

# Erin M. May

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

## Relevant Employment

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

## Education

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

## Publications in Astronomy

### Refereed First Author

- (8) **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” *AJ* 163, 256 (2022)
- (7) **E. M. May** & T. Komacek, et al. “Spitzer phase curve observations and circulation models of the inflated ultra-hot Jupiter WASP-76b” *AJ*, 162, 158 (2021b)
- (6) **E. M. May**, J. Taylor, T. D. Komacek, M. R. Line, V. Parmentier, “Water Ice Cloud Variability & Multi-Epoch Transmission Spectra of TRAPPIST-1e”, *ApJL*, 911, L30 (2021a)
- (5) **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)
- (4) **E. M. May** & E. Rauscher, “The Effects of a Surface on Atmospheric Circulation and Emission for 1.5R<sub>⊕</sub> Planets”, *ApJ* 893 161 (2020b)
- (3) **E. M. May** et al. “MOPSS II: Extreme Optical Scattering Slope for the Inflated Super-Neptune HATS-8b”, *AJ* 159 7 (2020a)
- (2) **E. M. May** et al. “MOPSS I: Flat Optical Spectra for the Hot Jupiters WASP-4b and WASP-52b”, *AJ* 156 122 (2018)
- (1) **E. M. May** & E. Rauscher, “Examining Tatooine: Atmospheric Models of Circumbinary Planets” *ApJ* 826, 225 (2016)

### Refereed Nth Author

- (11) L. Alderson et al. (including **E. M. May**) “A comprehensive analysis of WASP-17b's transmission spectrum from space-based observations” *MNRAS*, 512, 4185 (2022)
- (10) J. Lustig-Yaeger, et al. (including **E. M. May**) “Hierarchical Bayesian Atmospheric Retrieval Modeling for Population Studies of Exoplanet Atmospheres: A Case Study on the Habitable Zone” *AJ*, 163, 140 (2022)
- (9) A. Savel et al. (including **E. M. May**) “No Umbrella Needed: Confronting the hypothesis of iron rain on WASP-76b with post-processed general circulation models” *AJ*, 926, 85, 2022
- (8) L. Corrales, et al. (including **E. M. May**) “Five new hot-jupiter transits investigated with Swift UVOT” *AJ* 162, 287 (2021)
- (7) G. Fu, D. Deming, **E. M. May**, et al. “The Hubble PanCET program: Transit and Eclipse Spectroscopy of the Hot Jupiter WASP-74b” *AJ*, 162, 271 (2021)
- (6) J. Lustig-Yaeger, et al. (including **E. M. May**) “Retrieving Exoplanet Atmospheres using Planetary Infrared Excess: Prospects for the Nightside of WASP-43b and other Hot Jupiters” *ApJL*, 921, L4 (2021)
- (5) 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” *AJ*, 162, 168 (2021)
- (4) L. C. Mayorga, J. Lustig-Yaeger, **E. M. May**, et al. “Transmission Spectroscopy of the Earth-Sun System to

- Inform the Search for Extrasolar Life*" PSJ, 2, 140 (2021)
- (3) L. C. Mayorga, T. D. Robinson, M. S. Marley, **E. M. May**., K. B. Stevenson, "Variable Irradiation on 1D Cloudless Eccentric Exoplanet Atmospheres" ApJ, 915, 41 (2021)
  - (2) D. Keating et al. (including **E. M. May**) "Smaller than Expected Bright-spot Offsets in Spitzer Phase Curves of the Hot Jupiter Qatar-1b" AJ, 159, 225 (2020)
  - (1) 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)

## Funded Awards, Grants, and Space Telescope Time

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### 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; Funded 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; Funded CoIs: (including **E. M. May**) - 75.6 hours

### NASA ROSES XRP, 2022-2025

"Consistency is Key: A Uniform Reanalysis of Spitzer Phase Curves"

PI: **E. M. May** – \$683k total funding, \$267k to May

### NASA ICAR, 2021-2024

"The M-dwarf Opportunity"

Consortium on Habitability and Atmospheres of M-dwarf Planets (CHAMPs)

PI: K. Stevenson/R. Kopparapu; Funded CoIs: (including **E. M. May**)

