Shubham Kanodia

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https://shbhuk.github.io/

Appointments

Carnegie Institution for Science

Carnegie Postdoctoral Fellow, Earth and Planets Laboratory
From Pixels to Population: Understanding Gas Giants around M dwarfs

Pennsylvania State University

Research Technologist

HPF and NEID spectrograph design and instrument assembly

Washington, DC, USA

July 2022 - Present

Pennsylvania, USA

February 2017 – July 2017

Education

Pennsylvania State University

Doctor of Philosophy (Ph.D.) Astrophysics

Developing new tools and techniques to probe the M dwarf planet population

Pennsylvania State University

Master of Science (M.Sc.) Astrophysics

Combining the Next Generation of Exoplanet Instrumentation & Astrostatistics

Brown University

Master of Science (Sc.M.) Physics

Optical Design of the Exoplanet Climate Infrared Telescope Spectrometer

St. Xavier's College

Bachelor of Science (B.Sc.) Physics

Pennsylvania, USA

May 2019 - May 2022

Pennsylvania, USA Sept 2017 - May 2019

CS

Rhode Island, USA

Sept 2015 – Dec 2016

Mumbai, India

June 2012 - Apr 2015

Telescope Time Allocation

- o JWST Cycle 2 (GO 3171): 133 hours
- \circ HET 10 m HPF: > 75 nights
- o Gemini-N 8 m MAROON-X: 1.5 nights
- \circ Magellan 6.5 m: > 10 nights
- \circ ARC 3.5 m: > 50 half nights
- \circ WIYN 3.5 m: > 30 nights

Awards & Grants

- o JWST Cycle 2 GO Program 3171, 2023 onwards
- NN-Explore JPL Research Support Agreement, 2021, 2023-2024
- NASA Agency Group Achievement Award for NEID, 2020
- Carnegie Postdoctoral Fellow, Carnegie Earth & Planets Lab, 2022 onwards
- NASA Group Achievement Award, NEID, 2020
- o Downsbrough Graduate Fellowship in Astrophysics, Penn State, 2021
- o Zaccheus Daniel Fellowship, Penn State, 2018, 2020, 2021
- o Homer F. Braddock / Nellie H. and Oscar L. Roberts Fellowship, Penn State, 2017
- o J.N. Tata Endowment Fund for Higher Education, Mumbai, 2015

o INSPIRE Scholarship: Government of India, Mumbai, 2013

Mentoring & Advising

- o Helen Baran (2019 2020): Undergraduate at Pennsylvania State University
- o Marissa Maney (2019 2021): Undergraduate at Pennsylvania State University
- o Brody McElwain (2020 2022): Master's student at Pennsylvania State University
- Narisara (Mick) Mayer (2023): Undergraduate at Haverford College
- o Caleb Dando-Haenisch (2023): Undergraduate at American University
- o Radia Islam (2023): Undergraduate at University of Texas, Austin
- o Amber Wong (2023): Undergraduate at University of California, Irvine
- o Shane O'Brien (2023): Undergraduate at University of California, Irvine
- o Andrew Hotnisky (2023 –): Undergraduate at Pennsylvania State University
- o Fogofoluwa Adeniyan (2024): Undergraduate at Brightpoint Community College
- o Nachiket Yadav (2024 -): Undergraduate at University of Texas, Austin
- o Mitchell Shadden (2024): Undergraduate at University of Texas, Austin
- o Maya Vigil (2024): Undergraduate at University of Texas, Austin

Co-advised:

- o Megan Delamer (2022 2023): PhD student at Pennsylvania State University
- o Pinchen Fan (2022 2023): PhD student at Pennsylvania State University
- Lia Marta Bernabò (2023 2024): PhD student at Institute of Planetary Research DLR (Germany)
- o Varghese Reji (2023): PhD student at Tata Institute of Fundamental Research (India)
- o Te Han (2023): PhD student at University of California, Irvine

Academic Service

STScI JWST Telescope Allocation Committee (TAC)

Discussion Panelist

NSF's NOIRLab Telescope Time Allocation Committee

Panelist, Chair

NASA Exoplanets Research Program (XRP)

Panelist, Executive Secretary

Canadian Time Allocation Committee (CanTAC)

Technical Reviewer

Nature, ApJ, AJ, MNRAS, International Journal of Astrobiology

Referee

Carnegie EPL Astro Seminars

Organizer 2023 – Now

Emerging Researchers in Exoplanet Sciences IV, VII

Organizing Committee 2018, 2022

Teaching

Teaching probabilistic programming

Pennsylvania State University

State College, USA

2021 and 2022

Developed and taught a course on probabilistic programming, and statistical inference using the Hamiltonian Monte Carlo Python code: PyMC3 and package exoplanet.

