Aman Chokshi

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Publications

Appointments

2027 – 2029	**Forrest Foundation Fellow**	Curtin University (CIRA)
2025 – 2027	**Trottier Space Institute Fellow**	McGill University
2021 – 2022	**South Pole Telescope Winterover**	Amundsen–Scott South Pole Station, Antarctica

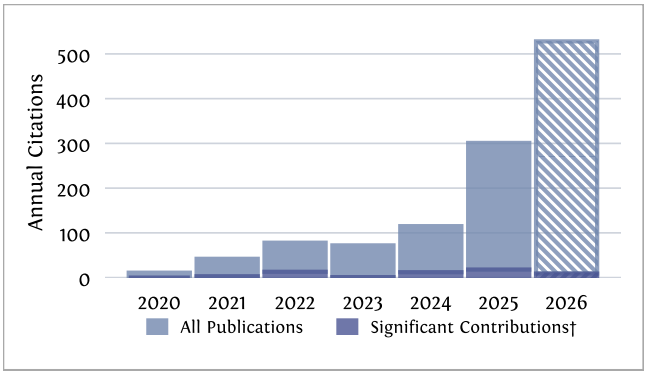
Education

2019 – 2025	**PhD in Astronomy**	University of Melbourne
	Unveiling Cosmic Reionisation: Improvements in Understanding Interferometric Systematics	
	Advisors: Rachel Webster, Bart Pindor, Nichole Barry	
2018	**Master of Science in Physics** *(Distinction)*	Pondicherry University
2015	**Bachelor of Science in Physics**	Loyola College

Research Interests

Observational Cosmology ▪ Radio Astronomy ▪ Cosmic Dawn & Reionisation
Astronomical Instrumentation ▪ Precision Interferometry

Research Profile



Publications	43 (1149 citations*)
Significant-contribution papers†	9 (56 citations*)
h-index, i10-index	14, 19*
Invited talks	19
Collaborations	MWA, SKA, SPT, EHT
Photography & media	NASA, NSF, ESA, *Nature*

* NASA ADS/SciX, August, 2026

Research Experience

2025–2027 Montreal Canada

Trottier Space Institute Fellow

Ultra-Low-Frequency Astronomy with ALBATROS

Commissioned and completed the ALBATROS interferometric array in the Canadian High Arctic, exploiting a polar ionospheric window to explore the largely uncharted radio sky below 30 MHz. First science demonstrates continuous ultra-low-frequency solar monitoring across the eight-station array, opening a new observational window for astrophysical and ionospheric science. [Chokshi et al. 2026]

2019–2025 Melbourne Australia

PhD in Astronomy, University of Melbourne

Precision Cosmology through Empirical Beam Measurements

Developed satellite-based techniques to measure MWA primary beams in situ, revealing significant departures from idealised telescope models. Propagated these beam deformations through 21-cm power-spectrum analyses, demonstrating foreground leakage into sensitive measurement modes at levels ≥ 100 times the cosmological signal. [Chokshi et al. 2024, 2021, 2020]

2021–2022 South Pole Antarctica

South Pole Telescope

Thermal Emission from Low-Earth-Orbit Satellites

Made first reported detection of thermal emission from artificial satellites at millimetre wavelengths using South Pole Telescope observations, and investigated its implications for cosmological surveys and short-duration transient searches. [Foster, Chokshi, et al. 2025]

Field Experience

2025–2026 **ALBATROS — Canadian High Arctic**
Led two field deployments to the McGill Arctic Research Station (79°N), commissioning and completing the eight-station ALBATROS array. Mentored three graduate students and one undergraduate while building two autonomous stations from the ground up at remote Arctic sites, transporting equipment overland and by helicopter.

2021–2022 **South Pole Telescope — Antarctica**
Wintered at the Amundsen–Scott South Pole Station, operating and maintaining the South Pole Telescope through a year of isolation. Ensured continuous observations and data quality while diagnosing and repairing hardware, software and major mechanical failures in situ at temperatures below −70°C.

