Natasha E. Batalha

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natashabatalha.github.io

Studies planetary atmospheres at the nexus of observation and theory, with planets within the Solar System and beyond. Leverages and develops theoretical models to determine atmospheric properties from spectroscopic observations of exoplanets and Brown Dwarfs.

Appointments

- **NASA Ames Research Center** — **Moffett Field, CA**
  Research Scientist — *Oct 2019 – present*
- **University of California Santa Cruz** — **Santa Cruz, CA**
  UC President's Postdoctoral Fellow — *Sep 2018 – Sep 2019*
- **Space Telescope Science Institute** — **Baltimore, MD**
  Postdoc Science Mission Office — *Aug 2017 - Aug 2018*

Education

- **The Pennsylvania State University** — **State College, PA**
  Dual PhD, Astronomy/Astrophysics & Astrobiology — *2017*
  Dissertation: A Synergistic Approach to Interpreting Planetary Atmospheres
- **Cornell University** — **Ithaca, NY**
  B.A., Physics — *2013*

Awards, Fellowships

- **2020**: Evans Visiting Lectureship in Exoplanet Science, UC Irvine
- **2018**: University California Postdoctoral Fellowship
- **2017**: Ford Foundation Fellow, Honorable Mention
- **2017**: Alfred P. Sloan Foundation Minority Graudate Scholarship
- **2016**: Kavli Student Fellow
- **2015**: National Astrobiology Early Career Collaboration Award
- **2015**: Stephen B. Brumback Graduate Fellowship in Astrophysics
- **2014**: National Science Foundation Graduate Research Fellowship
- **2013**: STEM Scholar Graduate Fellow

Open Source Projects | GitHub: ☆46 ⑂38 ⬇1,661 | Zenodo: ⬇2,719

- `PICASO`: `https://natashabatalha.github.io/picaso`
  Enables computation of reflected light, thermal, and transmission spectroscopy for exoplanets and Brown Dwarfs.

- **PandExo**: https://natashabatalha.github.io/PandExo
  Enables simulations of JWST and HST observations.
- **Virga**: https://natashabatalha.github.io/Virga
  Enables theoretical modeling of exoplanet and Brown Dwarf clouds.

