Megan Mansfield

University of Arizona Department of Astronomy & Steward Observatory
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Education

University of Chicago

PhD - Geophysical Sciences, June 2021 (Advisor: Jacob Bean)
Dissertation: "Revealing the Atmospheres of Highly Irradiated Exoplanets: From Ultra-Hot Jupiters to Venus Analogues"
M.S. – Geophysical Sciences, December 2018

Massachusetts Institute of Technology (MIT): June 2016

B.S. double major - Earth, Atmospheric, and Planetary Sciences; Physics Minor - Music
Senior Thesis: "Analysis of Pluto's Light Curve to Detect Volatile Transport"

Appointments

NASA Hubble Fellowship Program (NHFP) Sagan Fellow, Steward Observatory, University of Arizona, 2021-present

Honors and Awards

William Rainey Harper Dissertation Fellowship, University of Chicago, 2020-2021

Future Investigators in NASA Earth and Space Science and Technology (FINESST) Graduate Fellowship, 2019-2021

Eckhardt Graduate Scholars Program, University of Chicago, 2016-2021

Honorable Mention, NSF Graduate Research Fellowship Program, 2018

Christopher Goetze Prize for Undergraduate Research, MIT Department of Earth, Atmospheric, and Planetary Sciences, 2016

Phi Beta Kappa Academic Honor Society, MIT Chapter (Xi of Massachusetts), 2016

Sigma Pi Sigma Physics Honor Society, MIT, 2016

Observing Experience

<u>As Program PI</u>

JWST/MIRI

"Constraining the Atmosphere of the Terrestrial Exoplanet Gl 486b", 12.6 hours, 2022

IRTF/iSHELL

"Measuring the carbon-to-oxygen ratio of the exo-Neptune HAT-P-26b", 16 hours, 2021
"Measuring the carbon-to-oxygen ratio of the sub-Neptune GJ 3470b", 13.5 hours, 2021
"The first definitive C/O ratio determination for a sub-Jovian exoplanet", 16.5 hours, 2020

HST/WFC3

"Stuck in the Middle with WASP-77Ab: Defining Transitions in Hot Jupiter Atmospheres"**,** 10 orbits, 2020

Gemini-S/IGRINS

"A high-resolution survey of molecular abundances in transiting exoplanet atmospheres", 53.8 hours, 2020-2023

<u>As Program Co-I</u>

JWST

25.2 hours, NIRSpec, 2022 (PI: Vivien Parmentier)
48.7 hours, MIRI, 2022 (PI: Jacob Bean)
"The Transiting Exoplanet Community Early Release Science Program", 80.6 hours, NIRISS/NIRCam/NIRSpec/MIRI, 2022 (PI: Natalie Batalha)

HST/WFC3

6 orbits, 2020 (PI: Lorenzo Pino)

Gemini-S/IGRINS

131.2 hours, 2021-2024 (PI: Michael Line)
4.2 hours, 2020 (PI: Michael Line)

Spitzer/IRAC

9 hours, 2019 (PI: Drake Deming)
620 hours, 2018-2019 (PI: Jacob Bean)

Publications

8 first-author papers; 819 total citations

<u>Major Contributions</u>

24. **Mansfield, M.**, L. Wiser, K. B. Stevenson, M. R. Line, et al. (2021). *Detection of Water in the Thermal Emission Spectrum of the Hot Jupiter WASP-77Ab*, in prep.

23. **Mansfield, M.**, M. R. Line, J. L. Bean, J. J. Fortney, et al. (2020). *A hot Jupiter spectral sequence with evidence for compositional diversity*, accepted to Nature Astronomy.

22. **Mansfield, M.**, E. Schlawin, J. Lustig-Yaeger, A. D. Adams, et al. (2020). *Eigenspectra: A Framework for Identifying Spectra from 3D Eclipse Mapping*, MNRAS, 499, 5151.

21. **Mansfield, M.**, J. L. Bean, K. B. Stevenson, T. D. Komacek, et al. (2020). *Evidence for H_2 Dissociation and Recombination Heat Transport in the Atmosphere of KELT-9b,* ApJL, 888, L15.

20. **Mansfield, M.**, E. S. Kite, R. Hu, D. D. B. Koll, et al. (2019). *Identifying Atmospheres on Rocky Exoplanets through Inferred High Albedo,* ApJ, 886, 141.

19. Koll, D. D. B., M. Malik, **M. Mansfield**, E. M.-R. Kempton, et al. (2019). *Identifying Candidate Atmospheres on Rocky M dwarf Planets via Eclipse Photometry,* ApJ, 886, 140.

18. **Mansfield, M.**, J. L. Bean, A. Oklopčić, L. Kreidberg, et al. (2018). *Detection of Helium in the Atmosphere of the Exo-Neptune HAT-P-11b,* ApJL, 868, 34.

17. **Mansfield, M.**, J. L. Bean, M. R. Line, V. Parmentier, et al. (2018). *An HST/WFC3 Thermal Emission Spectrum of the Hot Jupiter HAT-P-7b,* AJ, 156, 10.

16. **Mansfield, M.**, E. S. Kite, and M. A. Mischna (2018). *Effect of Mars Atmospheric Loss on Snow Melt Potential in a 3.5-Gyr Mars Climate Evolution Model,* JGR-Planets, 123, 794.

