

Contact

E-mail: natasha.e.batalha@nasa.gov

Website: <http://natashabatalha.github.io>

Github: <http://github.com/natashabatlha>

Education

- 2017 **Pennsylvania State University**, State College, PA
Dual PhD, Astronomy and Astrophysics and Astrobiology
“A Synergistic Approach to Interpreting Planetary Atmospheres”
Supervised by James F. Kasting, Steinn Sigurdsson
- 2013 **Cornell University**, Ithaca, NY
B.A., Physics
University of New South Wales, Sydney, Australia
Abroad Honors Thesis, Physics and Astronomy

Appointments

- 2019-- **NASA Ames Research Center**, Moffett Field, CA
Research Scientist
- 2018 **University of California Santa Cruz**, Santa Cruz, CA
UC President’s Postdoctoral Fellowship
- 2017 **Space Telescope Science Institute**, Baltimore, MD
Postdoctoral Fellow in Science Mission Office

Awards and Fellowships

- 2018 University of California President’s Postdoctoral Fellowship
- 2017 Ford Foundation Fellowship, Honorable Mention
- 2016-2017 Alfred P. Sloan Foundation’s Minority Graduate Scholarship
- 2016 Kavli Student Fellow
- 2015 NAI Early Career Collaboration Award
- 2015 Stephen B. Brumbach Graduate Fellowship in Astrophysics
- 2014-2017 National Science Foundation Graduate Research Fellowship
- 2013 STEM Scholar Graduate Fellow
- 2012 Douglas and Dorothy K. Wood Scholarship
- 2011 NASA/NY Space Grant Consortium

1st Author Publications

- 2019 **Batalha, N.E.**, Marley, M., Lewis, N.K., Fortney, J.J., *Exoplanet Reflected Light Spectroscopy with PICASO* ApJ, 878, 1, <https://arxiv.org/abs/1904.09355>,
Batalha, N.E., Lewis, T., Fortney, J.J., Batalha, N.M., et al., *The Precision of Mass Measurements Required for Robust Atmospheric Characterization of Transiting Exoplanets*, ApJL, 885, 1, <https://arxiv.org/pdf/1910.00076.pdf>
- 2018 **Batalha, N.E.**, Smith, A., Lewis, N.K., Marley, M., Fortney, J. *Color Classification of Extrasolar Giant Planets: Prospects and Cautions*, AJ, 156, 158 <https://arxiv.org/abs/1807.08453>
Batalha, N.E., Lewis, N.K., Line, M.R. et al. *Strategies for Constraining the Atmospheres of Temperate Terrestrial Planets with JWST*, ApJL, 856, 34 <https://arxiv.org/abs/1803.07983>

- Batalha, N.E.**, et al., *Reply to Shaw*. EPSL, 484, 415-417
- 2017 **Batalha, N.E.**, et al., *PandExo: A Community Tool for Exoplanet Science with the JWST and HST*. PASP, 129, 064501 <https://arxiv.org/abs/1702.01820>
- Batalha, N.E.**, Kempton, E., & Mbarek, R., *Challenges in Constraining Exoplanet Masses via Transmission Spectroscopy*, 2017, ApJL, 836, L5, <https://arxiv.org/abs/1701.00012>
- Batalha, N.E.**, & Line, M.R., *Information Content Analysis for Selection of Optimal JWST Observing Modes for Transiting Exoplanet Atmospheres*. ApJ, 153, 4, <https://arxiv.org/abs/1612.02085>
- 2016 **Batalha, N.E.**, et al., *Climate Cycling on Early Mars Caused by the Carbonate-Silicate Cycle*. EPSL, 455, 7-13 <https://arxiv.org/abs/1609.00602>
- 2015 **Batalha, N.E.**, et al., *Testing the Early Mars H₂-CO₂ Greenhouse Hypothesis with a 1-D Photochemical Model*. Icarus, 258, 337-349 <https://arxiv.org/abs/1507.02569>
- 2014 **Batalha, N.E.**, et al. *Transiting Exoplanet Simulations with the James Webb Space Telescope*. JWST White Paper, <https://arxiv.org/abs/1507.02655>

