

Briley L. Lewis

Graduate Student and NSF Fellow, Astronomy and Astrophysics
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Education

- **University of California, Los Angeles** Los Angeles, CA, USA
PhD Astronomy and Astrophysics 2018 - Present
- **Columbia University (Columbia College)** New York, NY, USA
B.A. Astrophysics 2014 - 2018
 - Cumulative GPA: 3.70
 - Senior Thesis: Direct Imaging of Exoplanets with Project 1640

Research Experience

- **University of California, Los Angeles** Los Angeles, CA, USA
Graduate Student Researcher 2018 - Present
 - Advisor: Dr. Michael Fitzgerald
 - Investigating a theoretical framework for statistics of speckle noise in the high-contrast imaging regime, and using models to explore how we can exploit these statistics to improve contrast in observations.
- **American Museum of Natural History** New York, NY, USA
REU Student and Undergraduate Researcher 2016 - 2018
 - Advisor: Dr. Rebecca Oppenheimer
 - Worked as a part of Project 1640 focused on direct imaging of exoplanets as a part of the AMNH Summer 2016 National Science Foundation Research Experience for Undergraduates program.
 - Participated in three observing runs with the Project 1640 team at Palomar Observatory in California.
 - Processed infrared images using Python to suppress speckles and detect exoplanets, created lists of targets and assisted in planning for observing runs, and assisted in confirmation of new planet discoveries using astrometry and spectral modeling.
- **Space Telescope Science Institute** Baltimore, MD, USA
Summer Student and Undergraduate Researcher 2017 - 2018
 - Advisors: Drs. John Stansberry and Bryan Holler
 - Analyzed hyperspectral images and other data products from the New Horizons missions 2015 flyby of Pluto, with the goal of investigating the relationship between topographic factors (albedo, elevation) and the distribution of volatiles on its surface.
 - Created insolation models and maps of surface slopes/gradients for Pluto, based on data from New Horizons MVIC and LEISA instruments.

Publications

B.L. Lewis, J. Stansberry, W. Grundy, B. Schmitt, S. Protopapa, L. Trafton, B. Holler, W.B. McKinnon, L. Young, A. Stern, H. Weaver, C. Olkin, K. Ennico, P. Schenk and the New Horizons Science Team. Distribution and Energy Balance of Pluto's Nitrogen Ice, as seen by New Horizons in 2015. In preparation.

B.L. Lewis, J. Stansberry, W. Grundy, B. Schmitt, S. Protopapa, L. Trafton, B. Holler, W.B. McKinnon, L. Young, A. Stern, H. Weaver, C. Olkin, K. Ennico, P. Schenk and the New Horizons Science Team. Topographic and other influences on Pluto's volatile ices. In preparation.

J. Aguilar, R. Nilsson, R. Oppenheimer, **B.L. Lewis**, L. Pueyo, et. al. Discovery of a New Companion Object through High-Contrast Imaging. In preparation.

E. Carlson, L.C. Roberts Jr., R. Oppenheimer, J. Aguilar, R. Nilsson, **B.L. Lewis**, et. al. Binary Stars from Project 1640 Observations. In preparation.

B.L. Lewis, R. Oppenheimer (2017). Direct Imaging of Exoplanets with Project 1640. Columbia Undergraduate Science Journal, Volume 11, Spring 2017. New York, NY.

B.L. Lewis, H. Yang, A. Seetharaman. (2015). Our Future in the Stars. Columbia Undergraduate Science Journal, Volume 9, Spring 2015. New York, NY.

Presentations

Conference and Public Talks:

- *Nitrogen ice on Pluto, as seen by New Horizons* (IPAC Science Talk, invited seminar, Pasadena, CA, March 2019)
- *New Horizons: Understanding Pluto* (Columbia University Public Outreach, invited public lecture, April 2018)
- Undergraduate research panel (Conference for Undergraduate Women in Physics (CUWiP) at Columbia/CCNY/Barnard, invited panelist, January 2018)
- *Topographic Influences on Plutos Nitrogen Ice* (New Horizons Science Team Meeting (STM) invited talk, JHU APL, Laurel, MD, January 2018)
- *Direct Imaging of Exoplanets with Project 1640* (Astronomical Society of New York meeting invited prize lecture, November 2017)
- *Topographic and other influences on Pluto's volatile ices.* (Space Astronomy Summer Program Symposium, Space Telescope Science Institute, August 2017)
- *Direct Imaging of Exoplanets with Project 1640* (Columbia Undergraduate Science Journal Speaker Series, Columbia University, April 2017)
- *Direct Imaging of Exoplanets: Extreme Astrophotography* (Arts and Astro outreach event, Columbia University, March 2017)

- *Direct Imaging of Exoplanets with Project 1640* (Summer 2016 REU Symposium Presentation, American Museum of Natural History, August 2016)

