

# Kiersten M. Boley

Carnegie Earth & Planets Laboratory  
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## RESEARCH INTERESTS

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Planet formation and habitability, Influences of stellar abundances on planet formation, Exoplanet detection and characterization using the transit method, Evolution of terrestrial planet interiors and plate tectonics

## EDUCATION

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<b>The Ohio State University</b>	Columbus, OH
<b>Ph.D. in Astronomy</b>	May 2024
<b>Master's in Astronomy</b>	August 2021
<b>Georgia Institute of Technology</b>	Atlanta, GA
<b>Bachelor of Science in Physics</b>	May 2019
Concentration in Astrophysics	
Minor in German	
<b>Georgia Highlands College</b>	Rome, GA
<b>Associate of Science in Physics</b>	May 2015

## APPOINTMENTS

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<b>NASA Sagan Postdoctoral Fellow</b>	November 2024 – October 2027
Carnegie Earth & Planets Laboratory, Carnegie Institution for Science	Washington, DC
<b>Carnegie Postdoctoral Fellow</b>	November 2027 – November 2029
Carnegie Observatories, Carnegie Institution for Science	Pasadena, CA
<b>NSF Graduate Research Fellow</b>	August 2021 – August 2024
The Ohio State University	Columbus, OH
<b>IPAC Visiting Graduate Student Fellow</b>	January 2022 – August 2022
California Institute of Technology, IPAC	Pasadena, CA
<b>Dean's Distinguished Graduate Research Fellow</b>	August 2019 – August 2021
The Ohio State University	Columbus, OH

## HONORS, AWARDS, & FELLOWSHIPS

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NASA Hubble/Sagan Postdoctoral Fellowship	January 2024
Carnegie Postdoctoral Fellowship	January 2024
NSF Astronomy and Astrophysics Postdoctoral Fellowship (declined)	January 2024
Stanford Science Fellowship (declined)	January 2024
STSci Lasker Prize Fellowship (declined)	January 2024
Presidential Fellowship (declined)	January 2024
IGEN Travel Grant (\$1000)	November 2023

Black In Astro Travel Grant (\$500)	September 2023
Army Commendation Medal	September 2023
3rd Black Space Week Graduate Research Showcase (\$500)	June 2023
Army Achievement Medal	March 2023
Geochemical Society Travel Grant (\$2000)	March 2023
Beth Brown Memorial Poster Award (\$1000)	November 2022
2 <sup>nd</sup> Place Black in Physics Poster Competition (\$100)	October 2022
LSSTC Data Science Fellowship 2022 Program	July 2022
ExoExplorers 2022 Program (\$1000)	January 2022
IPAC Visiting Graduate Student Fellowship (\$20k)	January 2022
Beth Brown Memorial Award (\$1000)	November 2021
Gaudi-Stanek Award (\$2000)	August 2021
NSF Graduate Research Fellowship(\$105k)	March 2021
Two Sigma PhD Research Grant (\$2000)	March 2021
Two Sigma Diversity Fellowship Finalist	March 2021
Dean's Distinguished Graduate Fellowship (\$90k)	May 2019
National Defense Committee Medal	May 2019
James F. Towers Scholarship (\$2000)	August 2018
Lawrence Livermore National Laboratory, Deputy Director's coin	August 2018
Segal Americorps Educational Award (\$2500)	June 2018
The Armed Forces Communications and Electronics Association, Honor Award	May 2018
Army ROTC Scholarship (\$75K)	September 2016
Hope Scholarship (\$48K)	August 2014

## PUBLICATIONS

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### Summary: 3 First Author, 5 Contributing Author

#### First Author:

3. **Boley, K.**, Christiansen, J., et al., “The First Evidence of a Host Star Metallicity Cut-off In The Formation of Super-Earth Planets”, 2024, *AJ*, 168, 128
2. **Boley, K.**, Panero, W., Unterborn, C., et al., “Fizzy Super-Earths: Impacts of Magma Composition on the Bulk Density of Lava Worlds”, 2023, *ApJ*, 952, 202
1. **Boley, K.**, Wang, J., Zinn, J., et al., “Searching For Transiting Planets Around Halo Stars. II. Constraining the Occurrence Rate of Hot Jupiters”, 2021, *AJ*, 162, 85