Minor Contributions

15. Savel, A. B. and 8 others including **M. Mansfield** (2021). *No umbrella needed: Confronting the hypothesis of iron rain on WASP-76b with post-processed general circulation models*, arXiv: 2109.00163.

14. May, E. M. and 17 others including **M. Mansfield** (2021). *Spitzer phase curve observations and circulation models of the inflated ultra-hot Jupiter WASP-76b*, AJ, 162, 158.

13. Bell, T. J., and 14 others including **M. Mansfield** (2020). *A Comprehensive Reanalysis of Spitzer's 4.5 μm Phase Curves, and the Phase Variations of the Ultra-hot Jupiters MASCARA-1b and KELT-16b*, MNRAS, 504, 3316.

12. Kasper, D., and 7 others including **M. Mansfield** (2020). *Non-detection of Helium in the Upper Atmospheres of Three Sub-Neptune Exoplanets*, AJ, 160, 258.

11. Baxter, C., and 8 others including **M. Mansfield** (2020). *A transition between the hot and the ultra-hot Jupiter atmospheres*, A&A, 639, 36.

10. Keating, D., and 18 others including **M. Mansfield** (2020). *Smaller than expected bright-spot offsets in Spitzer phase curves of the hot Jupiter Qatar-1b*, AJ, 159, 225.

9. Wong, I., and 25 others including **M. Mansfield** (2020). *Exploring the Atmospheric Dynamics of the Extreme Ultrahot Jupiter KELT-9b Using TESS Photometry*, AJ, 160, 88.

8. Malik, M., E. M.-R. Kempton, D. D. B. Koll, **M. Mansfield**, et al. (2019). *Analyzing Atmospheric Temperature Profiles and Spectra of M dwarf Rocky Planets,* ApJ, 886, 142.

7. Chachan, Y., and 16 others including **M. Mansfield** (2019). *A Hubble PanCET Study of HAT-P-11b: A Cloudy Neptune with a Low Atmospheric Metallicity*, AJ, 158, 244.
6. Parmentier, V., M. R. Line, J. L. Bean, **M. Mansfield**, et al. (2018). *From Thermal Dissociation to Condensation in the Atmospheres of Ultra Hot Jupiters: WASP-121b in Context,* A&A, 617, A110.
5. Kempton, E. M.-R., and 41 others including **M. Mansfield** (2018). *A Framework for Prioritizing the TESS Planetary Candidates Most Amenable to Atmospheric Characterization*, PASP, 130, 993.
4. Arcangeli, J., and 9 others including **M. Mansfield** (2018). *H^- Opacity and Water Dissociation in the Dayside Atmosphere of the Very Hot Gas Giant WASP-18b,* ApJL, 855, 30.
3. Bean, J. L., and 101 others including **M. Mansfield** (2018). *The Transiting Exoplanet Community Early Release Science Program for JWST*, PASP, 130, 993.
2. Kosiarek, M., **M. Mansfield**, T. Brothers, H. Bates, et al. (2017). *SAURON: The Wallace Observatory Small Autonomous Robotic Optical Nightwatcher,* PASP, 129.
1. Binzel, R. P., and 16 others including **M. Mansfield** (2015). *Spectral Slope Variations for OSIRIS-REx Target Asteroid (101955) Bennu: Possible Evidence for a Fine-grained Regolith Equatorial Ridge*, Icarus, 256, 22-29.

Conference Presentations

Exo-Webb Summer Talk Series, contributed talk, July 2020

Exoplanets III, contributed talk, July 2020

Rocky Exoplanets in the Era of JWST, poster, November 2019

Extreme Solar Systems IV, poster, August 2019

Exoclimes V, poster, August 2019

Sagan Summer Workshop, poster, July 2019

Exoplanets II, contributed talk, July 2018

Habitable Worlds 2017, poster, November 2017

Enabling Transiting Exoplanet Observations with JWST, poster, July 2017

48th Lunar and Planetary Science Conference, poster, March 2017

Teaching Experience

Teaching Assistant, The Search for Extraterrestrial Life, Fall 2018, 2019

Teaching Assistant, Natural Hazards, Winter 2018

Teaching Assistant, Climate Foundations, Fall 2017

Students Advised

Olina Liang (University of Chicago undergraduate), Summer 2019

Service and Outreach

Referee for:

The Astrophysical Journal Supplement Series, 2021-present
The Astronomical Journal, 2019-present
Astronomy and Astrophysics, 2018-present

Proposal Review Member for:

HST Cycle 29 Large Programs (2021)
HST Mid-Cycle 26, 27-1, 27-1 (2018-2020)

University of Chicago Geophysical Sciences Seminar Committee, 2020-2021

University of Chicago Exoplanet Journal Club Graduate Student Lead – organized weekly talks on exoplanet science, 2020-2021

MIT Educational Council – conducted alumni interviews for MIT, 2018-present

University of Chicago DoGS Lunch Co-President – organized weekly research talks given by graduate students in the Department of Geophysical Sciences, 2018-2019

Spence School – talked about astronomy to all-girls middle school classes, 2018-2019

Adopt-a-Physicist – discussed physics careers with high school students, 2017-present

Other Activities

University of Chicago Chamber Orchestra, viola section leader, 2016-2021

MIT Muses A Cappella Group, CD Manager (2015), Music Director (2014), Assistant Music Director (2013)

MIT Symphony Orchestra, viola section member, 2012-2016