2021 **Event Horizon Telescope — South Pole**
Re-instrumented the South Pole Telescope for a week-long global EHT campaign, installing a dedicated receiver and secondary mirrors in temperatures below −40°C. Coordinated observations with telescopes worldwide for VLBI targets including Sgr A*, the supermassive black hole at the Galactic Centre.

2019–2020 **Murchison Widefield Array — Western Australia**
Designed and deployed a satellite-based beam-measurement system at the Murchison Radio-astronomy Observatory, integrating reference antennas into MWA receivers. Returned in 2020 to repair lightning damage and restore the experiment.

2018 **SARAS 2 — Himalayas, India**
Assisted with deployment of the SARAS 2 global 21-cm experiment at a high-altitude radio-quiet site in the Himalayas.

2018 **GROWTH Telescope — Indian Astronomical Observatory, Hanle**
Assisted with commissioning the 0.7-m robotic telescope, including some of its first on-sky observations.

2015 **Gauribidanur Radio Observatory — India**
Characterised the directional and frequency response of a broadband antenna for a low-frequency cosmology experiment.

Fellowships, Grants & Awards

2027–2029	**Forrest Research Foundation Fellowship**, Curtin	Salary & 12,000 AUD research fund
2027–2029	**Curtin Forrest Fellowship Project Support**	60,000 AUD
2025–2027	**Trottier Space Institute Fellowship**, McGill	Salary & 20,000 CAD/yr research fund
2025–2027	**Dunlap Fellowship**, University of Toronto†	272,000 CAD over three years
2023–2025	OzSTAR Supercomputer Time Award — MWA EoR Group (Co-PI)	781,000 CPU hours
2022	**Antarctic Service Medal**, U.S. National Science Foundation	
2021	Laby Foundation Grant — Telescopes in Schools Outreach	10,000 AUD
2019–2024	CSIRO ATNF PhD Travel Grant	5,000 AUD/yr
2019–2024	Australian Government RTP Fee Offset	175,991 AUD
2019–2024	Melbourne Research Scholarship	31,200 AUD/yr

† Offered and declined in favour of the Trottier Space Institute Fellowship.

Teaching & Supervision

2025–2026 **Graduate & Undergraduate Research Mentorship — ALBATROS**
Led and mentored three PhD students and one undergraduate through instrumentation, field deployment and scientific analysis, including two 4–6 week campaigns in the Canadian High Arctic. This work contributed to three publications so far, with two further papers in preparation. [Herman et al. 2024; **Chokshi** et al. 2026; Fay et al. 2026]

2026 **Undergraduate Research — Arctic Instrumentation**
Mentor McGill undergraduate Gabriel Dinsmore-Savage on research spanning wind-power systems for autonomous Arctic stations and an RFI monitoring experiment for the McGill Arctic Research Station.

2023–2024 **Master's Research — Optical/Infrared Interferometry**
Co-supervised Jiayi Li at the University of Melbourne on a six-month research project using the Very Large Telescope Interferometer (VLTI).

2020 **Python Tutor — Kathmandu Astrophysics School**
Taught scientific computing to astronomy students over a nine-week program.

2019–2021 **Undergraduate Teaching — University of Melbourne**
Laboratory demonstrator for *Solar System to the Cosmos*, teaching astronomical concepts and data analysis, and providing assessment and feedback.

2019–2021 **Telescopes in Schools — Victoria, Australia**
Trained teachers in telescope operation and astronomical observing, and delivered hands-on astronomy programs for school students.

2017 **Astrophotography Workshop — Pondicherry University**
Designed and led a practical workshop in astrophotography and astronomical observing.

