Skylar S. Larsen (she/they)

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Skills

- Expertise with Transiting Exoplanet Survey Satellite (TESS) light curves and the EXOplanet MOdeling Package (EXOMOP) code
- Coding Languages: Python, Fortran, R, IDL
- Experience with NASA Infrared Telescope Facility LXD spectroscopy data and Spextool software
- On-site observatory work on 24-inch and 14-inch telescopes
- Geology laboratory experience handling soil samples
- Scientific writing and presentation experience

Academic Research

Cornell University, Ithaca, NY **Sept 2023 - Present**

Ph.D. Student (Advisors: Dr. Nikole Lewis and Dr. Jake Turner)

- Modeling TESS exoplanet transits using the EXOMOP modeling code to derive the orbital and planetary parameters of sub-Neptune exoplanets.
- Writing Python code to identify, isolate, and graph exoplanet transit curves in TESS datasets.

Jacobs Technology, Johnson Space Center, Houston, TX **June – Aug 2023**

Intern (Advisor: Dr. Driss Takir)

- Analyzed and interpreted near-infrared spectra of a Ceres-like asteroid using Python and IDL to determine its surface composition and formation conditions.
- Presented internship research to peers at Astromaterials Research and Exploration Science (ARES).
- Processed soil samples at the Johnson Space Center Planetary and Earth Sciences Laboratory.
- Submitted professional meeting abstract to the Division of Planetary Sciences 2023 Conference.

Wallace Astrophysical Observatory, MIT, Westford, MA **June - Sept 2022**

Intern (Advisor: Dr. Michael Person)

- Observed Koronis family asteroids and Pluto via several Wallace Observatory telescopes.
- Handled and operated observatory telescopes on-site 3-4 nights a week.
- Edited and updated the Wallace Observatory lab manual.

Lunar and Planetary Institute, Houston, TX **June - Sept 2021**

Intern (Advisor: Dr. Driss Takir)

- Processed and interpreted near-infrared spectra of two near-Earth asteroids using Python and IDL.
- Presented internship research in planetary science at the 36th annual Summer Intern Conference.
- Panelist in the inaugural class of Lunar and Planetary Institute Stories panel event to audience of prospective students and researchers.
- Submitted professional meeting abstracts to the Division of Planetary Sciences, American Association of Variable Star Observers, and Lunar and Planetary Science Conference.

Wallace Astrophysical Observatory, MIT, Westford, MA **Sept - Dec 2020**

Research Student and Guest Speaker (Advisor: Dr. Richard P. Binzel)

- Measured the brightness profiles of three planetary nebulae and two diffuse nebulae.
- Remotely operated Wallace Astrophysical Observatory telescopes 2-4 times per week.
- In 2022, returned to give final presentation again as an example to current students.

Massachusetts Institute of Technology, Cambridge, MA **June - Sept 2020**

Intern (Advisor: Dr. Amanda Bosh)

- Used astrometry and Python to detect moons around centaurs and Kuiper belt objects.
- Presented work via oral presentation at the Summer 2020 Earth, Atmospheric, and Planetary Sciences Symposium.

Publications

- D Slivan, S. M., Barrera, K., Colclasure, A. M., Cusson, E. M., **Larsen, S. S.,** McLellan-Cassivi, C. J., Moulder, S. A., Nair, P. R., Namphy, P. D., Neto, O. S., Maurielle I. Noto, R., Maya S., Rhodes, S. J., & Youssef, S. A. (2024). Lightcurves and Derived Results for Koronis Family Member (452) Hamiltonia. *Minor Planet Bulletin*, *51*, 176–179.
- **Larsen, S.**, Takir, D., & McAdam, M. (2023, October). Spectroscopy of Asteroid (93) Minerva: Insights into the Formation of the Early Solar System. *AAS/Division for Planetary Sciences Meeting Abstracts, 55*(8).
- Slivan, S. M., Colclasure, A., **Larsen, S.**, McLellan-Cassivi, C., Neto, O., Noto, M., & Redden, M. (2023). Synodic and Sidereal Rotation Periods of Koronis Family Member (1389) Onnie. *The Minor Planet Bulletin, 50*(1), 8-10.
- **Larsen, S.**, Takir, D., Reddy, V., Binzel, R., & Taylor, P. (2021, October). Near-Infrared Spectroscopy of (3122) Florence and (357439) 2004 BL86 During Near-Earth Encounters. *AAS/Division for Planetary Sciences Meeting Abstracts*, *53*(7), 404-406.
- Muthukumaran, P., Kyi, M., & **Larsen, S.** (2019). Double Star System: WDS 01171-2314 (HWE3). *Journal of Double Star Observations*, *15*(4), 587-590.
- **Larsen, S.**, Smith, S., Hilburn, J., & Boyce, P. (2018). Investigation into the Accuracy of Small Telescope CCD Astrometry of Visual Double Stars. *37th Annual Symposium on Small Telescope Sciences.*
- **Larsen, S**., Reich, S., Serrano, A., Gailey, J., Boyce, P., Boyce, G., & Smith, K. (2017). Double Star Systems WDS 00026+ 1841 SHY 378AB and WDS 00002-2519 COO 273: An Investigation. *Journal of Double Star Observations*, *13*(4), 534-537.

