

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

- **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. Submitted to *Icarus*, August 2018.

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:

- *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, P. Schenk and the New Horizons Science Team. (2018) Spring 2018, Columbia Undergraduate Research Symposium, Columbia University, New York, NY. *Topographic and other influences on Pluto's volatile ices.*
- **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:

- 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

- **University of California, Los Angeles** Los Angeles, CA, USA
Teaching Assistant 2018 - Present
- **StarBites Podcast** New York, NY, USA
Guest host 2018
- **Columbia University, Department of Astronomy** New York, NY, USA
Grader and Teaching Assistant 2016 - 2018
 - Graded problem sets and exams, and held office hours, to assist Prof. Joseph Patterson and his undergraduate students, providing feedback on students work for his class, Theories of the Universe: From Babylon to the Big Bang.
 - Graded student work and guided student online discussion forums for Prof. Marcel Agueros for his class Stars and Atoms (introductory level stellar evolution).

- **Columbia University Undergraduate Astronomy Club (BlueShift)** New York, NY, USA
Co-founder, President, and Senior Advisor 2015 - 2018

- Organized and planned events for interested undergraduate students, such as a group observing trip to a dark sky park and regular presentations of undergraduate research in the department.
- Fostered a community atmosphere and increased communication between undergraduate students, graduate students, and faculty within the Department of Astronomy.

- **Columbia University, Department of Astronomy** New York, NY, USA
Public Outreach Programs Volunteer 2015 - 2018

- Assisted with telescopes, demonstrations, and QA sessions at the Columbia Astronomy Public Outreach Lecture events.
- Provided lectures and activities for local school visits.

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