

Vighnesh Nagpal

CURRICULUM VITAE · UNIVERSITY OF CHICAGO

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Education & Employment

University of Chicago

PHD STUDENT & NSF GRADUATE RESEARCH FELLOW

Chicago, IL, USA

Sep 2024 -

Berkeley Radio Astronomy Laboratory

JUNIOR SPECIALIST

Berkeley, CA, USA

Jan 2024 - May 2024

University of California, Berkeley

BACHELOR OF ARTS, PHYSICS AND ASTROPHYSICS

Berkeley, CA, USA

Aug 2020 - Dec 2023

Publications

FIRST OR SECOND-AUTHOR

1. **V. Nagpal**, M. Steinrueck, and colleagues. 2026. Shine Bright Like a Sub-Neptune: Explaining GJ 1214 b's High Bond Albedo with Coupled Aerosol Microphysics and the Reflected Light Phase Integral. *submitted to ApJ*
2. **V. Nagpal**, M. Steinrueck, D. Powell, P. Gao, D. Samra, and W. Cukier. 2026. Wet Removal and Cloud Enhancement: The Microphysics of Cloud-Haze Interactions on Sub-Neptunes. *ApJ*, 1010, 133.
3. J. Yang, **V. Nagpal**, M. Zhang, Q. Xue and colleagues. 2026. Photochemical Production of CS₂ in Temperate-to-Warm Gas Giant Exoplanet Atmospheres. *ApJL*, *in press*
4. **V. Nagpal**, M. Goldberg, K. Batygin. 2024. Breaking Giant Chains: Early-Stage Instabilities in Long-Period Giant Planet Systems. *ApJ*, 969, 2.
5. **V. Nagpal**, S. Blunt, B.P. Bowler, T.D. Dupuy, E.L. Nielsen, J.J. Wang. 2023. The Impact of Bayesian Hyperpriors on the Population-Level Eccentricity Distribution of Imaged Planets. *AJ*, 165, 32.
6. **V. Nagpal** and J.S. Dillon. 2022. The Detectability of FRBs with HERA. *HERA Memo Series #112*. Available at: <http://reionization.org>

CONTRIBUTING AUTHOR

1. M. Zhang, Q. Xue, J. Yang, **V. Nagpal**, and colleagues. 2026. C, N, O, S, and photochemistry in a temperate giant orbiting a mid M dwarf. *ApJL*, *in press*.
2. W. Cukier, D. Powell, X. Zhang, P. Gao, D. Samra, and **V. Nagpal**. 2026. CARMApy: An Open-Source Python Framework for Simulating Microphysical Clouds in Planetary Atmospheres. *submitted to ApJ*.
3. S. Blunt, J.J. Wang, and 18 colleagues including **V. Nagpal**. 2024. orbitize! v3: Orbit fitting for the High-contrast Imaging Community. *JOSS*.
4. S. Ghosh, D. Gadotti, F. Fragkoudi, **V. Nagpal**, and P. Di Matteo. 2024. Closing the gap: secular evolution of bar-induced dark-gaps in presence of thick disks. *MNRAS*, 532, 4.
5. M. Morgan, B.P. Bowler, and 4 colleagues inc. **V. Nagpal**. 2024. Signs of Similar Stellar Obliquity Distributions for Hot and Warm Jupiters Orbiting Cool Stars. *AJ*, 167, 2. [arxiv:2310.18445](https://arxiv.org/abs/2310.18445).
6. B.P. Bowler, Q.H. Tran, and 11 colleagues inc. **V. Nagpal**. 2023. Rotation Periods, Inclinations, and Obliquities of Cool Stars Hosting Directly Imaged Substellar Companions: Spin-Orbit Misalignments are Common. *AJ*, 165, 164.
7. The HERA Collaboration: Z. Abdurashidova, T. Adams, J.E. Aguirre, and 90 colleagues inc. **V. Nagpal**. 2023. Improved Constraints on the 21 cm EoR Power Spectrum and the X-Ray Heating of the IGM with HERA Phase I Observations. *ApJ*, 945, 124.
8. S. Blunt, J.J. Wang, and 11 colleagues inc. **V. Nagpal**. 2020. orbitize!: A Comprehensive Orbit-fitting Software Package for the High-contrast Imaging Community. *AJ*, 159, 89.

IN PREPARATION

1. **V. Nagpal**, T. Lu, M. Rice and colleagues. 2026. Swept by the Galactic Tide: How the Galaxy Shapes the Fates of Wide Binaries and their Giant Planets. *estimated submission November 2026*
2. **V. Nagpal**, K.E. Rockcliffe, D. Powell, P. Gao and colleagues. The Stellar Blueprint: How Host Stars Shape Sub-Neptune Climate and Chemistry. *estimated submission December 2026*
3. **V. Nagpal**, J.S. Dillon, and colleagues. 2026. Limits on FRB Occurrence Rates from 110–180 MHz with HERA Phase I Observations.
4. M. Steinrueck, **V. Nagpal**, P. Gao, and E. Wolf. 2026. Tholin Hazes are More Reflective Around M-dwarfs.