Teaching Assistant for Astronomy lab

Providence, USA Jan 2016 – Apr 2016

Brown University

Lab assistant for basic astronomy lab course.

Software Development

- o pyastrotools: Repository with set of astronomy helper functions 🗘
- o barycorrpy: Python package for precise barycentric and timing corrections. (Kanodia and Wright, 2018; Wright and Kanodia, 2020).
- o MRExo: Nonparametric tool used to fit 2-D, 3-D and 4-D mass- radius+ relationships using beta density functions. (Kanodia et al. 2019, 2023).

Outreach

In addition to regular Astronomy open nights and public events at each of my host institutions, I have contributed to the following:

o Public Talks:

- National Capital Astronomers: Washington DC, USA, A Gas-giant planet orbiting a Dwarf Star: An extreme Instance of Planet Formation, 2024
- Astronomy on Tap: State College, USA, Digging through the Cosmic Haystack, 2019
- Nerd Nite: Webster's Cafe, State College, USA, Searching for other worlds, other life, 2019
- Nehru Planetarium, Mumbai, India, Finding Earth 2.0, 2018

• Education:

- Volunteered for Carnegie Academy of Science (CASE): First Light science program for middle-school kids (2022 23)
- Volunteered for Astrofest: Penn State Department of Astronomy Annual outreach event (2017 2019)
- Volunteered with Brown Cubesat Educational Outreach Saturday STEM program at West Broadway Middle School to communicate Science and Physics to students. (2015 2016)
- Volunteered at Umang Foundation, Mumbai: Teaching underprivileged children basic Mathematics and English. (2012 2014)

Professional Talks

- Planetary Seminar, ETH Zurich, June 2024
- o Planetary Seminar, University of Zurich, June 2024
- o Open Problems in the Astrophysics of Gas Giants Conference, Chile, December 2023
- Planetary Seminar, University of Maryland, November 2023
- o American University Physics Colloquium, November 2023
- o Steward Observatory/NSF's NOIRLab Joint Colloquium, October 2023
- o DAA Seminar, Tata Institute for Fundamental Research, Mumbai, August 2023
- o Strange New Worlds Conference, Pune, August 2023
- o Origins of Solar Systems, Gordon Research Seminar, June 2023
- o EPL General Seminar, Carnegie EPL, February 2023
- School of Earth and Planetary Sciences (SEPS), NISER Bhubaneshwar, March 2023

- o SPIE Astronomical Telescopes + Instrumentation, Montreal, August 2022
- o DAA Seminar, Tata Institute for Fundamental Research, Mumbai, March 2022
- o EPL Astronomy Seminar, Carnegie EPL, October 2021
- o PSU Center for Exoplanets and Habitable Worlds Seminar, PSU, September 2021
- o NASA Goddard Extrasolar Planets Seminar, NASA Goddard, September 2021
- o Order of the Octopus, PSU, July 2021
- o PSETI Seminar, PSU, October 2020
- o NASA Technosignatures Workshop, USRA, September 2018
- o Emerging Researchers in Exoplanet Science Symposium, PSU, June 2018

Publications

First Author (Refereed): 15 (11); Significant Contributions: 22 [ADS]

Total Citations: 1419 on 18 November, 2024. Mentee Publications are indicated with *