#### Contributing Author:

5. Christiansen, J., Zink, J., Hardegree-Ullman, K., Fernandez, R., **Boley, K.**, et al. “Scaling K2 VII: Evidence for an increase in the occurrence rate of hot sub-Neptunes at intermediate”, 2023, *Accepted to AJ*
4. Rodríguez Martínez, R., Gaudi, B.S.,..., **Boley, K.**, et al. “A Comparison of the Composition of Planets in Single and Multiple Systems Orbiting M dwarfs”, 2023, *Accepted to AJ*

3. Zink, J., Hardegree-Ullman, K., Christiansen, J., ..., **Boley, K.**, et al. “Scaling K2. VI. Reduced Small Planet Occurrence in High Galactic Amplitude Stars”, 2023, *AJ*, **165**, 262
2. Rodríguez Martínez, R., Gaudi, B.S., ..., **Boley, K.**, et al. “A Reanalysis of the Composition of K2-106b: an Ultra-short Period Super-Mercury Candidate”, 2023, *AJ*, **165**, 97
1. Fitzmaurice, E., Martin, D., ..., **Boley, K.**, et al. “Spectroscopy of TOI-1259B - an unpolluted white dwarf companion to an inflated warm Saturn”, 2022, *MNRAS*, **518**, 636-641

## INVITED TALKS & COLLOQUIA

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“The Influence of Elemental Abundances on Planet Formation & Structure” Carnegie Observatories	December 2023 Pasadena, CA
“Impacts of Magma on the Bulk Density and Structure of Lava Worlds” Penn State University, Center for Exoplanets and Habitable Worlds	October 2023 State College, PA
“Influence of Metallicity on Planet Formation” Carnegie Earth & Planets Laboratory, Lunch Seminar Series	November 2023 Pasadena, CA
“Lava Worlds or Solid Planets: Impact of Magma on Planet Characterization” NASA Goddard, Exoplanet Seminar Series	October 2023 Baltimore, MD
“Influence of Metallicity on Planet Formation” Carnegie EPL, Astronomy Seminar Series	October 2023 Washington, DC
“Impacts of Magma Composition on the Bulk Density of Lava Worlds” ExoPAG, JPL Exoplanet Lecture Series	April 2023 Virtual
“The Impact of Elemental Abundances on Exoplanets ” University of Michigan, Colloquium	March 2023 Ann Arbor, MI
“Building Blocks of Planets: Effects of metals on Planet Formation ” ExoPAG, ExoExplorer Science Series	May 2022 Virtual
“Hot Jupiter Occurrence within the Metal-Poor Regime” Two Sigma, Finalist Reception	February 2021 Virtual due to COVID-19

## PRESENTATIONS & POSTERS

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“The Metallicity Cliff: An Abrupt Drop in Super-Earth Occurrence” Towards Other Earths III	July 2023 Porto, Portugal
“Impacts of Magma Composition on the Bulk Density of Lava Worlds” Goldschmidt 2023	July 2023 Lyon, France
“The Metallicity Cliff: Planet Occurrence Rates around Metal-Poor Stars” American Astronomical Society, 241st Meeting	January 2023 Seattle, WA
“Impacts of Magma Composition on the Bulk Density of Lava Worlds” Great Lakes Exoplanet Area Meeting 2022	November 2022 Columbus, OH

