

# Caprice L. Phillips

## Curriculum Vitae

The Ohio State University  
Department of Astronomy  
140 W. 18th Ave  
McPherson Laboratory 4036  
Columbus, OH, 43210

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

## RESEARCH INTERESTS

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

## EDUCATION

- **The Ohio State University** Columbus, OH  
*Ph.D. Astronomy*  
*- Graduate Certificate In College Education and University Teaching (In Progress)*  
Expected 2024
- **The University of Texas at Austin** Austin, TX  
*M.A. Astronomy*  
Thesis Title: *2M0443+3723 B: A Young Companion at the Substellar Boundary with Potential Membership in the  $\beta$  Pictoris Moving Group*  
May 2019
- **University of Arkansas at Little Rock** Little Rock, AR  
*B.S. Physics; Minor: Mathematics*  
December 2015

## RESEARCH EXPERIENCE

- **Graduate Student Researcher, Advisor: Dr. Ji Wang** Columbus, OH  
*Department of Astronomy, The Ohio State University*  
2019–Present
  - Investigating whether biosignatures on gas dwarfs are detectable on the upcoming *JWST* & *Twinkle* missions
- **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
- **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

## AWARDS, GRANTS AND HONORS

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○ 2 <sup>nd</sup> place <a href="#">BlackInX Interdisciplinary Twitter Research Poster Competition</a>	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
○ Hayes Graduate Research Forum Selected Participant (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
○ 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
○ Just Communities of Arkansas Leadership for Social Justice Program (UALR)	2011

## 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

## REFERRED PUBLICATIONS

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**Phillips, C.,** Wang, Ji., Kendrew, S., Green, 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  \$\beta\$  Pictoris Moving Group](#)

## INVITED TALKS, SEMINARS & COLLOQUIA

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STScI Exoplanet, Star, and Planet Formation Seminar Series ( <i>virtual</i> )	January 2022
The American Astronomical Society 239th Meeting ( <i>special session, Salt Lake City, Utah</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

## PRESENTATIONS

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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

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

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

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

Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope, *Two Sigma Diversity PhD Finalist Reception*, March 2021

Constraining Detection Limits for Potential Biosignatures in super-Earth Atmospheres with JWST (contributed talk), *ExoPAG 23*, January 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

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

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

**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

**Phillips, C.**, Exploring Practical Methods for Identifying Potential Meteorites, *McNair Research Symposium* (poster), September 2015, Little Rock, AR

**Phillips, C.**, Earth as a Transiting Exoplanet, *American Association of Physics Teachers Arkansas–Oklahoma–Kansas Section Meeting* (poster), September 2014, Arkadelphia, AR

**Phillips, C.**, Earth as a Transiting Exoplanet, *McNair Heartland Research Conference* (poster), September 2014, Kansas City, MO

**Phillips, C.**, Earth as a Transiting Exoplanet, *McNair Research Symposium* (poster), September 2014, Little Rock, AR

## 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
- **Teaching Assistant, ASTR 1301, “Introduction to Astronomy”** Little Rock, AR  
*Department of Physics & Astronomy, The University of Arkansas at Little Rock* Spring 2014 & Fall 2015
  - Undergraduate TA for undergraduate introductory astronomy course
- **Teaching Assistant, PHYS 1122, “Elementary Physics II Laboratory”** Little Rock, AR  
*Department of Physics & Astronomy, The University of Arkansas at Little Rock* Spring 2015
  - Undergraduate TA for laboratory physics section. Provided guidance and assistance to students conducting laboratory exercises
- **Lab Tutor, Student Support Services** Little Rock, AR  
*TRiO Programs, The University of Arkansas at Little Rock* 2013-2014
  - Tutored undergraduate students in calculus, college algebra, pre-core mathematics, and elementary physics

## ADVISING & MENTORING

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- **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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- **Executive Secretary**  
*NASA UVOIR: SubO-Exoplanet Panel* 2021
- **BlackInAstro** 2020-present  
*Lead organizer of [BlackInAstro](#)*

## PRESS/MEDIA COVERAGE

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- '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

