William Kennedy Misener

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Last Updated: July 2025

EDUCATION

University of California, Los Angeles
Ph.D., Planetary Science, June 2024
M.S., Geophysics and Space Physics, March 2021

University of Chicago
B.A., Physics with Specialization in Astrophysics, June 2018

EMPLOYMENT

Carnegie Postdoctoral Fellow, 2024-Present
Carnegie Institution for Science
Earth & Planets Laboratory

Graduate Student Researcher, 2018-2024
University of California, Los Angeles
Department of Earth, Planetary, and Space Sciences
Thesis title: "Exploring the thermal and chemical coupling between the silicate cores and hydrogen atmospheres of super-Earth and sub-Neptune exoplanets"
Advisor: Professor Hilke Schlichting

Research Assistant, 2016-2018
University of Chicago
Department of the Geophysical Sciences
Thesis title: "Modeling Dust Grain Growth and Transport Coupling in a Protoplanetary Disk"
Advisor: Professor Fred Ciesla

HONORS AND FUNDING AWARDS

- UCLA Dissertation Year Fellowship, 2023-24
- AAS International Travel Grant, 2023
- Travel Support for Exoplanets in our Backyard 2 conference, 2022
- UCLA Graduate Division Doctoral Travel Grant
- EPSS Department Teaching Award, University of California, Los Angeles, 2020
- Graduate Division Fellowship, University of California, Los Angeles, 2018-2023
- Alumni Scholarship, University of California, Los Angeles, 2018
- General and Physics Departmental Honors, University of Chicago, 2018
- Dean's List, University of Chicago, 2015-2018
- University Scholar, University of Chicago, 2014
- University National Merit Scholarship, University of Chicago, 2014

FIRST AUTHOR PUBLICATIONS

5. **W. Misener**, M. Schulik, H. Schlichting, and J. Owen 2025. "Blowin' in the Nonisothermal Wind: Core-powered Mass Loss with Hydrodynamic Radiative Transfer", *The Astrophysical Journal*, 980:152. DOI: 10.3847/1538-4357/ada777 arXiv: 2405.15221
4. **W. Misener**, H. Schlichting, and E. Young 2023. "Atmospheres as windows into sub-Neptune interiors: coupled chemistry and structure of hydrogen-silane-water envelopes", *Monthly Notices of the Royal Astronomical Society*, 524:981. DOI: 10.1093/mnras/stad1910 arXiv: 2303.09653
3. **W. Misener** and H. Schlichting, 2022. "The importance of silicate vapour in determining the structure, radii, and envelope mass fractions of sub-Neptunes", *Monthly Notices of the Royal Astronomical Society*, 514:6025. DOI: 10.1093/mnras/stac1732 arXiv: 2201.04299
2. **W. Misener** and H. Schlichting, 2021. "To cool is to keep: residual H/He atmospheres of super-Earths and sub-Neptunes", *Monthly Notices of the Royal Astronomical Society* 503:5658. DOI: 10.1093/mnras/stab895 arXiv: 2103.09212
1. **W. Misener**, S. Krijt, and F. Ciesla, 2019. "Tracking Dust Grains During Transport and Growth in Protoplanetary Disks", *The Astrophysical Journal* 885:118. DOI: 10.3847/1538-4357/ab4a13 arXiv: 1910.00609

OTHER PUBLICATIONS

1. S. Barat, J.-M. Désert, et al. (inc. **W. Misener** 8th) 2025. "A metal-poor atmosphere with a hot interior for a young sub-Neptune progenitor: JWST/NIRSpec transmission spectrum of V1298 Tau b", *The Astronomical Journal*, in press. arXiv: 2507.08837