Selected Invited Talks

2025–2026 **ALBATROS: An Arctic Window into the Ultra-Low Frequency Universe**
Caltech; Dunlap Institute; University of Melbourne

2025 **Towards an Epoch of Reionization Detection: Challenges in a pre-SKA Era**
University of the Western Cape

2024 **Instrumental Challenges of an Epoch of Reionization Detection**
CSIRO / ASA; ACAMAR

2023 **The Necessity of Validated Beam Models for EoR Science**
EPFL; Kapteyn Institute; LERMA; University of Manchester; Orsay

2023 **Auroras & Astronomy: A Year at the South Pole**
CSIRO; Raman Research Institute; University of Melbourne

2021 **Satellite Measurements of MWA Beam Patterns**
Macquarie University

Media, Photography & Public Engagement

2025–2026 South Pole Skies — **University of Melbourne**
Year-long exhibition of 11 large-format photographs from the South Pole, installed throughout the School of Physics.

2025 Royal Society Photography Competition — **Astronomy Runner-up**, *Between Auroras & Dawn*

2025 Nature #ScientistAtWork — **Winning Photograph**

2019–2024 NASA Astronomy Picture of the Day — **five selections**

2017–2021 European Space Agency — **three featured astrophotographs**

2019–2026 **Astrophotography & Public Astronomy — six talks**
University of Melbourne; McGill / Trottier Space Institute; Astronomy on Tap Montréal.

2024 **ABC News Breakfast** — television interview on Comet 12P/Pons–Brooks

2022 Space.com — feature on astrophotography from the South Pole

2022 Spaghettification; F-Stop Collaborate and Listen — podcast interviews on astronomy, photography and life at the South Pole

2020 **ASTRO3D in the Home** — Explore the Night Sky & Backyard Astronomy

2018 **Arduino Star Tracker** — designed and built a low-cost equatorial tracking mount for deep-sky astrophotography.

2012 **Low-Cost Wheelchair** — designed and built a lightweight wheelchair prototype on a ∼200 AUD budget and presented the design to the state government for further development.

Selected Publications †

1. *Inverting and Up-channelizing Critically-Sampled Polyphase Filter Banks*
S. Fay, M. Agrawal, H. C. Chiang, **A. Chokshi**, J. Sievers, S. Tartakovsky
2026, arXiv:2608.23441

2. *Continuous Ultra-Low-Frequency Solar Radio Monitoring with ALBATROS from the High Arctic*
A. Chokshi, M. Agrawal, ..., ALBATROS Collaboration
2026, arXiv:2607.16923

3. *Solshade: Terrain-aware Solar Illumination Modelling using Digital Elevation Models and Orbital Geometry*
A. Chokshi
2026, JOSS, 11, 9944

4. *Detection of Thermal Emission at Millimeter Wavelengths from Low-Earth Orbit Satellites*
A. Foster, **A. Chokshi**, ..., SPT Collaboration
2025, OJAp, 8, 51

5. *The necessity of individually validated beam models for an interferometric epoch of reionization detection*
A. Chokshi, N. Barry, J. L. B. Line, C. H. Jordan, B. Pindor, R. L. Webster
2024, MNRAS, 534, 2475–2484

6. *Drone-Based Antenna Beam Calibration in the High Arctic*
L. Herman, C. Barbarie, ..., **A. Chokshi**, ..., ALBATROS Collaboration
2024, arXiv:2407.00856

7. *The Role of the Instrumental Response in 21 cm Epoch of Reionization Power Spectrum Gridding Analyses*
N. Barry, **A. Chokshi**
2022, ApJ, 929, 64

8. *Dual polarization measurements of MWA beampatterns at 137 MHz*
A. Chokshi, J. L. B. Line, N. Barry, D. Ung, D. Kenney, A. McPhail, A. Williams, R. L. Webster
2021, MNRAS, 502, 1990–2004

9. *EMBERS: Experimental Measurement of BEam Responses with Satellites*
A. Chokshi, J. Line, B. McKinley
2020, JOSS, 5, 2629

