

# Caprice L. Phillips

## Curriculum Vitae

The Ohio State University  
Department of Astronomy  
140 W. 18th Ave  
McPherson Laboratory 4029  
Columbus, OH, 43210

Email: [phillips.1622@buckeyemail.osu.edu](mailto:phillips.1622@buckeyemail.osu.edu)

Website: [capricephillips.github.io](https://capricephillips.github.io)

## RESEARCH INTERESTS

I am interested in brown dwarf and exoplanet atmosphere characterization. My main research goals are to explore planetary formation through atmospheric retrievals of planetary - mass brown dwarfs and explore biosignatures and habitability of temperate exoplanets.

## EDUCATION

- **The Ohio State University** Columbus, OH  
*Ph.D. Astronomy* Expected 2025  
- Graduate Certificate In College Education and University Teaching (In Progress)  
*M.S. Astronomy* March 2022
- **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  $\beta$  Pictoris Moving Group*
- **University of Arkansas at Little Rock** Little Rock, AR  
*B.S. Physics; Minor: Mathematics* December 2015

## RESEARCH POSITIONS

- **Graduate Student Researcher & Visiting Scientist, Advisor: Dr. Jackie Faherty**  
*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  $\beta$  Pictoris Moving Group

## GRANTS & DISTINCTIONS

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◦ Sigma Xi Grant-In-Aid of Research (\$3426)	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

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◦ Ford Foundation Predoctoral Fellowship – Honorable Mention	2022
◦ 2 <sup>nd</sup> place <b>BlackInX Interdisciplinary Twitter Research Poster Competition</b>	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 <sup>rd</sup> 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

## WORKSHOPS & SUMMER SCHOOLS

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International HPC Summer School ( <i>Athens, Greece</i> )	June 2022
Other Worlds Laboratory Exoplanet Summer Program ( <i>UC Santa Cruz, Santa Cruz, CA</i> )	Summer 2022

## OBSERVING EXPERIENCE

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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, J., 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  $\beta$  Pictoris Moving Group*

## NON-REFEREED PUBLICATIONS

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**Phillips, C.**, Wang, J., Edwards, Rodriguez Martinez, R., BS, Gaudi, *Is LTT 1445 Ab a Hycean World or a Cold Habitable World?: An Exploration with Twinkle*

Walker, Ashley and Woods, Paul, 2022, Nature Astronomy, *The Representation of Blackness in Astronomy* – part of Q&A featuring Black In Astro leadership team

## SEMINARS & COLLOQUIA

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NASA GSFC Exoplanet Seminar Series ( <i>virtual</i> )	June 2022
University of Delaware Astro Seminar ( <i>virtual</i> )	May 2022
CCA Astronomical Data Meeting (New York City, New York)	March 2022
University of Kansas Astronomy and Space Physics Seminar ( <i>virtual</i> )	January 2022
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 (\*INVITED)

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Is LTT 1445 Ab a Cold Habitable World or a Hycean World?: An Exploration with Twinkle (contributed talk), *Emerging Researchers in Exoplanet Science (ERES) Conference VII*, August 2022, Pennsylvania State University

\*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  $\beta$  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

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**“A Data Driven Approach to Unlocking Planet Formation: The Atmospheric Retrieval of the BD+60 1417 System”** (Toulouse, France) - Cool Stars 21, July 2022

**“A Data Driven Approach to Unlocking Planet Formation: The Atmospheric Retrieval of the BD+60 1417 System”** (Athens, Greece) - International High Performance Computing Summer School, June 2022

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

**“Characterizing a New Candidate Benchmark Brown Dwarf Companion in the Pic Moving Group”** (National Harbor, Maryland) - American Astronomical Society, AAS Meeting #231, January 2018

## DEI & OUTREACH CONFERENCE CONTRIBUTIONS

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**“Equity & Inclusivity Efforts of the Department of Astronomy at The University of Texas at Austin”** (Austin, Texas) - Women in Astronomy IV Conference, July 2017

## TEACHING APPOINTMENTS

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- **Academic Facilitator, URSA Program** Columbus, OH  
*Polaris Program, The Ohio State University* Summer 2021 & Summer 2022
  - 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

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- **Simons-NSBP Scholars Program** New York, NY  
*Graduate Fellow—informal mentor to undergraduate scholars* Summer 2022
- **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

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- **BlackInAstro**  
*Vice-president of [BlackInAstro](#)* 2020 - Present
- **Executive Secretary**  
*NASA Review Panel* 2021,2022
- **American Physical Society**  
*Steering committee for Joint Network for Informal Physics Education and Research* 2021 - Present
- **Black In Physics**  
*Documentation lead organizer for Black In Physics Week 2021* 2021 - Present
- **The Ohio State University Department of Astronomy Diversity Committee**  
*Graduate student representative* 2019 - Present

## PRESS/MEDIA COVERAGE

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- AAS NOVA: Atmospheres of Small Planets Through a Big Telescope ([Link](#)) 2022
- Astrobites: 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
- Astrobites: #BlackInAstro Experiences - Caprice Phillips ([Link](#)) 2021

## INVITED OUTREACH

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- **Black In Science Podcast** Virtual  
*Invited guest* July 2022
- **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

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