SEMINARS & TALKS

36. **OWL Exoplanets Summer Program Seminar**, "Escape and atmosphere-interior interactions in sub-Neptunes", Santa Cruz, CA, USA, July 23, 2025
35. **STScI Exoplanets, Star and Planet Formation Seminar**, "Sub-Neptunes from top to bottom: How interior-atmosphere coupling affects small exoplanets", Baltimore, MD, USA, April 22, 2025
34. **General Seminar, Carnegie Earth & Planets Laboratory**, "Connecting the silicate interiors and hydrogen atmospheres of sub-Neptune exoplanets", Washington, DC, USA, September 26, 2024
33. **Theoretical Astrophysics Center Seminar, University of California, Berkeley**, "Thermal and Chemical Coupling Between the Silicate Cores and Hydrogen Atmospheres of Super-Earth and Sub-Neptune Exoplanets", Berkeley, CA, USA, September 23, 2024
32. **Earth and Planetary Science Seminar, Harvard University**, "Magma-atmosphere interactions in sub-Neptunes", Cambridge, MA, USA [virtual], February 12, 2024
31. **Seminar, Density Matters 2024**, "Coupled chemistry and structure of hydrogen-silane-water atmospheres", Ringberg, Kreuth, Germany, February 7, 2024
30. **Dissertation Contributed Talk, AAS 243**, "Coupled chemistry and structure of sub-Neptune atmospheres: a window into the interior", New Orleans, LA, USA, January 8, 2024
29. **Invited Talk, ExSoCal 2023**, "A Window into sub-Neptune Interiors: Coupled Chemistry and Structure of Hydrogen-Silane-Water Atmospheres", Pasadena, CA, USA, December 12, 2023

28. **Planetary Science Seminar, California Institute of Technology**, "Magma-atmosphere interactions in sub-Neptunes", Pasadena, CA, USA, December 5, 2023
27. **Exoplanet Journal Club, University of Chicago**, "Magma-atmosphere interactions in sub-Neptunes", Chicago, IL, USA, October 30, 2023
26. **Exoplanet Pizza Lunch, Harvard-Smithsonian Center for Astrophysics**, "Magma-atmosphere interactions in sub-Neptunes", Cambridge, MA, USA, October 25, 2023
25. **Monday Afternoon Talk, Massachusetts Institute of Technology**, "Magma-atmosphere interactions in sub-Neptunes", Cambridge, MA, USA, October 23, 2023
24. **Exoplanet Journal Club, University of Maryland**, "Magma-atmosphere interactions in sub-Neptunes", College Park, MD, USA, September 19, 2023
23. **Astrophysics Coffee, Institute for Advanced Study**, "Magma-atmosphere interactions in sub-Neptunes", Princeton, NJ, USA, September 15, 2023
22. **Exoplanets and Stars Seminar, Yale University**, "Magma-atmosphere interactions in sub-Neptunes", New Haven, CT, USA, September 11, 2023
21. **Invited Talk, ExoSS II, Jet Propulsion Laboratory**, "Magma-atmosphere interactions in sub-Neptunes", La Cañada Flintridge, CA, USA, August 30, 2023
20. **Invited Talk**, **EXCALIBUR Workshop,** "A Theorist's Quest for EXCALIBUR", Pasadena, CA, USA, July 29, 2023
19. **OWL Exoplanets Summer Program Seminar**, "Magma-atmopshere interactions in sub-Neptunes", Santa Cruz, CA, USA, July 19, 2023
18. **Contributed Talk**, **ExoClimes VI**, "Magma-atmopshere interactions in sub-Neptunes", Exeter, UK, June 28, 2023
17. **School of Mathematics Statistics and Physics Seminar, Newcastle University**, "A window into sub-Neptune interiors: coupled chemistry and structure of hydrogen-silane-water atmospheres", Newcastle upon Tyne, UK, June 23, 2023
16. **Contributed Talk, ERES Symposium**, "A window into sub-Neptune interiors: coupled chemistry and structure of hydrogen-silane-water atmospheres", New Haven, CT, USA, June 20, 2023
15. **Planetary Science Seminar, University of California, Los Angeles**, "Effects of silicate vapor on sub-Neptune atmospheres", Los Angeles, CA, USA, June 8, 2023
14. **AEThER Collaboration Workshop Flash Talk**, "Chemical equilibrium between magma oceans and hydrogen atmospheres", Washington, DC, USA January 18, 2023
13. **Astrophysics Group Seminar, Imperial College London**, "Effects of silicate vapour on sub-Neptune atmospheres", London, UK, October 13, 2022
12. **Contributed Talk**, **Bay Area Exoplanet Meeting #41**, "Effects of silicate vapor on sub-Neptune atmospheres", Santa Cruz, CA, USA, July 15, 2022
11. **Research Talk**, **MIAPbP Planet Formation Workshop**, "Formation and Evolution of Super-Earth and Sub-Neptune Atmospheres", Garching bei München, Germany, June 29, 2022
10. **Contributed Talk**, **Exoplanets IV Atmospheric Escape Splinter Session**, "To Cool is to Keep: Residual H/He Atmospheres of Super-Earths", Las Vegas, NV, USA, May 4, 2022
9. **Planetary Science Seminar, University of California, Los Angeles**, "The consequences of silicate vapor in determining the structure, radii, and evolution of sub-Neptunes", Los Angeles, CA, USA, February 24, 2022
8. **Contributed Talk, Bay Area Exoplanet Meeting #38**, "To Cool is to Keep: Residual H/He Atmospheres of Super-Earths", [virtual due to COVID-19], September 17, 2021