Awards, Fellowships, & Grants

2024	NSF Graduate Research Fellow , National Science Foundation	\$ 159,000
2024	Undergraduate Commencement Speaker , Department of Astronomy, UC Berkeley	\$ 1,000
2024	Chambliss Award , 243rd AAS Meeting. See the announcement here.	
2023	Berkeley Physics Undergraduate Research Program Scholar , UC Berkeley	\$ 1,500
2022	Summer Undergraduate Research Fellowship , California Institute of Technology	\$ 6,700
2022	Berkeley Physics Undergraduate Research Program Scholar , UC Berkeley	\$ 1,500
2022	Dean's List , UC Berkeley	

Mentoring

- 2026- **Aditya Shukla**, University of Chicago Lab Schools
- 2026 **Bao Vu**, John Paul II High School
- 2025 **Simone Alcalay**, → University of Chicago

Outreach, Teaching Experience & Service

- 2025- **Letters to a Pre-Scientist**, Pen Pal
- 2023 **Astronomy C10**, Undergraduate Student Instructor
- 2023 **Berkeley Astronomy Small Council**, Undergraduate Student Representative
- 2021 & 2022 **Code/Astro**, Teaching Assistant

Presentations

TALKS

- “The Stellar Blueprint: How Host Stars Shape Sub-Neptune Climate and Chemistry. *The Formation, Life and Fate of Exo-Neptunian Systems*. Lorentz Center, Leiden, the Netherlands. September 2026.
- “The Stellar Blueprint: How Host Stars Shape Sub-Neptune Climate and Chemistry. 50th Bay Area Exoplanet Science Meeting. UCSC. August 2026.
- *“Journeys Through Sub-Neptune Atmospheres and Exoplanet Dynamics, Flatiron Institute. June 2026.
- *“Cloud-Haze Interactions in Sub-Neptune Atmospheres”, A Dynamical Synthesis of Planetary Systems, Yale University. January 2026.
- “Interacting Clouds & Hazes on Sub-Neptunes”, GLEAM 2025, University of Wisconsin, Madison. November 2025.
- “Interacting Clouds & Hazes on Sub-Neptunes”, Other Worlds Laboratory, University of California, Santa Cruz. July 2025.
- “Clouds and Hazes on Sub-Neptunes: Insights from 2D Microphysical Modeling”, Exoclimates VII, Montreal. July 2025.
- “Clouds and Hazes on Sub-Neptunes: Insights from 2D Microphysical Modeling”, ERES X, Princeton University. June 2025.
- “Detecting low-frequency transients with HERA: forecasts and current attempts”, Lunch talk, Department of Astronomy, UC Berkeley. April 2024.
- “Breaking Giant Chains: Early-Stage Instabilities in Long-Period Giant Planet Systems”, Lunch talk, Department of Astronomy, UC Berkeley. November 2023.

“The Impact of Bayesian Hyperpriors on the Population-Level Eccentricity Distribution of Imaged Planets”, ERES VII, The Pennsylvania State University, PA, USA. August 2022.

“The Detectability of Fast Radio Bursts with HERA.” HERA Collaboration Meeting. January 2022.

“New results for the eccentricity distribution of imaged giant planets.” Lunch talk, Department of Astronomy, UC Berkeley. October 2021.

“Precise Dynamical Masses for the HD-104304 G-M Binary.” Lunch talk, Department of Astronomy, UC Berkeley. April 2021.

“Orbitize: a Python package for fitting orbits to directly imaged planets.” Boston Area Exoplanet Science Meeting VII, Harvard-Smithsonian Center for Astrophysics. April 2019.

POSTERS

V. Nagpal, M. Steinrueck, D. Powell, P. Gao. “Cloud-Haze Interactions on Sub-Neptunes” Exoplanet Atmospheres 2026, Denver, CO, March 2026.

V. Nagpal, J.S. Dillon, A.R. Parsons. Methods for Detecting FRBs with the Hydrogen Epoch of Reionization Array.” 243rd American Astronomical Society Meeting, New Orleans, LA, January 2024. Available [here](#).

V. Nagpal, S. Blunt, B.P. Bowler, T.D. Dupuy, E.L. Nielsen, J.J. Wang. ‘The Impact of Bayesian Hyperpriors on the Population-Level Eccentricity Distribution of Imaged Planets.” 240th American Astronomical Society Meeting, Pasadena, CA, June 2022.

V. Nagpal, J.S. Dillon and A.R. Parsons. Estimating the Detectability of Fast Radio Bursts with HERA. BPURS Poster Session, UC Berkeley, April 2022.

V. Nagpal et al. “Using long baseline radial velocities and direct imaging to make 13-sigma dynamical mass measurements for the components of the HD 104304 stellar binary.” 237th American Astronomical Society Meeting, Virtual Meeting, January 2021.