Publications | 11/25 1st author | h-index:15

1. **2021**: Mukherjee, S., Batalha, N. E., & Marley, M. S. 2021, arXiv e-prints, arXiv:2102.05305. 2102.05305 (in press ApJ)
2. **2021**: Gan, T., Wang, S. X., Teske, J. K., et al. 2021, MNRAS, 501, 6042, 10.1093/mnras/staa3886
3. **2020**: Lewis, N. K., Wakeford, H. R., MacDonald, R. J., et al. 2020, ApJL, 902, L19, 10.3847/2041-8213/abb77f
4. **2020**: Hayworth, B. P. C., Kopparapu, R. K., Haqq-Misra, J., et al. 2020, Icarus, 345, 113770, 10.1016/j.icarus.2020.113770
5. **2019**: Wakeford, H. R., Lewis, N. K., Fowler, J., et al. 2019, AJ, 157, 11, 10.3847/1538-3881/aaf04d
6. **2019**: Mayorga, L. C., Batalha, N. E., Lewis, N. K., & Marley, M. S. 2019, AJ, 158, 66, 10.3847/1538-3881/ab29fa
7. **2019**: Batalha, N. E., Marley, M. S., Lewis, N. K., & Fortney, J. J. 2019b, ApJ, 878, 70, 10.3847/1538-4357/ab1b51
8. **2019**: Batalha, N. E., Lewis, T., Fortney, J. J., et al. 2019a, ApJL, 885, L25, 10.3847/2041-8213/ab4909
9. **2019**: Batalha, N. E., Smith, A. J. R. W., Lewis, N. K., et al. 2018c, AJ, 156, 158, 10.3847/1538-3881/aad59d
10. **2018**: Moran, S. E., Hörst, S. M., Batalha, N. E., Lewis, N. K., & Wakeford, H. R. 2018, AJ, 156, 252, 10.3847/1538-3881/aae83a
11. **2018**: Blumenthal, S. D., Mandell, A. M., Hébrard, E., et al. 2018, ApJ, 853, 138, 10.3847/1538-4357/aa9e51
12. **2018**: Batalha, N. E., Lewis, N. K., Line, M. R., Valenti, J., & Stevenson, K. 2018b, ApJL, 856, L34, 10.3847/2041-8213/aab896
13. **2018**: —. 2018a, EPSL, 484, 415, 10.1016/j.epsl.2017.12.018
14. **2018**: Kempton, E. M. R., Bean, J. L., Louie, D. R., et al. 2018, PASP, 130, 114401, 10.1088/1538-3873/aadf6f
15. **2018**: Bean, J. L., Stevenson, K. B., Batalha, N. M., et al. 2018, PASP, 130, 114402, 10.1088/1538-3873/aadbf3
16. **2017**: Batalha, N. E., & Line, M. R. 2017, AJ, 153, 151, 10.3847/1538-3881/aa5faa
17. **2017**: Christiansen, J. L., Vanderburg, A., Burt, J., et al. 2017, AJ, 154, 122, 10.3847/1538-3881/aa832d
18. **2017**: Batalha, N. E., Kempton, E. M. R., & Mbarek, R. 2017a, ApJL, 836, L5, 10.3847/2041-8213/aa5c7d
19. **2017**: Batalha, N. E., Mandell, A., Pontoppidan, K., et al. 2017b, PASP, 129, 064501, 10.1088/1538-3873/aa65b0
20. **2016**: Haqq-Misra, J., Kopparapu, R. K., Batalha, N. E., Harman, C. E., & Kasting, J. F. 2016, ApJ, 827, 120, 10.3847/0004-637X/827/2/120
21. **2016**: Batalha, N. E., Kopparapu, R. K., Haqq-Misra, J., & Kasting, J. F. 2016, Earth and Planetary Science Letters, 455, 7, 10.1016/j.epsl.2016.08.044
22. **2015**: Batalha, N., Kalirai, J., Lunine, J., Clampin, M., & Lindler, D. 2015b, arXiv e-prints, arXiv:1507.02655. 1507.02655
23. **2015**: Batalha, N., Domagal-Goldman, S. D., Ramirez, R., & Kasting, J. F. 2015a, Icarus, 258, 337, 10.1016/j.icarus.2015.06.016

24. **2015**: Cowan, N. B., Greene, T., Angerhausen, D., et al. 2015, PASP, 127, 311, 10.1086/680855
25. **2011**: Agüeros, M. A., Covey, K. R., Lemonias, J. J., et al. 2011, ApJ, 740, 110, 10.1088/0004-637X/740/2/110

Awarded Grants & Observing Time

- **2020**: Co-I | Interdisciplinary Consortia for Astrobiology Research
  The M-dwarf Opportunity: Characterizing Nearby M-dwarf Habitable Zone Planets. PI: Stevenson, K.
- **2020**: Co-I | Interdisciplinary Consortia for Astrobiology Research
  Follow the Volatiles: Tracing chemical species relevant to habitability from proto-planetary disks to exoplanet atmospheres. PI: Batalha, N.M.
- **2020**: Co-I | HST-GO-16180
  Constructing the First Spectroscopic, Multi-Dimensional Map of a Hot Jupiter. PI: Kataria, T
- **2020**: Co-I | Gemini 2020-LP
  A high-resolution survey of molecular abundances in transiting exoplanet atmospheres. PI: Mansfield, M.
- **2019**: Collaborator | Planetary Data Archiving, Restoration, and Tools
  Enhancing capabilities of the HITRAN and HITEMP molecular spectroscopic databases for planetary research. PI:Gordon, I.
- **2019**: Science PI | NASA Unsolicited Proposal
  Community Tool for Computing, Manipulating and Visualizing Molecular and Atomic Opacities. PI:Lewis, N.K.
- **2017**: Co-I | JWST-ERS-1366
  The Transiting Exoplanet Community Early Release Science Program. PI: Batalha, N.M.
- **2017**: Co-I | HST-GO-14918
  Definitive Measurement of WASP-17b's Water Abundance in Preparation of JWST. PI: Wakeford, H.R.