7. **Lightning Talk, 12th EPSS Student Research Symposium**, "Residual H/He Atmospheres of Super-Earths", May 14, 2021
6. **Planetary Science Seminar, University of California, Los Angeles**, "To Cool is to Keep: Residual H/He Atmospheres of Super-Earths", Los Angeles, CA, USA, April 23, 2021
5. **Panelist, Habitable Worlds 2021,** "Super-Earths", [virtual due to COVID-19], March 25, 2021
4. **Contributed Talk, Exoplanet Demographics,** "To Cool is to Keep: Residual H/He Atmospheres of Super-Earths", [virtual due to COVID-19], November 13, 2020
3. **Contributed Talk, ExSoCal 2020**, "Residual H/He Atmospheres of Super-Earths", [virtual due to COVID-19], September 15, 2020
2. **Planetary Science Seminar, University of California, Los Angeles,** "Dust Grain Growth and Transport in Protoplanetary Disks", Los Angeles, CA, USA, April 26, 2019
1. **Honors Bachelor's Thesis Defense, University of Chicago,** "Modeling Dust Grain Growth and Transport in the Protoplanetary Disk", Chicago, IL, USA, May 24, 2018

POSTERS

8. **W. Misener**, "Sub-Neptunes as coupled magma-atmosphere systems", *Origins of Solar Systems Gordon Research Conference*, Mount Holyoke, MA, USA, June 19, 2025
7. **W. Misener**, H. Schlichting, and E. Young, "Coupled chemistry and structure of hydrogen-silane-water sub-Neptune atmospheres", *STScI Spring Symposium*, Baltimore, MD, USA, May 18, 2023
6. **W. Misener** and H. Schlichting, "Silicate vapor in sub-Neptune atmospheres", *Exoplanets in our Backyard 2*, Albuquerque, NM, USA, November 2, 2022
5. **W. Misener** and H. Schlichting, "Silicate vapor in sub-Neptune atmospheres", *Exoplanets IV*, Las Vegas, NV, USA, May 2, 2022
4. **W. Misener** and H. Schlichting, "Residual H/He Atmospheres of Super-Earths", *TESS Science Conference II* [virtual due to COVID-19], August 2, 2021
3. **W. Misener** and H. Schlichting, "Residual H/He Atmospheres of Super-Earths", *Sagan Summer Workshop* [virtual due to COVID-19], July 19, 2021
2. **W. Misener** and H. Schlichting, "To Cool is to Keep: Residual H/He Atmospheres of Super-Earths", *Habitable Worlds 2021*, [virtual due to COVID-19], March 22, 2021
1. **W. Misener** and H. Schlichting, "Residual H/He Atmospheres of Super-Earths", *Exoplanets III*, [virtual due to COVID-19], July 27, 2020

