

Caprice L. Phillips

Curriculum Vitae

The Ohio State University
Department of Astronomy
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RESEARCH INTERESTS

brown dwarf and exoplanet atmosphere detection and characterization, habitability, and substellar evolution

EDUCATION

- **The Ohio State University** Columbus, OH
Ph.D. Astronomy Expected 2025
- Graduate Certificate In College Education and University Teaching (In Progress)
- **The University of Texas at Austin** Austin, TX
M.A. Astronomy May 2019
Thesis Title: *2M0443+3723 B: A Young Companion at the Substellar Boundary with Potential Membership in the β Pictoris Moving Group*
- **University of Arkansas at Little Rock** Little Rock, AR
B.S. Physics; Minor: Mathematics December 2015

RESEARCH POSITIONS

- **Graduate Student Researcher, Advisor: Dr. Jackie Faherty** Columbus, OH
The Ohio State University & American Museum of Natural History 2022-Present
 - Using *Brewster* to robustly decouple temperature, gravity, composition, and cloud properties for planetary mass brown dwarfs
 - Exploring atmospheric properties of substellar companions to probe planetary formation mechanisms
- **Graduate Student Researcher, Advisor: Dr. Ji Wang** Columbus, OH
Department of Astronomy, The Ohio State University 2021-Present
 - Investigating whether biosignatures on temperate gas dwarfs/terrestrial-like planets are detectable with the upcoming *Twinkle* space mission
 - Determining suitable targets for observations for *Twinkle*
 - Exploring properties of clouds and/or hazes on Sub-Neptunes and how they change with temperature
- **Graduate Student Researcher, Advisor: Dr. Ji Wang** Columbus, OH
Department of Astronomy, The Ohio State University 2019-2021
 - Investigated whether biosignatures on gas dwarfs are detectable with the MIRI, NIRSpec, and NIRISS instruments on the upcoming *JWST* mission
- **Graduate Student Researcher, Advisor: Dr. Brendan Bowler** Austin, TX
Department of Astronomy, The University of Texas at Austin 2017-2019
 - Characterized the physical and empirical properties of a candidate benchmark brown dwarf companion in the β Pictoris Moving Group

- **Undergraduate Student Researcher, Advisor: Dr. Tony Hall** Little Rock, AR
2014–2015
Department of Physics & Astronomy, The University of Arkansas at Little Rock
 - Performed a comparative study of meteorites & unknown samples for composition determination using Raman spectroscopy, petrography, and a chemical test for nickel
- **Undergraduate Student Researcher, Advisor: Dr. Alois Adams** Little Rock, AR
2014
Department of Physics & Astronomy, The University of Arkansas at Little Rock
 - Investigated the probability of intelligent observers on confirmed exoplanets identifying Earth as a confirmed exoplanet through the transit method of detection

AWARDS, GRANTS AND HONORS

◦ AAS FAMOUS Travel Grant (\$1000)	2022
◦ 2 nd place BlackInX Interdisciplinary Twitter Research Poster Competition	2021
◦ OSU College of Arts & Sciences, ASC Student Success Grant (\$2500)	2021
◦ Hayes Graduate Research Forum Mathematical and Physical Sciences -Third Place (OSU)	2021
◦ Two Sigma Diversity PhD Research Grant (\$2000)	2021
◦ Two Sigma Diversity PhD Fellowship Finalist	2021
◦ ExoExplorers Program (ExoPAG Executive Committee/NASA Exoplanet Exploration Program)	2021
◦ 3 rd place BlackInPhysics 3MT competition	2020
◦ Inclusive Graduate Education Network Travel Award	2019
◦ LSSTC Data Science Fellowship (Large Synoptic Survey Telescope Corporation)	2018
◦ Dean's Strategic Fellowship (UT Austin)	2016
◦ Astronomy Graduate Excellence Fellowship (UT Austin)	2016
◦ Outstanding Senior Award (McNair Scholars Program)	2016
◦ Ronald E. McNair Scholars Program (UALR)	2014-2016
◦ College of Arts, Letters, and Sciences Ambassador (UALR)	2014-2015
◦ Friday Fellows Scholarship Program for Leadership and Service (UALR)	2012-2014
◦ Shepherd Poverty Studies Intern (UALR)	2013

OBSERVING EXPERIENCE

Keck II, NIRC2, LGS, Mauna Kea Observatory, (P.I. B. Bowler)	1 night
LBT, MODS/LBC, Mount Graham International Observatory, (Queue Observing)	8 nights

