

# 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>Senior Professional Staff</i>	July 2022 – Present
Johns Hopkins Applied Physics Laboratory <i>Postdoctoral Fellow</i>	October 2019 – July 2022
Space Telescope Science Institute <i>Postdoctoral Researcher with the STARGATE group</i>	July 2019 – October 2019

## Education

Ph.D. 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 ([ADS Library Link](#))

- (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 ([ADS Library Link](#))

- (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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### Hubble Space Telescope, Cycle 30

“*The HST/JWST synergy: A deep dive into the NUV with WASP-39b to answer key formation questions*”

PI: David Sing; Funded CoI include **E. M. May** – 24 orbits

### JWST, Cycle 1

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

PI: R. MacDonald; Funded CoIs include **E. M. May**- 13.3 hours

### JWST, 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 include **E. M. May** - 75.6 hours

### JWST, Cycle 1

“*Unshrouding the Sub-Neptune Population: The Case of TO-421b*”

PI: Eliza Kempton; CoIs include **E. M. May** – 11.0 hours

### JWST, Cycle 1 Early Release Science

“*The Transiting Exoplanet Community Early Release Science Program*”

PI: Natalie Batalha; CoIs include **E. M. May** – 86.6 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 include **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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NASA Goddard Exoplanet Seminar	June 2022
Royal Astronomical Society Specialist Discussion Keynote Speaker	Apr. 2022
<i>"A Changing Climate: Why 3D Models are Crucial for the Interpretation of Multi-Epoch Observations of Small Planets with JWST"</i>	
Carnegie EPL Astronomy Seminar	Mar. 2022
McGill Astronomy Seminar	Feb. 2022
UCSC PLUNCH Seminar	Jan. 2022
Infrared Science Interest Group (IR SIG) Webinar	Dec. 2021
STScI "Exoplanet Coffee" journal club	Apr. 2021
CfA Exoplanet Lunch Seminar	Mar. 2021
The Interstellar Probe Study Webinar Series	Jan. 2021
<i>"Exoplanets and Us: How looking back enables us look forward"</i>	
The 236 <sup>th</sup> meeting of the American Astronomical Society, virtual	Jan. 2021
UMD PALS Seminar	Dec. 2020
JILA Astrophysics Seminar	Nov. 2020
The Chesapeake Bay Area Exoplanet Meeting	June 2020
The 235 <sup>th</sup> meeting of the American Astronomical Society, Honolulu, HI	Jan. 2020
Dissertation talk, 233 <sup>rd</sup> meeting of the American Astronomical Society, Seattle, WA	Jan. 2019
Seminar, Las Campanas Observatory, La Serena, Chile	Sept. 2018
Origins Seminar, University of Arizona	Dec. 2017
Advanced School on Exoplanetary Science, Vietri Sul Mare, Italy	May 2017
Magellan Science Meeting, Washington D.C.	Dec. 2016

## Outreach

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Astronomy on Tap	
Speaker – Lansing, MI / Saint Louis, MO / Baton Rouge, LA	ongoing
Organizer – Ann Arbor Location	2015-2017
JWST subject matter expert, outreach event speaker, Maryland STEM festival	Dec. 2021
JWST subject matter expert, outreach event speaker, Gasden, AL Public Library	Nov. 2021
Invited Outreach/Lecture Speaker for the "Stanford Program for Inspiring the nExt Generation of Women in Physics"	July 2021
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

## Other/Service

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ExoPAG Executive Committee Member	ongoing
Transiting Exoplanet JWST ERS team member and transmission working group member	ongoing
JWST Telescope Scientist Team (TST) Transiting Exoplanet GTO project level member	ongoing
Conference Local Organizing Committees	
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
NASA PI Launchpad (attendee)	Jul. 2021
University of Michigan Time Allocation Committee – Magellan/MDM	2017A

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