Co-authored Publications

- 2019 Mayorga, L.C., **Batalha, N.E.**, Lewis, N.K., Marley, M., *Reflected Light Phase Curves in the TESS Era*. AJ, 158, 66,
- Wakeford, H.W., 6 others, **Batalha, N.E.**, et al. *Disentangling the Planet from the Star in Late-Type M Dwarfs: A Case Study of TRAPPIST-1g*, AJ, 157, 11 <https://arxiv.org/abs/1811.04877>
- 2018 Kempton, Eliza M.R., 13 others, **Batalha, N.E.** et al. *A Framework for Prioritizing the TESS Planetary Candidates Most Amenable to Atmospheric Characterization*, PASP, 130, 114401 <https://arxiv.org/abs/1805.03671>
- Moran, S.E., Horst, S.M., **Batalha, N.E.**, et al. *Limits on Clouds and Hazes for TRAPPIST-1 Planets*, AJ, 156, 252 <https://arxiv.org/abs/1810.05210>
- Bean, Jacob, 13 others, **Batalha, N.E.** et al., *The Transiting Exoplanet Community Early Release Science Program for JWST*. PASP, 130, 114402, <https://arxiv.org/abs/1803.04985>
- Blumenthal, S., Mandell, A., Herbrard, E., **Batalha, N.E.**, et al. *Comparison of Simulated JWST Observations Derived from Equilibrium and Non-Equilibrium Chemistry Models of Giant Exoplanets*, ApJ, 853, 138, <https://arxiv.org/abs/1712.01121>
- 2017 Kopparapu, R., Wolf, E., Arney, G., **Batalha, N.E.**, et al., *Habitable Moist Atmospheres on Terrestrial Planets Near the Inner Edge of the Habitable Zone around M-Dwarfs*. ApJ, 845, 5 <https://arxiv.org/abs/1705.10362>
- Christiansen, J., 27 others, **Batalha, N.E.**, et al., *Three's Company: An Additional Non-Transiting Super-Earth in the Bright HD 3167 System, and Masses for All Three Planets*, AJ, 154, 122 <https://arxiv.org/abs/1706.01892>
- 2016 Haqq-Misra, J., Kopparapu, R., **Batalha, N.E.**, et al. *Limit Cycles Can Reduce the Width of the Habitable Zone*, ApJ, 827, 120 <https://arxiv.org/abs/1605.07130>
- 2015 Cowan, N.B, Greene, T., Angerhausen, D., **Batalha, N.E.** et al. *Characterizing Transiting Planet Atmospheres Through 2025*. PASP, 127, 311 <https://arxiv.org/abs/1502.00004>

- 2011 Agueros, M., Covey, K., 3 others, **Batalha, N.E.** et al., *The Factory and the Beehive. I. Rotation Periods of Low-Mass Stars in Praesepe* Apj, 740, 110

Funded Proposals

- 2019 Science PI, NASA Unsolicited Proposal 112818, *Community Tool for Computing, Manipulating and Visualizing Molecular and Atomic Opacities*
- 2017 Co-Investigator, HST-GO-14918 (10 orbits) *Definitive Measurement of WASP-17b's Water Abundance in Preparation of JWST*, PI: Wakeford

Teaching & Mentoring

- 2019- Introduction to Python, Evergreen Valley College Citizen Science Initiative
- 2019 How to Give a Good Talk Seminar for Graduate Students
- 2018 Guest Lecturer, Undergraduate Level Planetary Atmospheres, John Hopkins Univ.
- 2017 K-12 Instructor at Project Favela Rocinha, Rio de Janeiro, Brazil
- 2013-2017 Mentor/Tutor, Learn to Be Foundation 501(c)(3) nonprofit

Professional Service

- 2020- ExoPAG Executive Committee
- 2018- Review Panelist TESS, HST, ROSES
- 2017- Referee, ApJ, ApJL, MNRAS
- 2014 ExoPAG: Science Analysis Group 10: Characterizing Exoplanets through 2025
- 2014 Emerging Researchers in Exoplanets Science Symposium Organizing Committee
- 2014 Astrobiology Graduate Conference Organizing Committee

Involvement with Groups Underrepresented in STEM

- 2018- Instructor, Evergreen Valley College - Citizen Science Initiative 501(c)(3)
- 2014-2017 Instructor, Centre County Prison Society Education Program
- 2013-2017 Director of Programs, Learn to Be Foundation 501(c)(3) nonprofit
- 2014-2015 Co-Chair, Graduate Women in Science Girl Scout
- 2014 Panelist, McNair Scholar Graduate Student

Presentations

Invited Talks, Seminar, Panels & Colloquia

- July 2020 Sagan Summer School Virtual
Writing a Transiting Exoplanet Science Proposal for JWST or HST
- Dec. 2019 Department of Astronomy, University of Michigan, Colloquium
Exoplanetary Atmospheres at the Onset of Next-Generation Missions
- Nov. 2019 Carnegie Observatory, Pasadena, Colloquium
Exoplanetary Atmospheres at the Onset of Next-Generation Missions
- Dec. 2018 Department of Astrobiology, University of Washington, Colloquium
Interpreting Terrestrial Exo-Atmospheres with JWST: Insights from Solar System Science
- Nov. 2018 Department of Space Sciences, Cornell University, Planetary Lunch Seminar
Interpreting Terrestrial Exo-Atmospheres with JWST: Insights from Solar System Science
- Nov. 2018 Harvard's Center for Astrophysics, Stars and Planets Seminar Series
Interpreting Terrestrial Exo-Atmospheres with JWST: Insights from Solar System Science

