

Erin M. May

Johns Hopkins Applied Physics Laboratory • Erin.May@jhuapl.edu • www.ErinMMay.com

Using 3D circulation models and ground- and space- based observations, I am interested in the characterization and classification of exoplanets and their atmospheres with uniform analysis methods.

Relevant Employment

Johns Hopkins Applied Physics Laboratory Postdoctoral Fellow with the STARGATE group	October 2019 – Present
Space Telescope Science Institute Postdoctoral Researcher with the STARGATE group	July 2019 – October 2019

Education

PhD in Astronomy and Astrophysics University of Michigan, Department of Astronomy Advisor: Emily Rauscher Thesis: <i>The Atmospheres of the Smallest Gas Exoplanets</i>	2019
B.S in Astrophysics and Advanced Mathematics Michigan State University, Department of Physics & Astronomy, Department of Mathematics	2014

Publications in Astronomy

Refereed (* = student advised)

- (7) **E. M. May**, J. Taylor, T. D. Komacek, M. R. Line, V. Parmentier, “Water Ice Cloud Variability & Multi-Epoch Transmission Spectra of TRAPPIST-1e”, *arXiv:2103.09313*
- (6) **E. M. May** & K. B. Stevenson, “Introducing a New Spitzer Master BLISS Map to Remove the Instrument Systematic -- Phase Curve Parameter Degeneracy, as Demonstrated by a Reanalysis of the 4.5 micron WASP-43b Phase Curve”, *AJ* 160 140 (2020c)
- (5) **E. M. May** & E. Rauscher, “The Effects of a Surface on Atmospheric Circulation and Emission for 1.5R_⊕ Planets”, *ApJ* 893 161 (2020b)
- (4) **E. M. May**, T. Gardner, E. Rauscher, & J. D. Monnier, “MOPSS II: Extreme Optical Scattering Slope for the Inflated Super-Neptune HATS-8b”, *AJ* 159 7 (2020a)
- (3) **E. M. May**, M. Zhao, M. Haidar*, E. Rauscher, & J. D. Monnier, “MOPSS I: Flat Optical Spectra for the Hot Jupiters WASP-4b and WASP-52b”, *AJ* 156 122 (2018)
- (2) Jacob Bean et al. (101 co-authors including **E. M. May**) “The Transiting Exoplanet Community Early Release Science Program for JWST” *PASP*, 30, 114402 (2018)
- (1) **E. M. May** & E. Rauscher, “Examining Tatooine: Atmospheric Models of Circumbinary Planets” *ApJ* 826, 225 (2016)

In-Prep. (* = student advised, ** = co-first authors, status of draft is noted)

- (8) **E. M. May**** and T. Komacek**, et al. “Spitzer phase curve observations and circulation modles of the inflated ultra-hot Jupiter WASP-76b” (**submitted to AJ**)
- (7) K. S. Sotzen, K.B. Stevenson, **E. M. May**, et al. “On the Utility of Transmission Color Ratios for Differentiating Super-Earths and Sub-Neptunes” (**submitted to ApJ**)
- (6) L. C. Mayorga, T. D. Robinson, M. S. Marley, **E. M. May**., K. B. Stevenson, “Variable Irradiation on 1D Cloudless Eccentric Exoplanet Atmospheres” (**Submitted to ApJ**)
- (5) **E. M. May**, K. B. Stevenson, et al. “Uniform 4.5 Micron Spitzer Phase Curve Results for QATAR-1b, QATAR-2b, WASP-52b, WASP-34b, and WASP-140b” (in prep., initial analysis is complete)
- (4) G. Fu et al. (including **E. M. May**) “The Panchromatic Comparative Exoplanet Treasury Program: WASP-74b” (in prep., contribution is complete)
- (3) T. Gardner*, **E. M. May**, et al. “MOPSS IV: Optical Transmission Spectra for HATS-35b” (in prep.)
- (2) K. Meyer*, **E. M. May**, et al. “MOPSS III: Optical Transmission Spectra for WASP-124b” (in prep.)