Education

Cornell University, Ithaca, NY **Sept 2023 - Present**

Doctorate in Astronomy (Current Cumulative GPA: 3.7/4.0)

Relevant Coursework: Exoplanet Characterization, Planetary Atmospheres, Planetary Surface Processes, Physics of the Planets, Climate Dynamics, Physics of Stars Neutron Stars and Black Holes, Astrophysical Properties, Deep Learning in Earth and Environmental Science

Massachusetts Institute of Technology, Cambridge, MA **June 2023**

Bachelor of Science in Earth, Atmospheric and Planetary Sciences (GPA: 5.0/5.0)

Relevant Coursework: Observational Techniques of Optical Astronomy, Geophysics and Planetary Science, Planetary Atmospheres, Extrasolar Planets: Physics and Detection Techniques, Space Systems Engineering, Essentials of Planetary Science, Physical Principles of Remote Sensing

Leadership

Cornell Department of Astronomy, Ithaca, NY **Sept 2024 - Present**

Teaching Assistant

- Served as Teaching Assistant for Fall 2024 ASTRO 1101 (From New Worlds to Black Holes) and Spring 2025 ASTRO 1102 (Our Solar System).
- Taught instructional material, led discussion sections, and held office hours for dozens of students over 10 weeks per semester.
- Rigorously graded student assignments and exams.
- Assisted in holding seminar lectures and acted as tech support.

Museum in the Dark, Ithaca, NY **Oct 2024**
Public Outreach Volunteer

- Volunteered at a family-oriented outreach event for the Museum of the Earth.
- Supervised a solar-system education activity to engage children in the sciences.

4-H Career Explorations in STEM, Ithaca, NY **June 2024**
Public Outreach Volunteer and Guest Speaker

- Co-led a presentation lecture about the search for life in the universe to inform and inspire high school students interested in astronomy.

Year of the Sun Total Eclipse 2024, Hobart and William Smith Colleges, Geneva, Ithaca, NY **Apr 2024**
Public Outreach Volunteer

- Volunteered at eclipse event to inform the general public about the 2024 total eclipse and general astronomy topics.
- Supervised a solar-system education activity aimed at an audience of all ages.

Maria Mitchell Women of Science Symposium, Cambridge, MA **Sept 2022**
Guest Panelist

- Spoke as a guest panelist at a panel titled "Survive and Thrive – Mental Health, Mentoring, and Support Systems for Women in STEM" as part of a symposium aimed at promoting and supporting women of all ages in STEM fields.

American Association of Variable Star Observers, Cambridge, MA **Jan 2020 – Nov 2023**
Ambassador Volunteer and Guest Speaker

- Volunteered to provide education and outreach opportunities to amateur astronomers and the public.
- Attended monthly ambassador brainstorm meetings.
- Presented original research at 110th American Association of Variable Star Observers Annual Meeting.
- Designed logos for several observing sections.

Experimental Study Group, MIT, Cambridge, MA **Sept 2020 – June 2023**
Teaching Assistant

- Served as Teaching Assistant for Calculus I, Calculus II, and a seminar titled "The Varieties of Human Experience (with Apologies to William James)."
- Taught instructional material and held office hours for dozens of students over 10 weeks per semester.
- Rigorously graded student assignments and exams.
- Assisted in holding seminar lectures and acted as tech support.

Awards

- **Cornell University Fellowship** (2023)
- **Peter and Sharon Fiekowsky Award for Excellence in Teaching,** MIT, Experimental Study Group (2023)
- **Phi Beta Kappa Membership,** MIT Chapter (2023)
- **Earth, Atmospheric and Planetary Sciences Undergraduate Achievement Award**, MIT (2022)
- **Outstanding Undergraduate Research Opportunity Program Student Award,** MIT, Co-winner (2022)