

William Kennedy Misener

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RESEARCH INTERESTS

The physics of the formation and evolution of planets, planetary atmospheres, and planetary systems

EDUCATION

University of California, Los Angeles, 2018-Present

Ph.D. candidate, Planetary Science

Master of Science, Geophysics and Space Physics, March 2021

University of Chicago, 2014-2018

Bachelor of Arts, Physics with Specialization in Astrophysics, June 2018

With General and Departmental Honors

RESEARCH EXPERIENCE

Graduate Student Researcher, 2018-Present

Advisor: Professor Hilke Schlichting

Department of Earth, Planetary, and Space Sciences, University of California, Los Angeles

Investigating formation, structure, and evolution of super-Earth and sub-Neptune atmospheres and their effects on surface chemistry and observability of exoplanet atmospheres

Research Assistant, 2016-2018

Advisor: Professor Fred Ciesla

Department of the Geophysical Sciences, University of Chicago

Investigated solid material transport dynamics and grain growth via Monte Carlo simulation of protoplanetary disk conditions

PUBLICATIONS

4. **W. Misener** and H. Schlichting, 2023. “Atmospheres as windows into sub-Neptune interiors: coupled chemistry and structure of hydrogen-silane-water envelopes”, *Monthly Notices of the Royal Astronomical Society*, in press. DOI: [10.1093/mnras/stad1910](https://doi.org/10.1093/mnras/stad1910) arXiv: [2303.09653](https://arxiv.org/abs/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](https://doi.org/10.1093/mnras/stac1732) arXiv: [2201.04299](https://arxiv.org/abs/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](https://doi.org/10.1093/mnras/stab895) arXiv: [2103.09212](https://arxiv.org/abs/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](https://doi.org/10.3847/1538-4357/ab4a13) arXiv: [1910.00609](https://arxiv.org/abs/1910.00609)

SEMINARS & TALKS

18. **Contributed Talk**, “Magma-atmosphere interactions in sub-Neptunes”, *ExoClimes VI*, Exeter, UK, June 28, 2023
17. **Seminar**, “A window into sub-Neptune interiors: coupled chemistry and structure of hydrogen-silane-water atmospheres”, *School of Mathematics Statistics and Physics, Newcastle University*, Newcastle upon Tyne, UK, June 23, 2023
16. **Contributed Talk**, “A window into sub-Neptune interiors: coupled chemistry and structure of hydrogen-silane-water atmospheres”, *ERES Symposium*, New Haven, CT, USA, June 20, 2023
15. **Seminar**, “Effects of silicate vapor on sub-Neptune atmospheres”, *Planetary Science Seminar, University of California, Los Angeles*, Los Angeles, CA, USA, June 8, 2023
14. **Flash Talk**, “Chemical equilibrium between magma oceans and hydrogen atmospheres”, *AETHER Collaboration Workshop*, Washington, DC, USA January 18, 2023
13. **Seminar**, “Effects of silicate vapour on sub-Neptune atmospheres”, *Astrophysics Group, Imperial College London*, London, UK, October 13, 2022
12. **Contributed Talk**, “Effects of silicate vapor on sub-Neptune atmospheres”, *Bay Area Exoplanet Meeting #41*, Santa Cruz, CA, USA, July 15, 2022
11. **Research Talk**, “Formation and Evolution of Super-Earth and Sub-Neptune Atmospheres”, *MIAPbP Planet Formation Workshop*, Garching bei München, Germany, June 29, 2022
10. **Contributed Talk**, “To Cool is to Keep: Residual H/He Atmospheres of Super-Earths”, *Exoplanets IV Atmospheric Escape Splinter Session*, Las Vegas, NV, USA, May 4, 2022
9. **Seminar**, “The consequences of silicate vapor in determining the structure, radii, and evolution of sub-Neptunes”, *Planetary Science Seminar, University of California, Los Angeles*, Los Angeles, CA, USA, February 24, 2022
8. **Contributed Talk**, “To Cool is to Keep: Residual H/He Atmospheres of Super-Earths”, *Bay Area Exoplanet Meeting #38* [virtual due to COVID-19], September 17, 2021
7. **Lightning Talk**, “Residual H/He Atmospheres of Super-Earths”, *EPSS 12th Student Research Symposium*, May 14, 2021
6. **Seminar**, “To Cool is to Keep: Residual H/He Atmospheres of Super-Earths”, *Planetary Science Seminar, University of California, Los Angeles*, Los Angeles, CA, USA, April 23, 2021
5. **Panelist**, “Super-Earths”, *Habitable Worlds 2021*, [virtual due to COVID-19], March 25, 2021
4. **Contributed Talk**, “To Cool is to Keep: Residual H/He Atmospheres of Super-Earths”, *Exoplanet Demographics*, [virtual due to COVID-19], November 13, 2020
3. **Contributed Talk**, “Residual H/He Atmospheres of Super-Earths”, *Exoplanets in Southern California*, [virtual due to COVID-19], September 15, 2020
2. **Seminar**, “Dust Grain Growth and Transport in Protoplanetary Disks”, *Planetary Science Seminar, University of California, Los Angeles*, Los Angeles, CA, USA, April 26, 2019

1. **Honors Bachelor's Thesis Defense**, "Modeling Dust Grain Growth and Transport in the Protoplanetary Disk", *University of Chicago*, Chicago, IL, USA, May 24, 2018

POSTERS

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

HONORS

- 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
- Honorarium for attending Planet Formation: From Dust Coagulation to Final Orbit Assembly workshop
- EPSS Department Teaching Award, University of California, Los Angeles, 2020
- Graduate Division Fellowship, University of California, Los Angeles, 2018-23
- 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

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

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, 2022-23

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

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.

COLLABORATION MEMBERSHIPS

AETHeR, 2021-Present.