First Author

- 15. **S. Kanodia**, *Transiting Jupiters around M-dwarfs have similar masses to FGK warm-Jupiters*, Submitted to AAS Journals
- 14. **S. Kanodia**, C. Cañas, S. Mahadevan, et al., *Searching for Giant Exoplanets around M-dwarf Stars (GEMS) I: Survey Motivation*, AJ, 167, 4, 2024 [ADS]
- 13. **S. Kanodia**, A. Gupta, C. Cañas, et al., *Searching for GEMS: Characterizing Six Giant Planets Around Cool Dwarfs*, AJ, 168, 6, 2024 [ADS]
- 12. **S. Kanodia**, S. Mahadevan, J. Libby-Roberts, et al., *TOI-5205b: A Short-period Jovian Planet Transiting a Mid-M Dwarf*, AJ, 165, 3, 2023 [ADS]
- 11. **S. Kanodia**, A. Lin, E. Lubar, et al., *Stable Fiber-illumination for Extremely Precise Radial Velocities with NEID*, AJ, 166, 3, 2023 [ADS]
- 10. **S. Kanodia**, M. He, E. Ford, et al., *Beyond Two-dimensional Mass–Radius Relationships: A Nonparametric and Probabilistic Framework for Characterizing Planetary Samples in Higher Dimensions*, ApJ, 956, 2, 2023 [ADS]
- 9. **S. Kanodia**, L. Ramsey, M. Maney, et al., *High-resolution Near-infrared Spectroscopy of a Flare around the Ultracool Dwarf vB 10*, ApJ, 925, 2, 2022 [ADS]
- 8. **S. Kanodia**, J. Libby-Roberts, C. Cañas, et al., *TOI-3757 b: A Low-density Gas Giant Orbiting a Solar-metallicity M Dwarf*, AJ, 164, 3, 2022 [ADS]
- 7. **S. Kanodia**, G. Stefansson, C. Cañas, et al., *TOI-532b: The Habitable-zone Planet Finder confirms a Large Super Neptune in the Neptune Desert orbiting a metal-rich M-dwarf host*, AJ, 162, 4, 2021 [ADS]
- 6. **S. Kanodia**, S. Halverson, J. Ninan, et al., *A Harsh Test of Far-field Scrambling with the Habitable-zone Planet Finder and the Hobby-Eberly Telescope*, ApJ, 912, 1, 2021 [ADS]
- 5. **S. Kanodia**, C. Cañas, G. Stefansson, et al., *TOI-1728b: The Habitable-zone Planet Finder Confirms a Warm Super-Neptune Orbiting an M-dwarf Host*, ApJ, 899, 1, 2020 [ADS]
- 4. **S. Kanodia**, J. Ninan, A. Monson, et al., *Ghosts of NEID's past*, SPIE, 11447, 2020 [ADS]
- 3. **S. Kanodia**, A. Wolfgang, G. Stefansson, et al., *Mass-Radius Relationship for M Dwarf Exo-* planets: Comparing Nonparametric and Parametric Methods, ApJ, 882, 1, 2019 [ADS]
- 2. **S. Kanodia**, and J. Wright, *Python Leap Second Management and Implementation of Precise Barycentric Correction (barycorrpy)*, RNAAS, 2, 1, 2018 [ADS]
- 1. **S. Kanodia**, S. Mahadevan, L. Ramsey, et al., *Overview of the spectrometer optical fiber feed for the habitable-zone planet finder*, SPIE, 10702, 2018 [ADS]

Significant Contributions

22. A. Hotnisky, **S. Kanodia**, J. Libby-Roberts, et al., *Searching for GEMS: Two Super-Jupiters around M-dwarfs – Signatures of Instability or Accretion?*, arXiv e-prints, None, 2024 [ADS]