Additional Publications

10. *SPT-3G D1: Foreground-Robust Lensing Templates for Primordial Gravitational Wave Searches*
Y. Nakato, W. L. K. Wu, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2608.06343

11. *Polarization Angle Swings in Blazars Detected in the Millimeter-wave with the South Pole Telescope*
A. Simpson, E. Anderes, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2608.00302

12. *CMB Lensing Reconstruction Using Two Years of Temperature Data from the SPT-3G Summer Survey*
K. Levy, S. Raghunathan, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2607.05784

13. *Galaxy Clusters Selected via the Sunyaev-Zel'dovich Effect in 5 year data from the SPT-3G Main Survey*
L. E. Bleem, M. Klein, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2607.01175

14. *SPT-3G D1: Compton-y maps using data from the SPT-3G and Planck surveys*
A. S. Maniyar, F. Bianchini, ..., **A. Chokshi**, ..., SPT Collaboration
2026, PhRvD, 114, 023534

15. *Characterization of the Polarization Beam Response of SPT-3G Using Point Sources*
T. de Haan, M. Archipley, ..., **A. Chokshi**, ..., SPT Collaboration
2026, OJAp, 9, 65326

16. *Cross-correlation of SPT-3G D1 CMB lensing and DES Y3 galaxy lensing*
A. Ouellette, Y. Omori, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2606.26223

17. *The SPT-deep Cluster Catalog: Sunyaev–Zel'dovich Selected Clusters from Combined SPT-3G and SPTpol Measurements over 100 Square Degrees*
K. Kornoelje, L. E. Bleem, ..., **A. Chokshi**, ..., SPT Collaboration
2026, ApJ, 1004, 48

18. *Millimeter-wave Detections of Symbiotic Stars in SPT and ACT Data*
C. Tandoi, A. Foster, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2605.01022

19. *SPT-3G D1: Axion early dark energy with CMB experiments and DESI observations*
A. R. Khalife, L. Balkenhol, ..., **A. Chokshi**, ..., SPT Collaboration
2026, PhRvD, 113, 103546

20. *Measurement of the Full Shape of the Thermal Sunyaev–Zel'dovich Power Spectrum from the South Pole Telescope and Herschel–SPIRE Observations*

S. Raghunathan, P. A. R. Ade, ..., **A. Chokshi**, ..., SPT Collaboration
2026, ApJL, 1002, L22

21. *SPT-3G D1: CMB temperature and polarization power spectra and cosmology from 2019 and 2020 observations of the SPT-3G main field*
E. Camphuis, W. Quan, ..., **A. Chokshi**, ..., SPT Collaboration
2026, PhRvD, 113, 083504

22. *SPT-3G D1: Maps of the millimeter-wave sky from 2019 and 2020 observations of the SPT-3G Main field*
W. Quan, E. Camphuis, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2603.20163

23. *Detection of Millimeter-wavelength Flares from Two Accreting White Dwarf Systems in the SPT-3G Galactic Plane Survey*
Y. Wan, J. D. Vieira, ..., **A. Chokshi**, ..., SPT Collaboration
2026, ApJ, 997, 133

24. *SPT-3G D1: A Measurement of Secondary Cosmic Microwave Background Anisotropy Power*
P. Chaubal, N. Huang, ..., **A. Chokshi**, ..., SPT Collaboration
2026, arXiv:2601.20551

25. *Unified and Consistent Structure Growth Measurements from Joint ACT, SPT, and Planck CMB Lensing*
F. J. Qu, F. Ge, ..., **A. Chokshi**, ..., SPT Collaboration
2026, PhRvL, 136, 021001

26. *First use of GPS satellites for beam calibration of radio dish telescopes*
S. Berger, A. Lasinski, V. MacKay, E. Egan, D. Wulf, **A. Chokshi**, J. Sievers
2026, PASA, 43, e016