“The Metallicity Cliff: Planet Occurrence Rates around Metal-Poor Stars” National Society of Black Physicist 2022	November 2022 Charlottesville, VA
“Planet Occurrence rates in the Metal-Poor Regime” Greater IPAC Science Symposium, 22nd Meeting	August 2022 Pasadena, CA
“Fizzy Planets: Mass-Radius Relationships for Magma Oceans” American Astronomical Society, 240th Meeting	June 2022 Pasadena, CA
“Planet Occurrence rates in the Metal-Poor Regime” Exoplanets IV Conference	May 2022 Las Vegas, NV
“Hot Jupiter Occurrence around Metal-Poor Stars” Great Lakes Exoplanet Area Meeting 2021	November 2021 Ann Arbor, MI
“Constraining Hot Jupiter Occurrence around Metal-Poor Stars” National Society of Black Physicist 2021	November 2021 Virtual due to COVID-19
“Hot Jupiter Occurrence around Halo Stars” Sagan Exoplanet Workshop 2021	July 2021 Virtual due to COVID-19
“Constraining the Metallicity required for Planet Formation” Emerging Researchers in Exoplanet Science 2021	May 2021 Virtual due to COVID-19
“Hot Jupiter Occurrence within the Metal-Poor Regime revisited by TESS” Space Telescope Science Institute, 2021 Spring Symposium	April 2021 Virtual due to COVID-19
“Occurrence of Hot Jupiters in the Metal-Poor Regime revisited by TESS” American Astronomical Society, 237th Meeting	January 2021 Virtual due to COVID-19
“Raiders of Lost Arcs: Faint Galaxy Detection” Lawrence Livermore National Laboratory, 2018 Summer Symposium	August 2018 Livermore, CA

## OBSERVING EXPERIENCE

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LBT, MODS/LBC, Mount Graham International Observatory, (Queue Observing)	5 nights
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## ACADEMIC SERVICE

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Committee Member, ExoPAG, Exoplanet Demographics Special Interest Group (SIG2)	2023-Present
Undergraduate Research Showcase Judge, Black Space Week	2023
Chambliss Judge, American Astronomical Society 241st Meeting	2023
Reviewer, NASA Astrophysics Review Panel	2022

## ADVISING & MENTORING

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Brendan Kirsh, The Ohio State University, Undergraduate	2023-2024
Hannah Eggenschwiler, The Ohio State University, Undergraduate	2021-2022
Monica Dahm, The Ohio State University, Undergraduate	2020-2021
Noah Weinstein, SciAccess Zenith Mentorship Program, Middle School	2020-2021

## EMPLOYMENT

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- Commander** | *U.S. Army* May 2019 – Present
- Manages ~ 100 Soldier and medical assets of the 676<sup>th</sup> Ground Ambulance Company
  - Responsible for planning and scheduling all training to maintain medical function
  - Responsible for ~24 million dollars worth of equipment
- Dance Instructor** | *Baird Ballet* July 2011 –December 2017
- Created and implemented ballet, jazz, and contemporary dance curriculum for students between the ages of 3-16 years old
- Office Manager** | *Techwood Consulting* July 2015 – December 2015
- Performed administrative and office management duties necessary to support corporate officers
- Lead Teller** | *Suntrust* June 2014 – January 2015
- Accurately processed customer cash, check, transfer, and statement transactions, with a balanced or reconciled drawers

## ADDITIONAL RESEARCH EXPERIENCE

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- Student Researcher** May 2018–August 2019  
Lawrence Livermore National Laboratory Livermore, CA
- Student Research Intern** January 2018–May 2018  
Georgia Tech Research Institute Atlanta, GA
- Research and Development Intern** January 2015– May 2015  
Mohawk Industries Lyerly, GA

## INVITED OUTREACH & SERVICE TALKS

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- “Community College to PhD: Supporting First-Gen Minority Students”** October 2023  
National Diversity in STEM Conference 2023
- “Supporting First-Gen Minority Students at all Stages”** March 2023  
University of Michigan, Department of Astronomy, Conversations on Inclusion and Equity
- “The Flooding Pipeline: DEI begins before University”** January 2023  
AAS 241, ExoExplorers Special Session
- “Exoplanets: Beyond the Solar System”** January 2023  
Open Science Talk Series
- “Exoplanets and the Search for Life”** October 2022  
Friends of Ohio State Astronomy & Astrophysics