- 21. *V. Reji, **S. Kanodia**, J. Ninan, et al., *Searching for GEMS: TOI-5688 A b, a low-density giant orbiting a high-metallicity early M-dwarf*, arXiv e-prints, None, 2024 [ADS]
- 20. G. Stefansson, S. Mahadevan, J. Winn, et al., *Gaia-4b and 5b: Radial Velocity Confirmation of Gaia Astrometric Orbital Solutions Reveal a Massive Planet and a Brown Dwarf Orbiting Low-mass Stars*, arXiv e-prints, None, 2024 [ADS]
- 19. *T. Han, P. Robertson, **S. Kanodia**, et al., *TOI-5344 b: A Saturn-like Planet Orbiting a Super-solar Metallicity M0 Dwarf*, AJ, 167, 1, 2024 [ADS]
- 18. *M. Delamer, **S. Kanodia**, C. Cañas, et al., *TOI-4201: An Early M Dwarf Hosting a Massive Transiting Jupiter Stretching Theories of Core Accretion*, ApJ, 962, 2, 2024 [ADS]
- 17. *L. Bernabò, **S. Kanodia**, C. Canas, et al., *Searching for GEMS: TOI-6383Ab, a giant planet transiting an M3-dwarf star in a binary system*, arXiv e-prints, None, 2024 [ADS]
- S. Sheikh, S. Kanodia, E. Lubar, et al., A Green Bank Telescope Search for Narrowband Technosignatures between 1.1 and 1.9 GHz During 12 Kepler Planetary Transits, AJ, 165, 2, 2023 [ADS]
- 15. G. Stefánsson, S. Mahadevan, Y. Miguel, et al., A Neptune-mass exoplanet in close orbit around a very low-mass star challenges formation models, Science, 382, 6674, 2023 [ADS]
- C. Cañas, S. Kanodia, J. Libby-Roberts, et al., TOI-3984 A b and TOI-5293 A b: Two Temperate Gas Giants Transiting Mid-M Dwarfs in Wide Binary Systems, AJ, 166, 1, 2023 [ADS]
- 13. *M. Lambert, C. Bender, **S. Kanodia**, et al., *TOI-5375 B: A Very Low Mass Star at the Hydrogen-burning Limit Orbiting an Early M-type Star*, AJ, 165, 5, 2023 [ADS]
- 12. A. Boss, and **S. Kanodia**, Forming Gas Giants around a Range of Protostellar M-dwarfs by Gas Disk Gravitational Instability, ApJ, 956, 1, 2023 [ADS]
- 11. J. Libby-Roberts, M. Schutte, L. Hebb, et al., *An In-depth Look at TOI-3884b: A Super-Neptune Transiting an M4Dwarf with Persistent Starspot Crossings*, AJ, 165, 6, 2023 [ADS]
- 10. C. Beard, P. Robertson, **S. Kanodia**, et al., *TOI-1696 and TOI-2136: Constraining the Masses of Two Mini-Neptunes with the Habitable-Zone Planet Finder*, AJ, 163, 6, 2022 [ADS]
- 9. A. Lin, A. Monson, S. Mahadevan, et al., *Observing the Sun as a Star: Design and Early Results from the NEID Solar Feed*, AJ, 163, 4, 2022 [ADS]
- 8. C. Beard, P. Robertson, **S. Kanodia**, et al., *GJ 3929: High-precision Photometric and Doppler Characterization of an Exo-Venus and Its Hot, Mini-Neptune-mass Companion*, ApJ, 936, 1, 2022 [ADS]
- 7. C. Cañas, **S. Kanodia**, C. Bender, et al., *TOI-3714 b and TOI-3629 b: Two Gas Giants Transiting M Dwarfs Confirmed with the Habitable-zone Planet Finder and NEID*, AJ, 164, 2, 2022 [ADS]
- 6. C. Schwab, A. Monson, **S. Kanodia**, et al., *The NEID spectrometer: fibre injection system design*, SPIE, 11447, 2020 [ADS]
- 5. G. Stefánsson, R. Kopparapu, A. Lin, et al., A Mini-Neptune and a Radius Valley Planet Orbiting the Nearby M2 Dwarf TOI-1266 in Its Venus Zone: Validation with the Habitable-zone Planet Finder, AJ, 160, 6, 2020 [ADS]

- 4. J. Wright, and **S. Kanodia**, *Barycentric Corrections for Precise Radial Velocity Measurements of Sunlight*, PSJ, 1, 2, 2020 [ADS]
- 3. C. Cañas, G. Stefansson, **S. Kanodia**, et al., *A Warm Jupiter Transiting an M Dwarf: A TESS Single-transit Event Confirmed with the Habitable-zone Planet Finder*, AJ, 160, 3, 2020 [ADS]
- 2. A. Metcalf, T. Anderson, C. Bender, et al., *Stellar spectroscopy in the near-infrared with a laser frequency comb*, Optica, 6, 2, 2019 [ADS]
- 1. J. Wright, **S. Kanodia**, and E. Lubar, *How Much SETI Has Been Done? Finding Needles in the n-dimensional Cosmic Haystack*, AJ, 156, 6, 2018 [ADS]