- (1) J. Rodriguez, **E. M. May**, K. B. Stevenson, et al. “A *Comprehensive Global Analysis of the Hot Jupiter KELT-14b with Spitzer, TESS, and Ground-based Telescopes*” (in prep., nearing submission)

Funded Awards, Grants, and Space Telescope Time

James Webb Space Telescope, Cycle 1

“*Under the Light of a Dead Star: Revealing the Atmospheric Composition of a White Dwarf Planet*”

PI: R. MacDonald; CoIs: (including **E. M. May**)

13.3 hours

James Webb Space Telescope, Cycle 1

“*Tell Me How I’m Supposed To Breathe With No Air:*

Measuring the Prevalence and Diversity of M-Dwarf Planet Atmospheres”

PI: K. Stevenson; CoIs: (including **E. M. May**)

75.6 hours

Ground-Based Observing Time

(6)	Magellan Baade Telescope, IMACS, E. M. May (PI) , 4 nights	2019A Semester
(5)	Magellan Baade Telescope, IMACS, E. M. May (PI) , 5 nights	2018B Semester
(4)	Magellan Baade Telescope, IMACS, E. M. May (PI) , 4 nights	2018A Semester
(3)	Magellan Baade Telescope, IMACS, E. M. May (PI) , 3 nights	2017B Semester
(2)	Magellan Baade Telescope, IMACS, E. M. May (PI) , 3 nights	2017A Semester
(1)	Magellan Baade Telescope, IMACS, E. M. May (PI) , 2 nights	2016B Semester

Teaching and Mentoring

Undergraduate and Graduate Students Advised

Current:	Tyler Gardner: <i>currently preparing a first-author publication on MOPSS data</i>	(Grad)
	Kelly Meyer: <i>currently preparing a first-author publication on MOPSS data</i>	(UG)
Previous:	James Lisowski: <i>worked on MOPSS data reduction</i>	(UG)
	Evan Scott: <i>machine learning to reach photon limited precision with ground-based spectroscopy</i>	(UG)
	Mariam Haidar: <i>red noise removal improvements to MOPSS pipeline, co-author on MOPSS I</i>	(UG)

Graduate Student Instructor Mentor, University of Michigan, Dept. of Astronomy

Fall 2017 – Spring 2019

Graduate Student Instructor, University of Michigan, Dept. of Astronomy

Spring 2015 – Fall 2015

Teaching Assistant, Michigan State University, Dept. of Physics and Dept. of Mathematics

Fall 2011 – Spring 2014

Guest Lecturer, Life in the Universe, University of Washington

Spring 2021

Conference, Seminar, and Invited Talks

- CfA Exoplanet Lunch Seminar, Mar. 2021
- The Interstellar Probe Study Webinar Series, Jan. 2021
“*Exoplanets and Us: How looking back enables us look forward*”
- The 236th meeting of the American Astronomical Society, virtual, Jan. 2021
“*Water Ice Cloud Variability & Multi-Epoch Transmission Spectra of TRAPPIST-1e*”
- UMD PALS Seminar, December 2020
- JILA Astrophysics Seminar, November 2020
- The Chesapeake Bay Area Exoplanet Meeting, June 2020
“*A New and Uniform Spitzer Systematic Model.*”
- The 235th meeting of the American Astronomical Society, Honolulu, HI, Jan. 2020
“*The Degeneracy of BLISS mapping and PRF decorrelation in High Precision Spitzer Photometry.*”
- Dissertation talk, 233rd meeting of the American Astronomical Society, Seattle, WA, Jan. 2019
“*The Smallest Gas Exoplanets – Theoretical and Observational Studies of their Atmospheres*”
- Seminar, Las Campanas Observatory, La Serena, Chile, Sept. 2018
“*Exoplanet Atmospheres at Magellan*”
- Origins Seminar, University of Arizona, Dec. 2017
- Advanced School on Exoplanetary Science, Vietri Sul Mare, Italy, May 2017
“*Exoplanet Atmospheres with the Magellan Baade Telescope*”,
- Magellan Science Meeting, Washington D.C., Dec. 2016
“*Exoplanet Atmospheres with IMACS*”

Other/Service/ Outreach

American Astronomical Society Congressional Visit Day	Mar. 2019
University of Michigan FEMMES Capstone Event	Nov. 2018
Local Elementary Students (<i>Females Excelling More in Mathematics, Engineering, and the Sciences</i>)	
University of Michigan Museum of Natural History Science Communication Fellow	2017-2019
University of Michigan Time Allocation Committee – Magellan/MDM	2017A
Astronomy on Tap – Ann Arbor Location, Event Organizer	2015-2017
Conference Local Organizing Committees	
Multi-Dimensional Characterization of Distant Worlds, Ann Arbor, MI	Oct. 2018
Origins of Volatiles in Habitable Planets, Ann Arbor, MI	Oct. 2017