

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
Department of Physics & Astronomy, The University of Arkansas at Little Rock 2014–2015
 - 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
Department of Physics & Astronomy, The University of Arkansas at Little Rock 2014
 - Investigated the probability of intelligent observers on confirmed exoplanets identifying Earth as a confirmed exoplanet through the transit method of detection

GRANTS & DISTINCTIONS

◦ Sigma Xi Grant-In-Aid of Research (\$3400)	2022
◦ AAS FAMOUS Travel Grant (\$1000)	2022
◦ OSU College of Arts & Sciences, ASC Graduate Student Success Grant (\$2500)	2021
◦ Two Sigma Diversity PhD Research Grant (\$2000)	2021
◦ Inclusive Graduate Education Network Travel Award	2019

AWARDS & HONORS

◦ 2 nd place BlackInX Interdisciplinary Twitter Research Poster Competition	2021
◦ Hayes Graduate Research Forum Mathematical and Physical Sciences -Third Place (OSU)	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
◦ 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., Kendrew, S., Greene, T., Hu, R., Valenti, J., Panero., W, Schulze, J, 2021, The Astrophysical Journal, 923, 144, *Detecting Biosignatures in the Atmospheres of Gas Dwarfs Planets with the James Webb Space Telescope*
- 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*

NON-REFEREED PUBLICATIONS

Phillips, C., Wang, Ji., Edwards, B, Gaudi, S, *Exploring the Lower Boundary of the Radius Valley with Twinkle: Studying Atmospheric Composition and Detecting Biosignatures of a Terrestrial-like planet LTT 1445 Ab, in prep*

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
2M0443+3723 B: A Young Companion at the Substellar Boundary with Potential Membership in the β

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 - **Cancelled due to COVID-19**

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 - **Cancelled due to COVID-19**

TEACHING APPOINTMENTS

- **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

- Astrobiters: Atmospheres of Small Planets Through a Big Telescope ([Link](#)) 2021
- Popular Science Magazine Interview ([Link](#)) 2021
- Exploring Potential Biosignatures with Twinkle ([Link](#)) 2021
- 'Twinkle' satellite to scan for potentially habitable worlds ([Link](#)) 2021
- Scientists May Detect Signs of Extraterrestrial Life in the Next 5 to 10 Years ([Link](#)) 2021
- Astrobiters: #BlackInAstro Experiences - Caprice Phillips ([Link](#)) 2021

INVITED OUTREACH

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

INVITED PANELS

- **American Geological Union** Virtual
Invited panelist for exoplanet science with JWST October 2021
- **APS Public Engagement Webinar Series** Virtual
Invited panelist for talk on social media July 2021

- **Committee on the Status of Minorities in Astronomy AAS Panel** Columbus, OH
Virtual Panelist for Anti-Blackness in Astronomy January 2021
- **BlackInPhysics Panel** Columbus, OH
Virtual panelist for undergraduate discussion: "How to be a Successful Student" October 2020
- **Women in Space Panel** Virtual
Live Q&A about astronomy careers for elementary, middle and high school students September 2020

SELECTED OUTREACH

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

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