TEACHING EXPERIENCE

Teaching Assistant, *University of California, Los Angeles*

EPS SCI 9: Solar System and Planets, Fall Quarter 2019, 2020, 2021

Ran weekly lab/discussion sections, expanded on topics related to general lecture and ran lab demonstrations for 80 non-major students

OUTREACH ACTIVITIES

Volunteer, *UCLA EPSS Eclipse Viewing Event*, 2023

Ran telescope observations and informed members of the public at an event for the October 2023 annular eclipse at a public park in Los Angeles.

Demonstrator, *UCLA AstroLive*, 2020

Demonstrated astrophysical concepts including relativity and rocket launching to 5th grade students visiting campus

Letter Writer, *Letters to a Pre-Scientist*, 2019-20, 2022-Present
Exchanged a series of letters with a middle school student emphasizing careers in STEM fields and my experiences

Volunteer, *Exploring Your Universe*, 2018-2020
Demonstrated exoplanet observation techniques and answered questions from public about exoplanetary science at public science festival which draws over 7,000 people

President, *Ryerson Astronomical Society*, 2017-2018
Led the University of Chicago's student-run amateur astronomy organization, which organized events and trips and ran weekly observation nights

PUBLIC OUTREACH TALKS

Planetarium Talk, *UCLA Planetarium*, "Planetary Interiors", May 2023
Planetarium Talk, *UCLA Planetarium*, "Native American Astronomy and Constellations", February 2023
Research in Space Fields, *ConnectEd Research Student Organization*, February 2022
Planetarium Talk, *UCLA Planetarium*, "Super-Earths", October 2021
WISRD Fall Lecture, *Wildwood School*, "Fantastic Trans-Neptunian Objects and What They Tell Us about Our Origin", November 4th, 2019
Planetarium Talk, *UCLA Planetarium*, "Exoplanets", September 2019
Meeting Talks, *Ryerson Astronomical Society*, various topics including "Planetary Atmospheres", "Pluto", "Life in the Solar System", "The James Webb Space Telescope", and "Planet Formation", among others, 2015-2018

TECHNICAL WORKSHOPS ATTENDED

Magellan Science Meeting, May 2025.
AEThER Team Workshop, June 2024.
EXCALIBUR Workshop, July 2023. *Organized by NASA Exoplanet Science Institute*.
Sagan Exoplanet Summer Workshop: Characterizing Exoplanet Atmospheres: The Next Twenty Years, July 2023. *Organized by NASA Exoplanet Science Institute*.
Other Worlds Laboratory Exoplanets Summer Program, July 2023. *Organized by the UC Santa Cruz Other Worlds Laboratory.*
AEThER Team Workshop, January 2023.
Formation, evolution & dispersal of protoplanetary discs, October 2022. *Organized by the Royal Astronomical Society.*
Planet Formation: From Dust Coagulation to Final Orbit Assembly, June 2022. *Organized by Munich Institute for Astro-, Particle, and BioPhysics (MIAPbP)*
Sagan Exoplanet Summer Workshop: Astrobiology for Astronomers, July 2019. *Organized by NASA Exoplanet Science Institute*.
Communicating Science Effectively in Today's World, May 2019. *Organized by UCLA Department of Earth, Planetary, and Space Sciences and UCLA Division of Physical Sciences*.

UNDERGRADUATE STUDENT SUPERVISED

Manasa Lakshmi Narasimhan, 2021-2022

SERVICE ACTIVITIES

Graduate Student Representative, *UCLA EPSS Curriculum Committee*, 2020-2022.
Reviewer, *The Astrophysical Journal, The Astrophysical Journal Letters*.
Session Chair, *AEThER Team Workshop*, 2023.
Local Organizing Committee Member, Magellan Science Meeting, 2025.
Social Hour Czar, Carnegie Earth and Planets Laboratory, 2025-Present.

COLLABORATION MEMBERSHIPS

AEThER, 2021-Present.