## Ground-Based Observing Time

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

## Teaching and Mentoring

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### Undergraduate and Graduate Students Advised

<b>Previous:</b>	Tyler Gardner: <i>worked on MOPSS data reduction and code development</i>	(Grad)
	Kelly Meyer: <i>worked on MOPSS data</i>	(UG)
	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

## Contributed, Invited, and Seminar/Colloquia Talks

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<b>Royal Astronomical Society Specialist Discussion Keynote Speaker</b>	Apr. 2022
<i>"A Changing Climate: Why 3D Models are Crucial for the Interpretation of Multi-Epoch Observations of Small Planets with JWST"</i>	
<b>Carnegie EPL Astronomy Seminar</b>	Mar. 2022
<b>McGill Astronomy Seminar</b>	Feb. 2022
<b>UCSC PLUNCH Seminar</b>	Jan. 2022
<b>Infrared Science Interest Group (IR SIG) Webinar</b>	Dec. 2021
<b>STScI "Exoplanet Coffee" journal club</b>	Apr. 2021
<b>CfA Exoplanet Lunch Seminar</b>	Mar. 2021
<b>The Interstellar Probe Study Webinar Series</b>	Jan. 2021
<i>"Exoplanets and Us: How looking back enables us look forward"</i>	
<b>The 236<sup>th</sup> meeting of the American Astronomical Society, virtual</b>	Jan. 2021
<b>UMD PALS Seminar</b>	Dec. 2020
<b>JILA Astrophysics Seminar</b>	Nov. 2020

<b>The Chesapeake Bay Area Exoplanet Meeting</b>	June 2020
<b>The 235<sup>th</sup> meeting of the American Astronomical Society, Honolulu, HI</b>	Jan. 2020
<b>Dissertation talk, 233<sup>rd</sup> meeting of the American Astronomical Society, Seattle, WA</b>	Jan. 2019
<b>Seminar, Las Campanas Observatory, La Serena, Chile</b>	Sept. 2018
<b>Origins Seminar, University of Arizona</b>	Dec. 2017
<b>Advanced School on Exoplanetary Science, Vietri Sul Mare, Italy</b>	May 2017
<b>Magellan Science Meeting, Washington D.C.</b>	Dec. 2016

## Outreach

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<b>Astronomy on Tap</b>	
<b>Speaker</b> – Lansing, MI / Saint Louis, MO / Baton Rouge, LA	ongoing
<b>Organizer</b> – Ann Arbor Location	2015-2017
<b>JWST subject matter expert, outreach event speaker, Maryland STEM festival</b>	Dec. 2021
<b>JWST subject matter expert, outreach event speaker, Gasden, AL Public Library</b>	Nov. 2021
<b>Invited Outreach/Lecture Speaker for the “Stanford Program for Inspiring the nExt Generation of Women in Physics”</b>	July 2021
<b>American Astronomical Society Congressional Visit Day</b>	Mar. 2019
<b>University of Michigan FEMMES Capstone Event</b>	Nov. 2018
Local Elementary Students ( <i>Females Excelling More in Mathematics, Engineering, and the Sciences</i> )	
<b>University of Michigan Museum of Natural History Science Communication Fellow</b>	2017-2019

## Other/Service

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<b>ExoPAG Executive Committee Member</b>	ongoing
<b>Transiting Exoplanet JWST ERS team member and data challenge working group member</b>	ongoing
<b>JWST Telescope Scientist Team (TST) Transiting Exoplanet GTO project level member</b>	ongoing
<b>Conference Local Organizing Committees</b>	
CHAMPs Seminar Series, virtual	ongoing
<i>(led the organization of the CHAMPs ECR Seminar Series in response to AAS 239 cancellation)</i>	
Multi-Dimensional Characterization of Distant Worlds, Ann Arbor, MI	Oct. 2018
Origins of Volatiles in Habitable Planets, Ann Arbor, MI	Oct. 2017
<b>NASA PI Launchpad (attendee)</b>	Jul. 2021
<b>University of Michigan Time Allocation Committee – Magellan/MDM</b>	2017A

***Ongoing Reviewer for NASA ROSES program elements, AAS journals, A&A journal, NASA Hubble, and other NASA supported observatories.***