- Oct. 2018 Department of Astronomy & Astrophysics, UCSC, Colloquium
Interpreting Terrestrial Exo-Atmospheres with JWST: Insights from Solar System Science
- Oct. 2018 Department of Physics, University of California Merced, Colloquium
Interpreting Exoplanetary Atmospheres with the Next Generation Space-Based Telescope
- Jun. 2018 Emerging Researchers in Exoplanets Symposium, Panelist
Future of Exoplanet Research Panel
- Jun. 2018 Planetary Exploration Group, JHU Applied Physics Lab, Laurel, MD
Exoplanets in the Era of JWST and WFIRST
- Feb 2018 George Mason University Observatory, Fairfax, VA
NASA's Search for Life Beyond Earth
- Jul. 2017 Enabling Transiting Exoplanet Observations with JWST, STScI, Talk
Introduction to PandExo
- Feb. 2017 School of Earth and Space Exploration, Arizona State University, Seminar
Transiting Exoplanet Science with the James Webb Space Telescope
- Aug. 2016 Planetary Systems: A Synergistic View, Quy Nhon, Vietnam, Talk
Transiting Exoplanet Science with the James Webb Space Telescope
- Apr. 2016 Department of Terrestrial Magnetism, Carnegie Institute, Seminar
Transiting Exoplanet Science with the James Webb Space Telescope
- Mar. 2016 Goddard Space Flight Center, Greenbelt, MD, Seminar
A Community Tool for Exoplanet Science with JWST
- Mar. 2016 Center for Exoplanets and Habitable Worlds, Penn State, Seminar
A Community Tool for Exoplanet Science with JWST
- Feb. 2016 Jet Propulsion Laboratory, Seminar
Transiting Exoplanet Science with the James Webb Space Telescope
- May 2015 Penn State Board of Visitors, University Park, PA, Talk
How to search for life when we don't know what we are looking for
- May 2015 Penn State Dean of Eberly College of Science Advisory Committee, Talk
How to search for life when we don't know what we are looking for
- Mar. 2015 Center for Exoplanets and Habitable Worlds, Penn State University, Seminar
Testing the Early Mars H₂-CO₂ Greenhouse Hypothesis
- Oct. 2012 Cornell Planet Lunch Series, Ithaca, NY, Seminar
Characterizing Transiting Exoplanet GJ1214b with KECK II

Contributed Talks

- Sept. 2019 Bay Area Exoplanet Meeting, NASA Ames, CA
Precision of Mass Required for Robust Atmospheric Characterization of Transiting Planets
- Dec. 2018 Bay Area Exoplanet Meeting, NASA Ames, CA
Exoplanet Reflected Light Spectroscopy with PICASO
- Sept. 2018 Bay Area Exoplanet Meeting, NASA Ames, CA
Color Classification of Extrasolar Giant Planets
- Jul. 2018 Exoplanets II, Cambridge, UK
Color Classification of Extrasolar Giant Planets

- May. 2018 Chesapeake Bay Area Exoplanet Meeting, Carnegie DTM, MD
Color Classification of Extrasolar Giant Planets
- Jan. 2018 Winter AAS Conference, Washington DC
Optimal Strategies for Probing Terrestrial Atmospheres with JWST
- Jan. 2017 Winter AAS Conference, Grapevine, Texas
Key Exoplanets in the JWST Era
- Oct. 2016 Division of Planetary Sciences Conference, Pasadena, CA
Climate Cycling on Early Mars via the Carbonate Silicate Cycle
- Jan. 2014 Winter AAS Conference, Washington, DC
Transiting Exoplanet Simulations with JWST
- Aug. 2013 Space Telescope Science Institute
Using NIRISS and NIRSpec for Transiting Exoplanet Science

Contributed Posters

- Mar. 2016 Linking Disks and Exoplanet Compositions Workshop, Baltimore, MD
A Community Tool for Exoplanet Characterization with JWST
- Mar. 2014 Exoplanet, Biosignatures & Instrumentation, Tucson, AZ
Warming Early Mars with H_2 and CO_2
- Mar. 2014 Exoplanet, Biosignatures & Instrumentation, Tucson, AZ
Characterizing Exoplanets with JWST