# OUTREACH

• <b>Friends of Ohio State Astronomy and Astrophysics (FOSAA) event</b> <i>"Detecting Potential Biosignatures in the Atmospheres of Gas Dwarfs with JWST"</i>	Virtual October 2021
• <b>American Geological Union</b> <i>Invited panelist for exoplanet science with JWST</i>	Virtual October 2021
• <b>Black In Physics</b> <i>Organizer for Black In Physics Week 2021</i>	Virtual August - October 2021
• <b>APS Public Engagement Webinar Series</b> <i>Invited panelist for talk on social media</i>	Virtual July 2021
• <b>The Big Fib Podcast</b> <i>Invited guest on podcast featuring stars &amp; planets</i>	Virtual June 2021
• <b>Science Around Cincy</b> <i>Invited Guest for YouTube series</i>	Columbus, OH June 2021
• <b>Columbus School for Girls</b> <i>Invited speaker at the Columbus School for Girls</i>	Virtual April 2021
• <b>StriveHigher Inc</b> <i>Women's Herstory month: meet an astrophysicist and astronomer</i>	Virtual March 2021
• <b>Girls in STEM Program: Sponsored by the Museum of Discovery</b> <i>Presenting a mentoring talk with girls aged 12-15</i>	Virtual March 2021
• <b>Q&amp;A Session with JWST</b> <i>Instagram outreach for James Webb Space Telescope</i>	Virtual February 2021
• <b>Westview High School</b> <i>Discussed with high school physics class about astronomy career</i>	Virtual February 2021
• <b>Committee on the Status of Minorities in Astronomy AAS Panel</b> <i>Virtual Panelist for Anti-Blackness in Astronomy</i>	Columbus, OH January 2021
• <b>The Women+ of Color Project</b> <i>Volunteer statement of purpose reading/feedback for program attendees</i>	Virtual October 2020
• <b>BlackInPhysics Panel</b> <i>Virtual panelist for undergraduate discussion: "How to be a Successful Student"</i>	Columbus, OH October 2020
• <b>American Astronomical Society Journal Author Series</b> <i>Discussion of paper published by the American Astronomical Society Journals</i>	Virtual September 2020
• <b>Women in Space Panel</b> <i>Live Q&amp;A about astronomy careers for elementary, middle and high school students, virtual panel</i>	Virtual September 2020
• <b>OSU Students for the Exploration and Development of Space</b> <i>Invited guest speaker: "Searching for biosignatures on super-Earths with JWST"</i>	Virtual September 2020
• <b>Dear Grad Student Podcast</b> <i>Invited guest on podcast discussing life as a graduate student and graduate school general experiences</i>	Virtual September 2020
• <b>Space Draft: Tucson's Flavor of Astronomy on Tap</b> <i>Invited speaker: Virtual public talk: "Super-Earths to Brown Dwarfs: Mysterious In-between Objects"</i>	Virtual July 2020
• <b>Movement Consulting</b> <i>Invited speaker for discussion of unspoken rules of academia</i>	Virtual July 2020
• <b>Making Space for All Webinar Series</b> <i>Invited for talk on exoplanets and habitability for inclusive and accessible astronomy webinar series</i>	Virtual May 2020

- **The Columbus Astronomical Society** Virtual  
*Presented a virtual talk with graduate students on the history of women in astronomy* March 2020
- **The Ohio State University Department of Astronomy Diversity Committee** Columbus, OH  
*Graduate student representative* 2019-Present
- **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
- **Astronomy Students Association** Austin, TX  
*Invited speaker: A Young Companion at the Substellar Boundary with Potential Membership in the BPMG* April 2019
- **Capital of Texas Undergraduate Research Conference** Austin, TX  
*Graduate student judge* 2018
- **UT Austin Girls Days Festival** Austin, TX  
*STEM festival for over 8,600 K-8th grade girls with activities and demos* 2017, 2019
- **Sleeping Bear Dunes National Lakeshore** Empire, MI  
*Developed astronomy demonstrations for inaugural Astronomy Day & star parties* Summer 2016
- **Aviators Academy** Little Rock, AR  
*Led an after-school outreach program for 6-11 students focused on STEM activities* 2016
- **Maria Mitchell Association** Nantucket, MA  
*Hosted weekly solar telescope viewing and directed astronomy summer camps for preK-8<sup>th</sup> grader* Summer 2014
- **Arkansas Children's Hospital** Little Rock, AR  
*Led science outreach programs for inpatients* 2015
- **Maker-faire** North Little Rock, AR  
*Maintained STEM focused makers booth* 2015
- **Amazeum Tinkerfest** Bentonville, AR  
*One day STEAM oriented festival* 2014
- **Girls of Promise** Little Rock, AR  
*Led physics demos for 8th grade girls* 2014-2015
- **Discover UALR Day** Little Rock, AR  
*Led physics demonstrations for prospective students* 2014-2015
- **Code/Interactive** Bronx, NY  
*Guided inner-city students through interactive astronomy lesson on two week outdoor excursion* Summer 2013

## PROGRAMMING LANGUAGES & SOFTWARE

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Python,  $\LaTeX$ , Git, HTML

## PROFESSIONAL MEMBERSHIPS

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American Astronomical Society  
National Society of Black Physicists

Junior Member  
Full Member