASA (x2) 2022-2025

- Developed and conducted a survey on financial health of GASA members.
- Used the survey results to provide recommendations to the department for funding adjustments.

Other GASA Positions

Graduate Student Mentor (x2), GASA 2023-2025
Social Committee (x2), GASA 2022-2025
Graduate Student Mentorship Coordinator, GASA 2022-2023

Conference and Workshop Organization

Organizing Committee, STATSTRO Workshop 2024-2025

- Helped to coordinate content and scheduling for both 2024 and 2025 versions of this workshop designed to bring astronomers and statisticians together.
- Designed and developed the STATSTRO 2025 website.

Teaching

Head TA Positions (UofT)

AST201: Stars and Galaxies, Head Tutorial TA 2024

- Coordinated duties for graduate and undergraduate TAs across the entire course.
- Ensured feedback and evaluation was consistent from all TAs for projects and testing.

AST101: The Sun and Its Neighbours, Head TA 2024

- Designed tutorial content and structure for ≈30 graduate TAs to deliver to ≈1500 undergraduate students over the duration of the course.
- Ran weekly meetings with all of the TAs to make sure everyone was aligned on the course content and delivery.

Other Graduate TA Positions (UofT)

AST201: Stars and Galaxies (x3) 2023-2025
AST101: The Sun and Its Neighbours (x2) 2022-2023

Undergraduate TA Positions (UW)

EARTH460: Applied Geophysics II 2015
EARTH260: Applied Geophysics I 2013
EARTH359: Flow Through Porous Media 2012

Community Engagement and Outreach

Team Project Instructor, DSI Certificates 2024-2025

- This is a program designed to rapidly upskill individuals (with an emphasis on recent immigrants) who have employment experience but are looking to transition into a machine learning or data science career.
- In my 2-week module (which I have delivered for the last 3 cohorts of students), I focus on developing the participants' "softer" skills required to excel in a technical career, such as self-organizing teamwork and delivering clear value to stakeholders.

Volunteer Coordinator, AstroTours 2022-2023

- Coordinate ≈20 volunteers for this monthly outreach event which includes a public talk and interactive astronomy activities.

Volunteer, Astronomy On Tap Toronto 2022-2024

- Engaged members of the public and assisted with logistics for these events which are the largest astronomy outreach events in Toronto.

Astronomy Educator, British Columbia School District #36 2024

- Presented an introductory astronomy classroom talk to Grade 6 students.

Volunteer, AstroEDU Toronto 2023

- Helped facilitate this conference designed to address common issues in astronomy education and share experiences among astronomy educators.

Previous Employment

Hootsuite Inc.

Product Manager, Data Technology 2021 - 2022

- Developed the product roadmap for the company's entire data engineering department.
- Managed an initiative to standardize all of the company's data pipelines.

Royal Bank of Canada

Senior Product Manager, Data Innovation Lab 2020 - 2021

- Led the technical implementation of the reporting tool for RBC's global "Return To Premises" (post-COVID) initiative.
- Developed the product roadmap for my team's in-house data visualization application.

Product Manager, Data Innovation Lab 2019 - 2020

- Expanded the reach of my team's internal data visualization product into several departments across the company.

Senior Developer, Data Innovation Lab 2018 - 2019

- Full stack developer.
- Built the the first web application to be deployed on RBC's internal cloud.

Technical Systems Analyst, Corporate Real Estate IT 2016 - 2018

- Developed and automated ≈20 data pipelines for the Corporate Real Estate team.
- Deployed software to devices (eg. self-service kiosks, meeting room booking panels) throughout RBC office buildings.

Tetra Tech EBA

Geotechnician 2016

- Conducted materials testing and quality control for various construction projects at remote sites throughout Northwest Territories and Nunavut.
- Configured a remote alerting system for seismic vibrations induced during construction work at a hospital.

Co-op Jobs (while at UW)

Geophysicist, Nexen Energy ULC Jan-Aug 2014
Geotechnician, Tetra Tech EBA May-Sep 2013
Researcher, UW Geophysics Lab Sep-Dec 2012
Geologist, Lake Shore Gold Corp. Jan-Apr 2012
Geologist, Lake Shore Gold Corp. May-Aug 2011