Co-Author

- 40. A. Gupta, J. Luhn, J. Wright, et al., *The NEID Earth Twin Survey. I. Confirmation of a 31-day planet orbiting HD 86728*, arXiv e-prints, None, 2024 [ADS]
- 39. E. Ford, C. Bender, C. Blake, et al., *Earths within Reach: Evaluation of Strategies for Mitigating Solar Variability using 3.5 years of NEID Sun-as-a-Star Observations*, arXiv e-prints, None, 2024 [ADS]
- 38. J. Dong, A. Chontos, G. Zhou, et al., *Origins of Super Jupiters: TOI-2145b Has a Moderately Eccentric and Nearly Aligned Orbit*, arXiv e-prints, None, 2024 [ADS]
- 37. C. Beard, P. Robertson, M. Giovinazzi, et al., *Utilizing Photometry from Multiple Sources to Mitigate Stellar Variability in Precise Radial Velocities: A Case Study of Kepler-21*, AJ, 168, 4, 2024 [ADS]
- 36. E. Fitzmaurice, G. Stefánsson, R. Kavanagh, et al., *Astrometry and Precise Radial Velocities Yield a Complete Orbital Solution for the Nearby Eccentric Brown Dwarf LHS 1610 b*, AJ, 168, 3, 2024 [ADS]
- 35. S. Jones, G. Stefánsson, K. Masuda, et al., *TOI-2015 b: A Warm Neptune with Transit Timing Variations Orbiting an Active Mid-type M Dwarf*, AJ, 168, 2, 2024 [ADS]
- 34. M. Battley, K. Collins, S. Ulmer-Moll, et al., NGTS-30b/TOI-4862b: An 1 Gyr old 98-day transiting warm Jupiter, Astronomy and Astrophysics, 686, 2024 [ADS]
- 33. A. Alqasim, N. Grieves, N. Rosário, et al., *TOI-757 b: an eccentric transiting mini-Neptune on a 17.5-d orbit*, Monthly Notices of the Royal Astronomical Society, 533, 1, 2024 [ADS]
- 32. A. Gupta, S. Millholland, H. Im, et al., *A hot-Jupiter progenitor on a super-eccentric retrograde orbit*, Nature, 632, 8023, 2024 [ADS]
- 31. X. Wang, M. Rice, S. Wang, et al., Single-star Warm-Jupiter Systems Tend to Be Aligned, Even around Hot Stellar Hosts: No T _{eff}- Dependency, ApJ, 973, 1, 2024 [ADS]
- 30. J. Dong, S. Wang, M. Rice, et al., *TOI-1859b: A 64 Day Warm Jupiter on an Eccentric and Misaligned Orbit*, ApJ, 951, 2, 2023 [ADS]
- 29. L. Powers, J. Libby-Roberts, A. Lin, et al., *TOI-3785 b: A Low-density Neptune Orbiting an M2-dwarf Star*, AJ, 166, 2, 2023 [ADS]
- 28. A. Lin, J. Libby-Roberts, J. Alvarado-Montes, et al., *The Unusual M-dwarf Warm Jupiter TOI-1899 b: Refinement of Orbital and Planetary Parameters*, AJ, 166, 3, 2023 [ADS]
- 27. J. Lubin, X. Wang, M. Rice, et al., *TOI-1670 c, a 40 day Orbital Period Warm Jupiter in a Compact System, Is Well Aligned*, ApJ, 959, 1, 2023 [ADS]
- 26. R. Frazier, G. Stefánsson, S. Mahadevan, et al., *NEID Reveals That the Young Warm Neptune TOI-2076 b Has a Low Obliquity*, ApJ, 944, 2, 2023 [ADS]

