Dr. Brianna I. Lacy - Curriculum Vitae

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Positions Held

51 Pegasi b Post-doctoral Fellow — Austin, TX
University of Texas at Austin — *September 2021 – present*

Graduate Research Assistant — Princeton, NJ
Princeton University — *September 2016 – August 2021*

Post-Baccalaureate Research Assistant — Seattle, WA
University of Washington — *August 2015 – August 2016*

NASA Intern — Greenbelt, MD
Goddard Spaceflight Center — *June 2015 – August 2015*

Undergraduate Research Assistant — Seattle, WA
University of Washington — *January 2013 – June 2015*

NASA Intern — Huntsville, AL
Marshall Spaceflight Center — *September 2014 – December 2014*

Education

Princeton University — Princeton, NJ
Ph.D. in Astrophysical Sciences — *September 2016 – August 2021*

University of Washington — Seattle, WA
Bachelor of Science in Physics and Astronomy — *September 2011 – May 2015*

Awards

2020 – 51 Pegasi b Postdoctoral Fellowship in Planetary Astronomy (PI) — $375,000

2015 – UW Physics Department's Mary L. Boas Endowed Scholarship — $3,000

Teaching Experience

Texas Prison Education Initiative Instructor — Austin, TX
University of Texas at Austin — *September 2022 – present*

Prison Teaching Initiative Instructor — Princeton, NJ
Princeton University — *September 2018 – March 2020*

Assistant Instructor — Princeton, NJ
Princeton University — *February 2017 – May 2017*

AST 201 Undergraduate Grading Assistant — Spring 2015
University of Washington — *Seattle, WA*

Physics of Roller Coasters Teaching Assistant — Summer 2010, 2011, 2012, 2013
University of Washington's Robinson Center — *Seattle, WA*

Peer-reviewed Publications

9. **Lacy, B.** & Burrows, A., *Self-consistent Models of Y Dwarf Atmospheres with Water Clouds and Disequilibrium Chemistry*, accepted by ApJ (2023)

8. Currie, T.; G. Brandt, M.; Brandt, T. D.; **Lacy, B.**; et al., *Direct Imaging and Astrometric Discovery of a Superjovian Planet Orbiting an Accelerating Star*, accepted by Science (2023) — Contributed model grid to aid in prediction of planet's optical brightness

7. **Lacy, B.** & Burrows, A., *JWST Transit Spectra II: Constraining Aerosol Species, Particle-size Distributions, Temperature, and Metallicity for Cloudy Exoplanets*, The Astrophysical Journal, Volume 904, Issue 1, id.25, 43 pp. (2020) arXiv:2007.00109

6. **Lacy, B.** & Burrows, A., *JWST Transit Spectra I: Exploring Potential Biases and Opportunities in Retrievals of Tidally-locked Hot Jupiters with Clouds and Hazes*, The Astrophysical Journal, Volume 905, Issue 2, id.131, 38 pp., (2020) arXiv:2006.06899

5. **Lacy, B.** & Burrows, A., *Prospects for Directly Imaging Young Giant Planets at Optical Wavelengths*, Astrophysical Journal, Volume 892, Issue 2, article id. 151, 20pp. (2020) arXiv:1911.10585

4. **Lacy, B.**; Shlivko, D.; Burrows, A., *Characterization of Exoplanet Atmospheres with the Optical Coronagraph on WFIRST*, The Astronomical Journal, Volume 157, article id. 132, 132 pp. (2019) arXiv:1801.08964

3. Wallerstein, G.; Anderson, R. I.; Farrell, E. M.; Guinan, E.; Albright, M.; **Lacy, B.**; et al., *The Behavior of the Paschen and Calcium Triplet Lines in Cepheid Variables II: The 16-day Variable X Cygni*, Publications of the Astronomical Society of the Pacific, Volume 131, Issue 1003, pp. 094203 (2019) — Assembled intermediate tables and figures, measured radial velocity shifts of diagnostic spectral lines

2. Hughes, J.; **Lacy, B.**; Sakari, C.; Wallerstein, G.; Davis, C.E.; et al., *A Multiwavelength Study of the Segue 3 Cluster*, The Astronomical Journal, Volume 154, Number 2, article id. 57, 18 pp. (2017) arXiv:1706.01961 — Completed all data reduction and photometry

1. Agol, E.; Jansen, T.; **Lacy, B.**; Robinson, T.; Meadows, V.; *The Center of Light: Spectroastrometric Detection of Exomoons*, Astrophysical Journal, Volume 812, Issue 1, article id. 5, 16 pp. (2015) arXiv:1509.01615 — Contributed to methods, results, discussion and conclusion sections, working in equal partnership with fellow undergraduate Tiffany Jansen while under the advice of Prof. Eric Agol

Conference Publications

1. Douglas, E. S.; Ashcraft, J. N.; Belikov, R.; Debes, J.; Kasdin, J.; Krist, J.; **Lacy, B.**; et al., *A Review of Simulation and Performance Modeling Tools for the Roman Coronagraph Instrument*, Proceedings of the SPIE, Volume 11443, id. 1144338 11 pp. (2020) — Contributed figure and paragraphs describing exoplanet spectral models

Selected Research Talks and Posters

New Models for JWST's Diversity of Cold Worlds, AMNH Astronomy Seminar, New York, NY, 2023 (invited talk)