Professional Service

Referee:	AAS, MNRAS	Panelist:	TESS, HST, ROSES
Member:	AAS, DPS, SACNAS	Organizer:	ERES, AbGradCon
Committees:	ExoPAG Executive Committee		ExoExplorers, Bay Area Exo Mtg.
	PDS User Committee		

Broader Impacts

- **2018-2020**: Python Instructor, Evergreen Valley College - Citizen Science Initiative
  501(c)3 with the goal of increasing BIPOC students in STEM.
- **2017**: Instructor, Project Favela
  501(c)3 with the goal of providing education to students in Rocinha, one of Brazil's largest favelas.
- **2014-2017**: Instructor, Centre County Prison Society Education Program
  501(c)3 with the goal of providing education within the prison system.
- **2013-2017**: Director of Programs, Learn to Be Foundation
  501(c)3 with the goal of providing K-12 students with free 1-on-1 online tutoring

Invited Talks, Seminars, Panels & Colloquia

- **July 2021**: Sagan Summer Workshop
- **Aug. 2021**: ASA-HITRAN
- **June 2021**: Scialog: Signatures of Life in the Universe

- **Apr. 2021**: College of Science Seminar Series, San Jose State University
- **Nov. 2020**: Astronomy & Astrophysics Colloquium, Caltech Institute of Technology
- **July 2020**: Sagan Summer Workshop
- **Dec. 2019**: OWL @ ETH - paving the way to the atmospheric characterization of terrestrial exoplanets
- **Dec. 2019**: Department of Astronomy Colloquium, University of Michigan
- **Nov. 2019**: Carnegie Observatory Colloquium, Pasadena, CA
- **Jul. 2019**: Moonshots and Earthshots in the Search for Life Beyond Earth, Green Bank, WV
- **Dec. 2018**: Department of Astrobiology Colloquium, University of Washington
- **Nov. 2018**: Department of Space Sciences Planetary Lunch Seminar, Cornell University
- **Nov. 2018**: Stars and Planets Seminar Series, Harvard Center for Astrophysics
- **Oct. 2018**: Department of Astronomy & Astrophysics, University of California Santa Cruz
- **Oct. 2018**: Department of Physics Colloquium, University of California Merced
- **Jun. 2018**: Panelist at Emerging Researchers in Exoplanets Symposium
- **Jun. 2018**: Planetary Exploration Group Seminar, JHU Applied Physics Lab
- **Feb. 2018**: George Mason University Observatory Public Lecture, Fairfax, VA
- **Jul. 2017**: Enabling Transiting Exoplanet Observations with JWST Workshop, Space Telescope Science Institute
- **Feb. 2017**: School of Earth and Space Exploration Seminar, Arizona State University
- **Aug. 2016**: Planetary Systems: A Synergistic View, Quy Nhon, Vietnam
- **Aug. 2016**: Department of Terrestrial Magnetism Colloquium, Carnegie Institute
- **Mar. 2016**: Planetary Lunch Seminar, Goddard Space Flight Center
- **Mar. 2016**: Planetary Lunch Seminar, Center for Exoplanets and Habitable Worlds, The Pennsylvania State University
- **Feb. 2016**: Seminar, Jet Propulsion Laboratory
- **May 2015**: Special Seminar to The Pennsylvania State Board of Visitors
- **May 2015**: Special Seminar to The Pennsylvania State Dean of Eberly College of Science Advisory Committee

Contributed Talks

Sept. 2019: Bay Area Exoplanet Meeting, NASA Ames, CA

Aug. 2019: Extreme Solar Systems IV, Reykjavik, Iceland

Dec. 2018 : Bay Area Exoplanet Meeting, NASA Ames, CA

Sept. 2018: Bay Area Exoplanet Meeting, NASA Ames, CA

Jul. 2018: Exoplanets II, Cambridge, UK

May. 2018: Chesapeake Bay Area Exoplanet Meeting, Carnegie DTM, MD

Jan. 2018: Winter AAS Conference, Washington DC

Jan. 2017: Winter AAS Conference, Grapevine, Texas

Oct. 2016: Division of Planetary Sciences Conference, Pasadena, CA

Jan. 2014 : Winter AAS Conference, Washington, DC