- 25. A. Gupta, J. Jackson, G. Hébrard, et al., *A High-Eccentricity Warm Jupiter Orbiting TOI-4127*, AJ, 165, 6, 2023 [ADS]
- 24. L. Zhao, X. Dumusque, E. Ford, et al., *The Extreme Stellar-signals Project. III. Combining Solar Data from HARPS, HARPS-N, EXPRES, and NEID*, AJ, 166, 4, 2023 [ADS]
- 23. M. Reefe, R. Luque, E. Gaidos, et al., A Close-in Puffy Neptune with Hidden Friends: The Enigma of TOI 620, AJ, 163, 6, 2022 [ADS]
- 22. R. Terrien, A. Keen, K. Oda, et al., *Rotational Modulation of Spectroscopic Zeeman Signatures in Low-mass Stars*, ApJ, 927, 1, 2022 [ADS]
- 21. S. Logsdon, M. Wolf, D. Li, et al., *The NEID port adapter: on-sky performance*, SPIE, 12184, 2022 [ADS]
- 20. A. Gupta, J. Luhn, J. Wright, et al., *Detection of p-mode Oscillations in HD 35833 with NEID and TESS*, AJ, 164, 6, 2022 [ADS]
- 19. J. Dong, C. Huang, G. Zhou, et al., *NEID Rossiter-McLaughlin Measurement of TOI-1268b:*A Young Warm Saturn Aligned with Its Cool Host Star, ApJ, 926, 2, 2022 [ADS]
- 18. A. Ghosh, S. Sharma, J. Ninan, et al., *Gaia 20eae: A Newly Discovered Episodically Accreting Young Star*, ApJ, 926, 1, 2022 [ADS]
- 17. C. Cañas, S. Mahadevan, W. Cochran, et al., A Hot Mars-sized Exoplanet Transiting an M Dwarf, AJ, 163, 1, 2022 [ADS]
- 16. G. Stefànsson, S. Mahadevan, C. Petrovich, et al., *The Warm Neptune GJ 3470b Has a Polar Orbit*, ApJ, 931, 2, 2022 [ADS]
- 15. A. Gupta, C. Bender, J. Ninan, et al., Real-time exposure control and instrument operation with the NEID spectrograph GUI, SPIE, 12189, 2022 [ADS]
- 14. C. Cañas, S. Mahadevan, C. Bender, et al., *An Eccentric Brown Dwarf Eclipsing an M dwarf*, AJ, 163, 2, 2022 [ADS]
- 13. A. Gupta, J. Wright, P. Robertson, et al., *Target Prioritization and Observing Strategies for the NEID Earth Twin Survey*, AJ, 161, 3, 2021 [ADS]
- 12. S. Mahadevan, G. Stefánsson, P. Robertson, et al., *The Habitable-zone Planet Finder Detects a Terrestrial-mass Planet Candidate Closely Orbiting Gliese 1151: The Likely Source of Coherent Low-frequency Radio Emission from an Inactive Star*, ApJ, 919, 1, 2021 [ADS]
- 11. J. Lubin, P. Robertson, G. Stefansson, et al., *Stellar Activity Manifesting at a One-year Alias Explains Barnard b as a False Positive*, AJ, 162, 2, 2021 [ADS]
- 10. S. Vissapragada, G. Stefánsson, M. Greklek-McKeon, et al., *A Search for Planetary Metastable Helium Absorption in the V1298 Tau System*, AJ, 162, 5, 2021 [ADS]
- 9. V. Krishnamurthy, T. Hirano, G. Stefánsson, et al., *Nondetection of Helium in the Upper Atmospheres of TRAPPIST-1b, e, and f, AJ, 162, 3, 2021 [ADS]*
- 8. P. Robertson, G. Stefansson, S. Mahadevan, et al., *Persistent Starspot Signals on M Dwarfs: Multiwavelength Doppler Observations with the Habitable-zone Planet Finder and Keck/HIRES*, ApJ, 897, 2, 2020 [ADS]
- 7. G. Stefansson, S. Mahadevan, M. Maney, et al., *The Habitable Zone Planet Finder Reveals a High Mass and Low Obliquity for the Young Neptune K2-25b*, AJ, 160, 4, 2020 [ADS]
- 6. A. Roy, S. Halverson, S. Mahadevan, et al., *Solar Contamination in Extreme-precision Radial-velocity Measurements: Deleterious Effects and Prospects for Mitigation*, AJ, 159, 4, 2020 [ADS]

- 5. J. Ninan, G. Stefansson, S. Mahadevan, et al., Evidence for He I 10830 Å Absorption during the Transit of a Warm Neptune around the M-dwarf GJ 3470 with the Habitable-zone Planet Finder, ApJ, 894, 2, 2020 [ADS]
- 4. G. Stefansson, C. Cañas, J. Wisniewski, et al., *A Sub-Neptune-sized Planet Transiting the M2.5 Dwarf G 9-40: Validation with the Habitable-zone Planet Finder*, AJ, 159, 3, 2020 [ADS]
- 3. P. Robertson, T. Anderson, G. Stefansson, et al., *Ultrastable environment control for the NEID spectrometer: design and performance demonstration*, JATIS, 5, 2019 [ADS]
- 2. J. Ninan, C. Bender, S. Mahadevan, et al., *The Habitable-Zone Planet Finder: improved flux image generation algorithms for H2RG up-the-ramp data*, SPIE, 10709, 2018 [ADS]
- 1. G. Stefansson, S. Mahadevan, L. Hebb, et al., *Toward Space-like Photometric Precision from the Ground with Beam-shaping Diffusers*, ApJ, 848, 1, 2017 [ADS]