27. *Millimeter-wave observations of Euclid Deep Field South using the South Pole Telescope: A data release of temperature maps and catalogs*
M. Archipley, A. Hryciuk, ..., **A. Chokshi**, ..., SPT Collaboration
2026, A&A, 706, A17

28. *SPT-3G D1: Constraints on inflationary gravitational waves with two years of SPT-3G data*
J. A. Zebrowski, C. L. Reichardt, ..., **A. Chokshi**, ..., SPT Collaboration
2025, PhRvD, 112, 123520

29. *Towards constraining cosmological parameters with SPT-3G observations of 25% of the sky*
A. Vitrier, K. Fichman, ..., **A. Chokshi**, ..., SPT Collaboration
2025, arXiv:2510.24669

30. *Improved Limits on the 21 cm Signal at z = 6.5–7.0 with the Murchison Widefield Array Using Gaussian Information*
C. M. Trott, C. D. Nunhokee, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2025, ApJ, 991, 211

31. *Improved limits on the 21cm signal at z=6.5-7.0 with the MWA using Gaussian information*
C. M. Trott, C. D. Nunhokee, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2025, arXiv:2508.04164

32. *Limits on the 21 cm Power Spectrum at z = 6.5–7.0 from Murchison Widefield Array Observations*
C. D. Nunhokee, D. Null, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2025, ApJ, 989, 57

33. *Cosmology from CMB lensing and delensed EE power spectra using 2019–2020 SPT-3G polarization data*
F. Ge, M. Millea, ..., **A. Chokshi**, ..., SPT Collaboration
2025, PhRvD, 111, 083534

34. *Measurement and Modeling of Polarized Atmosphere at the South Pole with SPT-3G*
A. Coerver, J. A. Zebrowski, ..., **A. Chokshi**, ..., SPT Collaboration
2025, ApJ, 982, 15

35. *Pointing Accuracy Improvements for the South Pole Telescope with Machine Learning*
P. M. Chichura, A. Rahlin, ..., **A. Chokshi**, ..., SPT Collaboration
2025, JAI, 14, 2550001

36. *MOSEL Survey: Spatially Offset Lyman-continuum Emission in a New Emitter at z = 3.088 Can Explain the Low Number Density of Observed LyC Leakers*
A. Gupta, C. M. Trott, ..., **A. Chokshi**, ..., et al.
2024, ApJ, 973, 169

37. *Testing the ΛCDM Cosmological Model with Forthcoming Measurements of the Cosmic Microwave Background with SPT-3G*

K. Prabhu, S. Raghunathan, ..., **A. Chokshi**, ..., SPT Collaboration
2024, ApJ, 973, 4

38. *Radio fossils, relics, and haloes in Abell 3266: cluster archaeology with ASKAP-EMU and the ATCA*
C. J. Riseley, E. Bonnassieux, ..., **A. Chokshi**, ..., et al.
2022, MNRAS, 515, 1871–1896

39. *Epoch of reionization power spectrum limits from Murchison Widefield Array data targeted at EoR1 field*
M. Rahimi, B. Pindor, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2021, MNRAS, 508, 5954–5971

40. *Constraining the 21 cm brightness temperature of the IGM at z = 6.6 around LAEs with the murchison widefield array*
C. M. Trott, C. H. Jordan, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2021, MNRAS, 507, 772–780

41. *A new MWA limit on the 21 cm power spectrum at redshifts 13-17*
S. Yoshiura, B. Pindor, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2021, MNRAS, 505, 4775–4790

42. *The impact of tandem redundant/sky-based calibration in MWA Phase II data analysis*
Z. Zhang, J. C. Pober, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2020, PASA, 37, e045

43. *Deep multiredshift limits on Epoch of Reionization 21 cm power spectra from four seasons of Murchison Widefield Array observations*
C. M. Trott, C. H. Jordan, ..., **A. Chokshi**, ..., MWA EoR Collaboration
2020, MNRAS, 493, 4711–4727