REFEREED PUBLICATIONS

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- Phillips, C.**, Wang, Ji., Edwards, B, Gaudi, S, *Exploring the Lower Boundary of the Radius Valley with Twinkle: A Biosignature Study of the Terrestrial-like Planet - LTT 1445 Ab, in prep*
- Phillips, C.**, Wang, Ji., Kendrew, S., Greene, T., Hu, R., Valenti, J., Panero, W, Schulze, J, *Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope, accepted to ApJ, [arXiv:2109.12132](#)*
- Phillips, C.**, Bowler, B., Mace, G., Liu, M., Sokal., K, 2020, The Astrophysical Journal, 896, 173, **2MASS J04435686+3723033 B: A Young Companion at the Substellar Boundary with Potential Membership in the β Pictoris Moving Group**

SEMINARS & COLLOQUIA

STScI Exoplanet, Star, and Planet Formation Seminar Series (<i>virtual</i>)	January 2022
The Pennsylvania State University CEHW Astronomy Seminar (<i>virtual</i>)	November 2021
National Society of Black Physicists Innovate Seminar Series (<i>virtual</i>)	September 2021

American Physical Society: “Quarks to Cosmos” (<i>virtual</i>)	April 2021
NASA JPL Exoplanet Seminar (<i>virtual</i>)	March 2021
Exoplanet Explorers (ExoExplorers) Science Series (<i>virtual</i>)	February 2021
College of Charleston, Department of Physics and Astronomy Colloquium (<i>virtual</i>)	October 2020

CONFERENCE RESEARCH TALKS

Detectability of Biosignatures in Temperate Gas Dwarfs with Twinkle (contributed talk), *Twinkle and the Next Generation of Exoplanet Scientists Conference*, September 2021

Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope (contributed talk), *AbGradCon*, September 2021

Constraining Detection Limits for Potential Biosignatures in super-Earth Atmospheres with JWST (contributed talk), *ExoPAG 23*, January 2021, virtual due to COVID-19

Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope (contributed talk), *Bay Area Exoplanet Meeting*, June 2021, virtual due to COVID-19

Constraining Detection Limits for Potential Biosignatures in super-Earth Atmospheres with JWST (contributed talk), *National Society of Black Physicists*, November 2020, virtual due to COVID-19
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Pictoris Moving Group (contributed talk), *National Society of Black Physicists*, November 2019, Providence, RI

Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope, *Edward F. Hayes Graduate Research Forum*, April 2021

Can We Detect Ammonia in the Atmospheres of super-Earths with the James Webb Space Telescope?, *Black In Physics 3MT Competition*, October 2020

RESEARCH POSTERS

Phillips, C, Wang, J, Edwards, B, Gaudi, S, Characterizing Temperate Gas Dwarfs with Twinkle, American Astronomical Society Meeting Abstracts (poster), January 2022

Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope, *BlackInX Conference* (poster), July 2021

Phillips, C., Bowler, B., Liu, Michael C., Mace, Gregory N., Sokal, Kimberly, American Astronomical Society Meeting Abstracts (poster), 231, 349.04

Martinez, R, Bozek, B, Drew, P, Manning, S, **Phillips, C**, Equity & Inclusivity Efforts of the Department of Astronomy at The University of Texas at Austin, *Women in Astronomy IV Conference* (poster), July 2017, Austin, TX

DEI & OUTREACH CONFERENCE CONTRIBUTIONS

The ExoExplorers: Early-Career Perspectives on the Intersection of Exoplanet Science and DEI in Astronomy, American Astronomical Society 239th Meeting (*special session*), Salt Lake City, Utah, January 2022

TEACHING APPOINTMENTS

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- **Academic Facilitator, URSA Program** Columbus, OH
Polaris Program, The Ohio State University March - August 2021
 - Created and implemented physics and astronomy curriculum, along with teaching and leading discussions during daily courses focused on exoplanets for incoming underrepresented first-year undergraduates to OSU
 - **Teaching Assistant, ASTR 1141, “Life in the Universe”** Columbus, OH
Department of Astronomy, The Ohio State University Fall 2020 & Spring 2021
 - Graduate TA for undergraduate course with focus on astrobiology and nature of life in the universe
 - **Teaching Assistant, ASTR 3350, “Astronomical Observation and Data Analysis”** Columbus, OH
Department of Astronomy, The Ohio State University Fall 2020
 - Graduate TA for undergraduate course with focus on modern astronomy with contemporary data analysis methods implemented in the Python programming language
 - **Teaching Assistant, ASTR 309N, “Lives and Deaths of Stars”** Austin, TX
Department of Astronomy, The University of Texas at Austin Spring 2019
 - Graduate TA for undergraduate course on supernovas, white dwarfs, neutron stars, and black holes
 - Teaching Assistant, ASTR 321, “The Future of Humanity”** Austin, TX
Department of Astronomy, The University of Texas at Austin Spring & Fall 2018
 - Graduate TA for upper-division undergraduate writing astronomy course based on technological advancement. Graded and provided constructive feedback on written assignments
 - **Teaching Assistant, ASTR 309C, “Birth of Stars & Planets”** Austin, TX
Department of Astronomy, The University of Texas at Austin Fall 2017
 - Graduate TA for undergraduate astronomy course focused on star & planet formation

