

# SHREYAS VISSAPRAGADA

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## EDUCATION:

|                                                                    |             |
|--------------------------------------------------------------------|-------------|
| Ph.D., Planetary Science, California Institute of Technology       | 2017 – 2022 |
| Thesis: “The Irradiation-Driven Evolution of Gas-Giant Exoplanets” |             |
| Advisor: Heather Knutson                                           |             |
| M.S., Planetary Science, California Institute of Technology        | 2017 – 2019 |
| B.A. ( <i>magna cum laude</i> ), Astrophysics, Columbia University | 2013 – 2017 |
| Advisors: Catherine Walsh and Daniel Wolf Savin                    |             |

## POSITIONS:

|                                                                            |                |
|----------------------------------------------------------------------------|----------------|
| 51 Pegasi b Postdoctoral Fellow, Harvard University, Cambridge, MA         | 2022 – current |
| Graduate Research Fellow, California Institute of Technology, Pasadena, CA | 2017 – 2022    |
| Undergraduate Researcher, Columbia Astrophysics Laboratory, New York, NY   | 2014 – 2017    |
| LEAPS Summer Student, Leiden, The Netherlands                              | 2016           |
| REU Student, Nevis Laboratories, Irvington, NY                             | 2015           |

## AWARDS AND HONORS:

|                                                        |                |
|--------------------------------------------------------|----------------|
| 51 Pegasi b Fellowship                                 | 2022 – current |
| NSF Graduate Research Fellowship                       | 2019 – 2022    |
| Paul & Daisy Soros Fellowship                          | 2019 – 2021    |
| Barry M. Goldwater Scholarship                         | 2016 – 2017    |
| USRA James B. Willett Educational Memorial Scholarship | 2016 – 2017    |
| James J. and Jovin C. Lombardo Scholarship             | 2013 – 2017    |
| National Merit Scholarship                             | 2013 – 2017    |

## PUBLICATIONS: [First author: 9; second/third author: 12; *n*th author: 12]

33. **S. Vissapragada** et al. 2023, “A High-Resolution Non-Detection of Escaping Helium In The Ultra-Hot Neptune LTT 9779b,” *The Astrophysical Journal Letters*, in review
32. **S. Vissapragada** et al. 2023, “Helium in the Extended Atmosphere of the Warm Super-Puff TOI-1420b,” *The Astronomical Journal*, in review
31. R. Cloutier et al. 2023, “Masses, Revised Radii, and a Third Planet Candidate in the “Inverted” Planetary System Around TOI-1266,” *MNRAS*, in review (arxiv:2310.13496)
30. S. Grunblatt et al. 2023, “An unlikely survivor: a low-density hot Neptune orbiting a red giant star,” *Science*, in review (arXiv:2303.06728)
29. J. Pérez González, M. Greklek-McKeon, **S. Vissapragada** et al. 2023, “Detection of an Atmospheric Outflow from the Young Hot Saturn TOI-1268b,” *The Astronomical Journal*, in review (arXiv:2307.09515)
28. S. Yoshida, **S. Vissapragada** et al. 2023, “TESS Spots a Super-Puff: The Remarkably Low Density of TOI-1420b,” *The Astronomical Journal*, accepted (arXiv:2309.09945)
27. A. Bello-Arufe et al. 2023, “Transmission Spectroscopy of the Lowest-density Gas Giant: Metals and a Potential Extended Outflow in HAT-P-67b,” *The Astronomical Journal*, 166, 69
26. L. Dos Santos et al. 2023, “Observing Atmospheric Escape in Sub-Jovian Worlds with JWST,” *The Astronomical Journal*, 165, 244
25. M. Greklek-McKeon, H. Knutson, **S. Vissapragada** et al. 2022, “Constraining the Densities of the Three Kepler-289 Planets with Transit Timing Variations,” *The Astronomical Journal*, 165, 48
24. F. Dai et al. “TOI-1136 is a Young, Coplanar, Aligned Planetary System in a Pristine Resonant Chain,” *The Astronomical Journal*, 165, 33
23. **S. Vissapragada** et al. 2022, “The Possible Tidal Demise of Kepler’s First Planetary System,” *The Astrophysical Journal Letters*, 941, L31