Poster Presentations:

- **B.L. Lewis**, J. Stansberry, W. Grundy, B. Schmitt, S. Protopapa, L. Trafton, B. Holler, W.B. McKinnon, L. Young, A. Stern, H. Weaver, C. Olkin, K. Ennico, and the New Horizons Science Team. (2019) *Distribution and Energy Balance of Plutos Nitrogen Ice, as seen by New Horizons in 2015*. January 2019, American Astronomical Society Winter Meeting, Seattle, WA.
- **B.L. Lewis**, J. Stansberry, W. Grundy, B. Schmitt, S. Protopapa, L. Trafton, B. Holler, W.B. McKinnon, L. Young, A. Stern, H. Weaver, C. Olkin, K. Ennico, P. Schenk and the New Horizons Science Team. (2018) *Topographic and other influences on Pluto’s volatile ices*. January 2018, American Astronomical Society Winter Meeting, National Harbor, MD.
- **B.L. Lewis**, J. Stansberry, W. Grundy, B. Schmitt, S. Protopapa, L. Trafton, B. Holler, W.B. McKinnon, L. Young, A. Stern, H. Weaver, C. Olkin, K. Ennico, P. Schenk and the New Horizons Science Team. (2017) *Topographic and other influences on Pluto’s volatile ices*. October 2017, Division for Planetary Sciences, Provo, UT.
- **B.L. Lewis**, R. Oppenheimer (2017). *Direct Imaging of Exoplanets with Project 1640*. January 2017, Conference for Undergraduate Women in Physics, Princeton University, Princeton, NJ.
- **B.L. Lewis**, R. Oppenheimer (2016). *Direct Imaging of Exoplanets with Project 1640*. Fall 2016, Columbia Undergraduate Research Symposium, Columbia University, New York, NY.
- **B.L. Lewis**, R. Oppenheimer (2016). *Direct Imaging of Exoplanets with Project 1640*. AstroFest 2016, Columbia University Department of Astronomy, New York, NY.

Other Conferences and Workshops Attended:

- Center for Adaptive Optics Fall Science Retreat, Workshop on High Contrast Exoplanet Imaging Performance, November 2018
- 2018 Dunlap Institute Summer School for Astronomical Instrumentation, Toronto, Canada, July 2018
- SAMSI Astrostatistics Workshop for Undergraduates, Research Triangle Park, NC, October 2016
- CoolStars19, Uppsala, Sweden, June 2016
- APS Conference for Undergraduate Women in Physics (CUWiP), Wesleyan College, Middletown, CT. January 2016

Awards, Grants & Honours

National Science Foundation (NSF) Graduate Research Fellow	2018
UCLA Graduate Dean’s Fellowship	2018
AAS Chambliss Undergraduate Honorable Mention	2018
Astronomical Society of New York (ASNY) Undergraduate Research Prize	2017
Universities Space Research Association (USRA) Scholarship Honorable Mention	2017
Division for Planetary Sciences Hartmann Student Travel Grant Recipient	2017

Teaching Experience and Outreach

- **Skype a Scientist** Virtual
Scientist Volunteer 2019 - Present
- **University of California, Los Angeles** Los Angeles, CA, USA
Astronomy Live and UCLA Planetarium Volunteer 2019 - Present
- **University of California, Los Angeles** Los Angeles, CA, USA
Teaching Assistant, Undergraduate Physics and Astronomy Labs 2018 - Present
- **Astrobites** Online
Author, Regular Rotation 2018 - Present
- **Canyon High School Science Olympiad** Anaheim, CA, USA
Divisions B/C Physical Science Event Coach 2018 - Present
- **Letters to a Pre-Scientist** USA
Scientist Pen-Pal/Mentor 2018 - Present
- **Columbia University, Department of Astronomy** New York, NY, USA
Grader, Public Outreach Volunteer 2016 - 2018
- **Columbia University Undergraduate Astronomy Club (BlueShift)** New York, NY, USA
Co-founder, President, and Senior Advisor 2015 - 2018

Other Community Activities

- **UCLA Womxn in Physics and Astronomy (WiPA)** Los Angeles, CA, USA
Co-Chair 2019 - Present
- **Astrobriles (astrobriles.etsy.com)** Los Angeles, CA, USA
Artist / Shop Owner 2018 - Present
- **Alpha Chi Omega, Gamma Theta Gamma Alumni Chapter** Los Angeles, CA, USA
Member and Communications Chair 2019 - Present
- **Columbia Alumni Representative Committee** Los Angeles, CA, USA
Prospective Student Interviewer 2018 - Present

Professional Memberships

American Astronomical Society, AAS Division for Planetary Sciences, Society of Physics Students, American Physical Society

Computational Experience

LaTeX, Git, Bash (command line), Python, Java, Mathematica, SQL, R, Microsoft Office Products