ADVISING & MENTORING

-
- **The SciAccess Zenith Mentorship Program** Columbus, OH
Informal graduate student mentor for high school student in Space Science Mentoring Program Fall 2020
 - **TAURUS Summer Research Program** Austin, TX
Informal graduate student mentor and developed imposter syndrome graduate student panel seminar 2017-2018

PROFESSIONAL SERVICE

-
- **National Science Foundation**
Steering committee for Joint Network for Informal Physics Education and Research 2021-Present
 - **BlackInAstro** Virtual
Lead organizer of [BlackInAstro](#) 2020-Present
 - **Black In Physics** Virtual
Documentation lead organizer for Black In Physics Week 2021 August - October 2021
 - **Executive Secretary**
NASA UVOIR: SubO-Exoplanet Panel 2021
 - **The Ohio State University Department of Astronomy Diversity Committee** Columbus, OH
Graduate student representative 2019-Present

PRESS/MEDIA COVERAGE

<i>Exploring Potential Biosignatures with Twinkle</i> (Link)	2021
<i>'Twinkle' satellite to scan for potentially habitable worlds</i> (Link)	2021
<i>Scientists May Detect Signs of Extraterrestrial Life in the Next 5 to 10 Years</i> (Link)	2021
<i>Astrobiters: #BlackInAstro Experiences - Caprice Phillips</i> (Link)	2021

INVITED OUTREACH

Friends of Ohio State Astronomy and Astrophysics (FOSAA) event	Virtual
<i>"Detecting Potential Biosignatures in the Atmospheres of Gas Dwarfs with JWST"</i>	October 2021
Columbus School for Girls	Virtual
<i>Invited speaker at the Columbus School for Girls</i>	April 2021
The Big Fib Podcast	Virtual
<i>Invited guest on podcast featuring stars & planets</i>	June 2021
Science Around Cincy	Columbus, OH
<i>Invited Guest for YouTube series</i>	June 2021
Dear Grad Student Podcast	Virtual
<i>Invited guest on podcast discussing graduate school general experiences</i>	September 2020
Space Draft: Tucson's Flavor of Astronomy on Tap	Virtual
<i>Invited speaker: Virtual public talk: "Super-Earths to Brown Dwarfs: Mysterious In-between Objects"</i>	July 2020
Making Space for All Webinar Series	Virtual
<i>Invited for talk on exoplanets and habitability for inclusive and accessible astronomy webinar series</i>	May 2020
Movement Consulting	Virtual
<i>Invited speaker for discussion of unspoken rules of academia</i>	July 2020

INVITED PANELS

American Geological Union	Virtual
<i>Invited panelist for exoplanet science with JWST</i>	October 2021
APS Public Engagement Webinar Series	Virtual
<i>Invited panelist for talk on social media</i>	July 2021
Committee on the Status of Minorities in Astronomy AAS Panel	Columbus, OH
<i>Virtual Panelist for Anti-Blackness in Astronomy</i>	January 2021
BlackInPhysics Panel	Columbus, OH
<i>Virtual panelist for undergraduate discussion: "How to be a Successful Student"</i>	October 2020
Women in Space Panel	Virtual
<i>Live Q&A about astronomy careers for elementary, middle and high school students</i>	September 2020

SELECTED OUTREACH

Black In Astro Undergraduate Research Competition	Virtual
<i>Co-organized & moderated undergraduate research competition</i>	November 2021
StriveHigher Inc	Virtual
<i>Women's Herstory month: meet an astrophysicist and astronomer</i>	March 2021
Girls in STEM Program: Sponsored by the Museum of Discovery	Virtual
<i>Presented a mentoring talk with girls aged 12-15</i>	March 2021

- **Q&A Session with JWST** Virtual
Instagram outreach for James Webb Space Telescope February 2021
- **Westview High School** Virtual
Discussed with high school physics class about astronomy career February 2021
- **The Women+ of Color Project** Virtual
Volunteer statement of purpose reading / feedback for program attendees October 2020
- **American Astronomical Society Journal Author Series** Virtual
Discussion of paper published by the American Astronomical Society Journals September 2020
- **The Columbus Astronomical Society** Virtual
Presented a virtual talk with graduate students on the history of women in astronomy March 2020
- **Sequoia and Kings Canyon National Park** Mineral King, CA
Designed evening program on natural skies & pop-up activities on natural skies & natural sounds Summer 2019
- **UT Austin College of Natural Sciences** Austin, TX
Presented a poster on Black Women in Astronomy for the Black Excellence in STEM Festival 2019
- **Capital of Texas Undergraduate Research Conference** Austin, TX
Graduate student judge 2018

PROFESSIONAL SOCIETIES

American Astronomical Society	Junior Member
National Society of Black Physicists	Full Member