22. J. J. Spake et al. “Non-detection of He I in the Atmosphere of GJ 1214b with Keck/NIRSPEC, at a Time of Minimal Telluric Contamination,” *The Astrophysical Journal Letters*, 939, L11
21. **S. Vissapragada** et al. 2022, “The Upper Edge of the Neptune Desert is Stable Against Photoevaporation,” *The Astronomical Journal*, 164, 234
20. A. Boyle, J. Christiansen, **S. Vissapragada** et al. 2022, “An Updated Ephemeris for K2-138d,” *Research Notices of the American Astronomical Society*, 6, 71
19. Q. Zhang et al. 2022, “Dust Evolution in the Coma of Distant, Inbound Comet C/2017 K2 (PANSTARRS),” *The Planetary Science Journal*, 3, 135
18. I. Wong, A. Shporer, **S. Vissapragada** et al. 2022, “TESS Revisits WASP-12: Updated Orbital Decay Rate and Constraints on Atmospheric Variability,” *The Astronomical Journal*, 163, 175
17. **S. Vissapragada** et al. 2022, “The Maximum Mass-Loss Efficiency for a Photoionization-Driven Isothermal Parker Wind,” *The Astrophysical Journal*, 927, 96
16. L. Kaye, **S. Vissapragada** et al. 2022, “Transit Timings Variations in the three-planet system: TOI-270,” *Monthly Notices of the Royal Astronomical Society*, 510, 5464
15. L. dos Santos, A. Vidotto, **S. Vissapragada** et al. 2022, “p-winds: an open-source Python code to model planetary winds and upper atmospheres,” *Astronomy & Astrophysics*, 659, A62
14. I. Wong et al. 2021, “TOI-2109b: An Ultra-Hot Gas Giant on a 16-Hour Orbit,” *The Astronomical Journal*, 162, 256
13. **S. Vissapragada** et al. 2021, “A Search for Planetary Metastable Helium Absorption in the V1298 Tau System,” *The Astronomical Journal*, 162, 222
12. Q. Zhang, Q. Ye, **S. Vissapragada** et al. 2021, “Preview of Comet C/2021 A1 (Leonard) and Its Encounter with Venus,” *The Astronomical Journal*, 162, 194
11. K. Paragas, **S. Vissapragada** et al. 2021, “Metastable Helium Reveals an Extended Atmosphere for the Gas Giant HAT-P-18b,” *The Astrophysical Journal Letters*, 909, L10
10. **S. Vissapragada** et al. 2020, “Constraints on Metastable Helium in the Atmospheres of WASP-69b and WASP-52b with Ultranarrowband Photometry,” *The Astronomical Journal*, 159, 278
9. A. Piro & **S. Vissapragada** 2020, “Exploring Whether Super-Puffs Can Be Explained as Ringed Exoplanets,” *The Astronomical Journal*, 159, 131
8. **S. Vissapragada** et al. 2020, “Diffuser-Assisted Infrared Transit Photometry for Four Dynamically Interacting Kepler Systems,” *The Astronomical Journal*, 159, 108
7. S. Yee et al. 2020, “The Orbit of WASP-12b is Decaying,” *The Astrophysical Journal Letters*, 888, L5
6. S. Tinyanont et al. 2019, “WIRC+Pol: A Low-Resolution Near-Infrared Spectropolarimeter,” *Publications of the Astronomical Society of the Pacific*, 131, 025001
5. C. Walsh, **S. Vissapragada**, & H. McGee 2018, “Methanol formation in TW Hya and future prospects for detecting larger complex molecules in disks with ALMA,” *Proceedings of the International Astronomical Union*, 332, 395
4. N. F. W. Ligterink et al. 2018, “Methanol ice co-desorption as a mechanism to explain cold methanol in the gas phase,” *Astronomy & Astrophysics*, 612, A88.
3. D. W. Savin, R. Bhaskar, **S. Vissapragada**, & X. Urbain 2017, “On the Energetics of the  $\text{HCO}^+ + \text{C} \rightarrow \text{CH}^+ + \text{CO}$  Reaction and Some Astrochemical Implications,” *The Astrophysical Journal*, 844, 154.
2. **S. Vissapragada** et al. 2016, “Recommended Thermal Rate Coefficients for the  $\text{C} + \text{H}_3^+$  Reaction and Some Astrochemical Implications,” *The Astrophysical Journal*, 832, 31.
1. N. de Ruelle et al. 2016, “Merged-beams Reaction Studies of  $\text{O} + \text{H}_3^+$ ,” *The Astrophysical Journal*, 816, 31.