Water Clouds and Vertical Mixing in Y Dwarf Atmospheres, Cloud Zwei Con, Ringberg Castle, Germany, 2023

Water Clouds and Vertical Mixing in Y Dwarf Atmospheres, OSU Exoplanet Seminar, Columbus, OH, 2022 (invited talk)

Water Clouds and Vertical Mixing in Y Dwarf Atmospheres, 51 Pegasi b Summit, San Francisco, CA, 2022

Self-Consistent Models of Y Dwarf Atmospheres with Water Clouds and Disequilibrium Chemistry, Cool Stars 21, Toulouse, France, 2022

Self-Consistent Models of Y Dwarf Atmospheres with Water Clouds and Disequilibrium Chemistry, Exoplanets IV, Las Vegas, NV, 2022

Modeling and Characterizing Substellar Atmospheres, New Post-doc Colloquium, Austin, TX, 2021 (invited talk)

Windows into Alien Worlds: Modeling and Characterizing Substellar Atmospheres, Post-defense Public Seminar, Princeton, NJ, 2021

A Closer Look at Cloudy Tidally-locked Exoplanets, 51 Pegasi b Summit, held virtually, 2021

Retrievals of Tidally-locked Hot Jupiters with Clouds and Hazes, UT Austin Cosmos Seminar, Austin, TX, 2020 (invited talk, given via zoom)

Directly Imaging Young Giant Planets with Roman-CGI, Roman-CGI SIT Student Symposium, held virtually, 2020

Retrievals of Tidally-locked Hot Jupiters with Clouds and Hazes, JPL Exoplanet Journal Club, Pasadena, CA, 2020 (invited talk, given via zoom)

Retrievals of Tidally-locked Hot Jupiters with Clouds and Hazes, MPIA ExoCoffee, Heidelberg, Germany, 2020 (invited talk, given via zoom)

Prospects for Directly Imaging Young Giant Planets in the Optical, Winter OWL Meeting, Honolulu, HI, 2020 (invited talk)

Combined Effects of Aerosols and Day-Night Temperature Gradients on Transit Spectra, AAS, Honolulu, HI, 2020

Characterizing Exoplanets with WFIRST-CGI, Cornell Planet Seminar, Ithaca, NY, 2019

Prospects for Directly Imaging Young Giant Planets in the Optical, Brown Dwarf Exoplanet Connections III, Wilmington, DE, 2019

Prospects for Directly Imaging Young Giant Planets in the Optical, Extreme Solar Systems IV, Reykjavik, Iceland, 2019

Combined Effects of Aerosols and Day-Night Temperature Gradients on Transit Spectra, ExoClimes V, Oxford, UK, 2019

Characterization of Exoplanet Atmospheres with the Optical Coronagraph on WFIRST, Sagan Exoplanet Summer Workshop, Pasadena, CA, July 2018

Characterization of Exoplanet Atmospheres with the Optical Coronagraph on WFIRST, AAS, Washington D.C., 2018

Characterizing Alien Worlds: Ground-Based Transit Spectroscopy of GJ1214b, NASA GSFC Summer Intern Poster Session, Greenbelt, MD, 2015

Modeling Spectroastrometric Detections of Exomoons, Pathways to Habitable Planets II, Berne, Switzerland, 2015

The Spectroactrometric Detection of Exomoons, AAS, Seattle, WA, 2015

Investigating Candidate Parent Bodies of the α-Monocerotids and the δ-Leonids, NASA MSFC Fall Intern Symposium, Huntsville, AL, 2014

Outreach Talks

Exoplanet Atmospheres in High Definition - science talk at McDonald Observatory Board of Visitors fundraising event — Jeff Davis County, 2022
Tracking New Exoplanet Populations with WFIRST - NASA Hyperwall Talk at AAS—Honolulu, 2020
Exploring Exomoons - presentation at University of Washington Public Observing Night—Seattle, 2015
The Expanding Universe - Planetarium Show at University of Washington—Seattle, 2015

Community Service

Conference Organization: Bash Symposium (2023 co-chair), Emerging Researchers in Exoplanet Science IV
Referee: Astronomy & Astrophysics, Journal of Astronomical Telescopes, Instruments, and Systems, Nature Astronomy, Astrophysical Journal
Mentorship: research mentor to two undergraduate students at UT Austin, peer mentor for Princeton post-baccalaureate student and mentor for two students through a partnership between Princeton's Women in Physics and Undergraduate Women in Physics
Leadership: department post-doc representative at UT Austin, department representative to Princeton's Graduate Student Government, co-organizer of Graduate Student Mental Health Awareness Month, co-organizer of Princeton DEI journal club
Committees: UT Austin graduate admissions, mock-TAC for UT Austin graduate student observing seminar
Trainings: Equity in Graduate Admissions workshop, Cultivating Culturally Competent Leaders workshop, How to be an Effective Ally workshop, Princeton Distress Awareness & Response training
Recurring Outreach Roles: host for Princeton public observing nights, astro-news coordinator for Astronomy on Tap Trenton
One-time or Annual Outreach Events: UT Austin STEM Girl Day, Princeton Plasma Physics Laboratory's Young Women's Conference, Dia de la Ciencia, Girl Scout Space Science Badge Day, Trenton Young Scholars Institute