## SELECT OUTREACH & SERVICE

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- Advisory Board Member** | *Be Wise* August 2023–August 2024  
*Developed mentorship and science programs for K-12 students living in under-resourced communities*
- Co-Host** | *Astro [Sound] Bites Podcast* April 2022 – July 2024  
*The official audio spinoff of the Astrobites blog. Three graduate students discuss recently published astronomy research results and life in academia. Episodes released bi-weekly*
- Astronomy Instructor** | *Be Wise Summer Camp* May 2023–July 2023  
*Developed and taught astronomy lessons to K-6th grade students from low- income neighborhoods*
- Panelist** | *AAS Community College Panel* October 2023  
*Served as a panelist for the AAS panel on how to support community college students*
- Panelist** | *NSF GRFP Panel* June 2023  
*Served as a panelist for the Emergent Materials REU Program workshop on NSF GRFP*
- Panelist** | *AAS 241 Workshop: How To Give Great Presentations* January 2023  
*Served as a panelist for the AAS 241 workshop on “A Scientist’s Guide to Effective Communication”*
- Panelist** | *Monthly Movie Nights - Science Fiction vs Science Fact* November 2022  
*Served as a panelist for the Q&A for the movie “Space Balls”*
- Guest Host** | *OutSciders Classroom* September 2022  
*OutSciders is a web-based video series that teaches students science and environmental stewardship through our National Parks. Guest Hosted 2 episodes*
- Academic Facilitator** | *URSA Program* March 2021 – September 2022  
*Creates Astronomy and Physics Curriculum and teaches incoming undergraduate students from under-represented groups*
- Interviewee** | *Astronomy in Color* February 2022  
*Interviewed for Black History Month sharing my perspective as a black woman in astronomy ( [Article](#) )*
- Mentor** | *Polaris Mentorship Program* August 2020 – May 2022  
*Provides mentorship to under-represented undergraduates in Physics and Astronomy*
- Invited Speaker** | *NPR-The Short Wave podcast* August 2021  
*Discussed the constellation Canis Major, Sirius, and the summer night sky*
- Graduate Representative** | *AIP TEAM-UP Workshop* December 2020 – January 2022  
*Represented the OSU Astronomy Department at this workshop that educates on strategies to recruit and retain African-American undergraduate students in Astronomy and Physics by creating an inclusive environment*

**Mentor** | *SciAccess Zenith Mentorship Program* February 2021 – April 2021

*Provides mentorship for blind and visually impaired high-school students that are interested in astronomy*

**Panelist** | *Monthly Movie Nights - Science Fiction vs Science Fact* February 2021

*Served as a panelist for the Q&A webinar for the movie “2001: A Space Odyssey”*

**Volunteer Coordinator** | *Jumpstart* August 2017 – May 2019

*Recruited, managed, and trained 190 recruited volunteers to serve 3 preschools for assorted Jumpstart service projects*

**Team Leader** | *Jumpstart* August 2016–August 2017

*Led 5 peers to provide developmentally appropriate educational activities, with a focus on language and literacy, to young children*

**Corps Member** | *Jumpstart* August 2015–August 2016

*Implemented early childhood curriculum, supported family involvement, promoted children’s language and literacy skills through ongoing relationships with 20 children, and increased adult support in the learning environment*

**Volunteer** | *Mission is Possible* August 2013–May 2015

*Served in various roles from working with disabled children to cleaning elderly couple’s homes to improve the community in Rome, GA*

## MEDIA COVERAGE

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The Ohio State University News September 2023  
*Study sheds new light on strange lava worlds*

## COMPUTATIONAL SKILLS

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Python, MATLAB, HTML/CSS, L<sup>A</sup>T<sub>E</sub>X

## SCHOLARLY MEMBERSHIPS

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American Astronomical Society	Junior Member
National Society of Black Physicists	Full Member
Phi Theta Kappa	Member