## MENTORING:

|                                                                                                                                                                                                       |                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Jea Adams, Harvard University                                                                                                                                                                         | 2022 - current |
| Jea is working on an open-source pipeline for atomic spectroscopy with the NEID spectrograph.                                                                                                         |                |
| Kiki Sileshi, Cambridge Rindge and Latin School                                                                                                                                                       | 2022 - 2023    |
| Katerina Triantafyllou, Cambridge Rindge and Latin School                                                                                                                                             | 2022 - 2023    |
| Mekeyas Mekuria, Cambridge Rindge and Latin School                                                                                                                                                    | 2022 - 2023    |
| Kiki, Kat, and Mekeyas wrote a data reduction pipeline to search for H $\alpha$ absorption in planetary atmospheres.                                                                                  |                |
| Haedam Im, Irvine High School (currently undergraduate student at MIT)                                                                                                                                | 2020 - 2022    |
| Haedam is using a 1-m telescope to observe objects of interest from the TESS mission, with a goal of ruling out false positives. She was named a 2022 Regeneron STS scholar for her work.             |                |
| Kimberley Paragas, Wesleyan University (currently PhD student at Caltech)                                                                                                                             | 2020 - 2021    |
| Kim helped improve our exoplanet atmospheric escape measurements at Palomar Observatory during the SURF program at Caltech, and discovered the escaping atmosphere of the gas giant planet HAT-P-18b. |                |
| Roshan Bhaskar, Columbia University (currently PhD student at UNC Greensboro)                                                                                                                         | 2016 - 2017    |
| Roshan studied the impacts of removing the energetically-forbidden HCO <sup>+</sup> + C reaction from astrochemical models of molecular clouds.                                                       |                |

## SELECTED TALKS:

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|-------------------------------------------------------------------------------------|------|
| Astronomy Colloquium, Wesleyan University                                           | 2023 |
| Five College Astronomy Department Colloquium, University of Massachusetts Amherst   | 2023 |
| Exoplanets, Star & Planet Formation Seminar, Space Telescope Science Institute      | 2023 |
| Astronomy Colloquium, University of Florida                                         | 2023 |
| Exoplanets Group Talk, NASA Jet Propulsion Laboratory                               | 2022 |
| Center for Integrative Planetary Science Seminar, University of California Berkeley | 2022 |
| Astronomy Seminar, Carnegie Earth & Planets Laboratory                              | 2022 |
| Center for Exoplanets and Habitable Worlds Seminar, Pennsylvania State University   | 2022 |
| Stars and Planet Formation Meeting, University of Michigan                          | 2021 |
| Astronomy Department Seminar, American Museum of Natural History                    | 2021 |
| Origins Seminar, University of Arizona                                              | 2021 |
| FLASH Talk, University of California Santa Cruz                                     | 2021 |
| ELSI Seminar, Tokyo Institute of Technology                                         | 2021 |
| Bromery Seminar, Johns Hopkins University                                           | 2021 |
| Exoplanets and Stars Seminar, Yale University                                       | 2021 |
| Astronomy Seminar, University of Connecticut                                        | 2021 |
| Exoplanet Seminar, University of Chicago                                            | 2021 |

