Keith Vanderlinde keith.vanderlinde@utoronto.ca
University of Toronto, David A. Dunlap Dept. of Astronomy & Astrophysics, 50 St. George St., Toronto, ON M5S 3H4

Research Interests

- **Experimental cosmology.** Large-scale structure (LSS) of the Universe; baryon acoustic oscillations (BAO); 21 cm hydrogen intensity mapping; cosmic microwave background.
- **Time-domain radio astronomy.** Pulsar searching; Fast Radio Bursts (FRBs); real-time transient detection and VLBI localization.
- **Radio astronomical instrumentation.** Fourier optics; signal-processing algorithms and optimization; digital correlation techniques; telescope and survey design.

Education

PhD, Physics, 2008 — Department of Physics, University of Chicago
Dissertation: *New Measurements from the CAPMAP Experiment of the CMB E-mode Power Spectrum at High Multipoles, and New Limits on B-mode Power.*
Thesis Advisor: Bruce Winstein

BSc, Physics with Electrical Engineering, 2002 — Massachusetts Institute of Technology
Dissertation: *Search for Orbital Periodicities in X-ray Binaries.*
Thesis Advisors: Al Levine & Saul Rappaport

Research Positions

Professor	2025 –	Dept. of Astronomy & Astrophysics, University of Toronto
Associate Professor	2018 – 2025	Dept. of Astronomy & Astrophysics, University of Toronto
Assistant Professor	2013 – 2018	Dept. of Astronomy & Astrophysics, University of Toronto
CIfAR Global Scholar	2010 – 2012	Department of Physics, McGill University
Trottier Postdoctoral Fellow	2009 – 2010	McGill University
Postdoctoral Researcher & SPT Winterover	2008	Department of Astronomy, University of Chicago
Research Assistant	2002 – 2007	Kavli Institute for Cosmological Physics, University of Chicago
Undergraduate Research Assistant	2001	Center for Space Research, MIT

Honours & Awards

- Buchalter Cosmology Prize, 2024
- NSERC Brockhouse Canada Prize, 2022
- AAS Lancelot M. Berkeley Prize, 2021
- Governor General's Innovation Award, 2020
- Ontario Early Researcher Award, 2018

Major Collaborations

- Co-PI, the Canadian Hydrogen Observatory and Radio-transient Detector (CHORD)
- Co-I, the Canadian Hydrogen Intensity Mapping Experiment (CHIME)

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- Co-I, CHIME/Fast Radio Bursts · Co-I, CHIME/Pulsar
- Co-I, Hydrogen Intensity and Real-time Analysis eXperiment (HIRAX)
- Co-I, Canadian VLBI / FRB outrigger network
- Builder, South Pole Telescope, 1st–3rd generations (SPT-SZ, SPTpol, SPT-3G)

Publication Metrics

- Papers & proceedings: 172 (149 refereed)
- Citations: ∼27,000
- h-index: 90

Students & Academic Staff Supervised

- 23 undergraduate summer researchers
- 18 undergraduate senior theses
- 18 MSc / first-year research-project students
- 9 PhD students (7 completed)
- 11 postdoctoral fellows (2 current)

Teaching & Outreach

Undergraduate. Galaxies & Cosmology (AST222); Origin & Evolution of the Universe (AST121); Practical Astronomy (AST325/326, lab course).

Graduate. Observational Cosmology (AST1430); Observational Techniques (AST2050); Introduction to Radio Astronomy.

Extracurricular. Led the Dunlap "Introduction to Instrumentation" Summer School, 2013–2025 (designed labs and lectures, and led overall planning), targeted at senior-undergraduate / early-graduate students. Lecturer, SKA Summer School (aperture-synthesis interferometry lecture & lab).

Public. TEDx Toronto speaker (2014); dozens of public-library lectures; talks to science-interest groups including the Royal Astronomical Society of Canada, the North York Astronomical Association, and the Royal Canadian Institute for Science.

Significant Recent Publications

1. CHIME/FRB Collaboration, *The Second CHIME/FRB Catalog of Fast Radio Bursts*, ApJS 283, 1 (2026).
2. CHIME/FRB Collaboration, *CHIME/FRB Outriggers: Design Overview*, ApJ 993, 1 (2025).
3. CHIME/FRB Collaboration, *A Catalog of Local-Universe Fast Radio Bursts from CHIME/FRB and the KKO Outrigger*, ApJS 280, 1 (2025).
4. Cassanelli et al., *A fast radio burst localized at detection to a galactic disk using very long baseline interferometry*, Nature Astronomy 8, 1429 (2024).
5. CHIME Collaboration, *A Detection of Cosmological 21 cm Emission from CHIME in Cross-correlation with eBOSS Measurements of the Lyman-α Forest*, ApJ 963, 1 (2024).
6. Lanman et al., *CHIME/FRB Outriggers: KKO Station System and Commissioning Results*, AJ 168, 87 (2024).
7. CHIME Collaboration, *Detection of Cosmological 21 cm Emission with the Canadian Hydrogen Intensity Mapping Experiment*, ApJ 947, 1 (2023).

8. CHIME/FRB Collaboration, *CHIME/FRB Discovery of 25 Repeating Fast Radio Burst Sources*, ApJ 947, 2 (2023).
9. MacKay, Lai, Shmerko, Wulf, Belostotski, and Vanderlinde, *Low-cost, Low-loss, Ultra-wideband Miniaturized Feed for Modern Interferometric Radio Telescopes*, J. Astronomical Instrumentation 12, 4 (2023).
10. CHIME Collaboration, *An Overview of CHIME, the Canadian Hydrogen Intensity Mapping Experiment*, ApJS 261, 29 (2022).
11. CHIME/FRB Collaboration, *Sub-second periodicity in a fast radio burst*, Nature 607 (2022).
12. CHIME/FRB Collaboration, *The First CHIME/FRB Fast Radio Burst Catalog*, ApJS 257, 59 (2021).
13. CHIME/Pulsar Collaboration, *The CHIME Pulsar Project: System Overview*, ApJS 255, 5 (2021).
14. CHIME/FRB Collaboration, *A bright millisecond-duration radio burst from a Galactic magnetar*, Nature 587, 7832 (2020).
15. CHIME/FRB Collaboration, *Periodic activity from a fast radio burst source*, Nature 582, 7812 (2020).
16. Marcote et al., *A repeating fast radio burst source localised to a nearby spiral galaxy*, Nature 577, 7789 (2020).
17. CHIME/FRB Collaboration, *A second source of repeating fast radio bursts*, Nature 566, 7743 (2019).
18. CHIME/FRB Collaboration, *Observations of fast radio bursts at frequencies down to 400 megahertz*, Nature 566, 7743 (2019).
19. Vanderlinde et al., *The Canadian Hydrogen Observatory and Radio-transient Detector (CHORD)*, CASCA LRP-2020 (arXiv:1911.01777) (2019).
20. CHIME/FRB Collaboration, *The CHIME Fast Radio Burst Project: System Overview*, ApJ 863, 48 (2018).
21. Henning et al., *Measurements of the Temperature and E-mode Polarization of the CMB from 500 Square Degrees of SPTpol Data*, ApJ 852, 97 (2018).
22. Vanderlinde et al., *Galaxy Clusters Selected with the Sunyaev–Zel'dovich Effect from 2008 South Pole Telescope Observations*, ApJ 722 (2010).