## TELESCOPE TIME:

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|---------------------------------------------------------------------------------|----------------|
| <i>James Webb Space Telescope</i> : NIRSpec/PRISM (15.2 hours, co-I)            | 2023 - present |
| <i>Hubble Space Telescope</i> : WFC3 UVIS/G280 (10 orbits, PI)                  | 2023 - present |
| Telescopio Nazionale Galileo: HARPS-N (35 hours, PI)                            | 2023 - present |
| Fred Lawrence Whipple Observatory: TRES (8 nights, PI)                          | 2023 - present |
| MMT Observatory: Hectochelle (8 nights, PI)                                     | 2023 - present |
| Magellan Telescopes: WINERED (3 nights, PI), MIKE (2 nights, PI)                | 2023 - present |
| WIYN 3.5m Observatory: NEID (65 hrs, PI)                                        | 2021 - present |
| Hale 200-inch Telescope (Palomar Observatory):                                  | 2018 - present |
| WIRC (> 60 nights, PI and Co-I), PARVI (2 nights, PI), CHIMERA (3 nights, Co-I) |                |
| Las Cumbres Observatory Global Telescope Network: Sinistro imagers (24 hrs, PI) | 2020 - 2021    |
| Atacama Large Millimeter/submillimeter Array, 1 hr (PI)                         | 2018           |

**SERVICE:**

- Reviewer 2021 - current  
Served as reviewer for articles in AAS Journals, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, and Nature. Member of the Time Allocation Committee for the NN-EXPLORE program, which awards time on the NEID spectrograph to the community through NOIRLab, and CanTAC, which awards time on the CFHT. Reviewer for the NASA Exoplanet Research Program (XRP), for which I was a Panel Chair in 2023.
- CfA Exoplanet Pizza Lunch Seminar Organizer 2023 - current  
Organizing the pizza lunch seminar series at the Center for Astrophysics.
- Science Research Mentoring Program 2022 - 2023  
Supervised research activities for three high school students at Cambridge Rindge and Latin School. Over the year, the students learned how to read and discuss scientific papers, coding in Python, and about exoplanet science. Their final research product was a science-ready pipeline for detecting the H $\alpha$  line in exoplanet transmission spectroscopy.
- Skype a Scientist Volunteer 2018 - 2022  
Discussed various topics in planetary science with and answered questions from K-8 classrooms across the United States over Skype.
- Caltech FUTURE and FUTURE Ignited Volunteer 2019 - 2022  
Helped optimize CVs and personal statements for undergraduate women interested in graduate school (FUTURE). Additionally lectured for students of color interested in graduate school (FUTURE Ignited).
- Caltech Astronomy Department Outreach Volunteer 2018 - 2022  
Coordinated, participated in, and helped organize our Astronomy on Tap program (bringing astrophysics to a popular bar in Pasadena once a month); participated in multiple panels for our monthly lecture series, helped inaugurate our “Science Train” program (bringing astrophysics to public transit), and led solar telescope observations during Caltech’s “March for Science” event.
- Astrobiology Graduate Conference Organizing Committee 2018 - 2021  
Fund-raised for the 2019 Utah and 2021 Tokyo conferences, coordinated the undergraduate flash talk competition, and reviewed conference abstracts. My primary goal was to ensure that students could attend these conferences free of financial hardship.
- Teaching Assistant 2015 - 2020  
Served as a teaching assistant in the Caltech Planetary Science Department (Planet Formation and Evolution; Planetary Physics), the Columbia University Astronomy Department (Earth, Moon, and Planets; Stars and Atoms; Life in the Universe; Stars, Galaxies, and Cosmology), and the Columbia University Computer Science Department (Introduction to Computing (Python); Discrete Mathematics)
- Caltech Dix Planetary Science Seminar Organizer 2019 - 2020  
Organized our department’s lecture series, including coordinating speakers, managing finances, and ensuring a smooth transition to a virtual lecture format during the COVID-19 pandemic.
- Caltech Graduate Student Council 2018 - 2020  
Served as secretary, advocacy committee member, and diversity committee member. My primary goals were to ensure pay raises commensurate with rising rents, to ensure every graduate student was able to access affordable healthcare, and to ensure Caltech was taking active steps towards diversifying our graduate student body.
- Caltech-PCC Connection Program 2018  
Lectured for an astronomy course at Pasadena City College (our local community college).