

# Sean K. Terry

---

PERSONAL	Department of Astronomy 4296 Stadium Drive—University of Maryland College Park, MD 20742	Email: skterry@umd.edu Github: skterry <a href="http://skterry.github.io">http://skterry.github.io</a>
APPOINTMENTS	<b>Postdoctoral Associate</b> , University of Maryland, College Park <b>Postdoctoral Scholar</b> , University of California, Berkeley	2023 – Present 2020 – 2023
EDUCATION	<b>The Catholic University of America</b> , Ph.D., Physics <b>The Catholic University of America</b> , M.S., Physics <b>George Mason University</b> , B.S., Astronomy/Physics <b>Northern Virginia Community College</b> , A.S., Gen. Science	2020 2018 2015 2012
RESEARCH AREAS	Gravitational microlensing by stars, exoplanets, free-floating planets, & black holes, adaptive optics, instrumentation, galactic bulge stellar populations	
SERVICE & PROFESSIONAL ACTIVITIES	<b>Professional Activities</b> Member – <i>Roman</i> Galactic Exoplanet Survey (RGES) Project Infrastructure Team (PIT) Group Lead – RGES Mass Measurement Requirement Verification Lead Organizer – Keck All-Sky Precision Adaptive Optics (KAPA) Annual Meeting Member – UC Berkeley Astronomy Climate Advisory Committee Collaborator – UCLA Galactic Center Group Project Science Team – KAPA Representative – Annual NASA GSFC Administrator’s Congressional Visits LOC – 19th International Conference on Microlensing	2023– 2024 2021,2022 2022–2023 2020–2023 2020–2023 2016 2015
	<b>Professional Memberships</b> Member – American Astronomical Society (AAS) Member – Society for Personality and Social Psychology (SPSP) Member – Seers Exoplanet Environments Collaboration (SEEC)	2015– 2017–2020 2016–2020,2023–
	<b>Panels &amp; Reviews</b> <i>HST</i> (2021), <i>TESS</i> (2021), <i>NSF</i> (2022), <i>XRP</i> (2024)  Referee for <i>ApJ</i> , <i>AJ</i> , <i>A&amp;A</i>	
	<b>Outreach</b> Invited Speaker, <i>Physics Club</i> , Berkeley High School, Berkeley, CA Guest Scientist, STEM-Day, Garfield High School, Woodbridge, VA CUA Booth, Annual Astronomy Festival on the Mall, Washington, DC Proctor, GMU Public Observing Nights, Fairfax, VA	2023 2017 2015–2017 2013–2015
TEACHING	<i>ASTR 7AB: Introduction to Astrophysics</i> – UC Berkeley Instructor, <i>AstroTech</i> , – UC Berkeley <i>Exoplanets in Fact &amp; Fiction</i> – American University <i>Astronomy for non-STEM Majors</i> – George Mason University (TA)	Summer 2023 2021–2022 Fall 2019 2014

*Introduction to Astrophysics* – George Mason University (TA) 2013

ADVISING

**High School Students**

Viveka Chaudry – Sidwell Friends School (current: Brown University) 2022  
Title: *HST Observations of Microlensing Event MOA-2007-BLG-192*

**Undergraduates**

Allen Chen – UC Berkeley 2022–2023  
Title: *Off-axis PSF Reconstruction for the Keck-I OSIRIS Imager*

Theo Pedapolu – UC Berkeley 2021  
Title: *Real-time Calculation of Atmospheric Turbulence Above the Keck Observatory*

Ishaan Gandhi – Harvey Mudd College (current: securities industry) 2016  
Title: *Developing Software Tools for HST Source Catalog Generation*

Anshula Gandhi – MIT (current: University of British Columbia M.Sc.) 2016  
Title: *Developing Software Tools for HST Source Catalog Generation*

GRANTS  
AWARDED

**Lead or Co-lead**

Hubble Space Telescope Cycle 32 #17834  
“*Confirming Serendipitous Microlens Host Detections with New and Archival HST Imaging*”  
Principal Investigator: S. K. Terry  
October 01, 2024 – September 30, 2025  
Award: \$73,700

Hubble Space Telescope Cycle 32 #17776  
“*A Precursor Survey of the Roman Galactic Bulge Time Domain Fields*”  
Principal Investigator: S. K. Terry  
October 01, 2024 – February 15, 2027  
Award: \$412,700

Hubble Space Telescope Multi-Cycle 30–32 #17081, #17404, #17838  
“*Mass Measurement of a Candidate Black Hole Microlens with Systematic Error Control*”  
Principal Investigator: D. P. Bennett/S. K. Terry (co-PI)  
October 01, 2022 – September 30, 2025  
Award: \$53,400/yr

Hubble Space Telescope Cycle 28 #16509  
“*Detection of the Astrometric Microlensing Signal by the Binary Black Hole Candidate MOA-2019-BLG-284*”  
Principal Investigator: S. K. Terry  
April 05, 2021 – September 30, 2021  
Award: \$22,100

**Notable Co-Investigator**

James Webb Space Telescope Cycle 3 #6777  
“*Finding Black Holes through Gravitational Microlensing*”  
Principal Investigator: J. R. Lu  
September 24, 2024 – October 1, 2025  
Award: \$50,000

James Webb Space Telescope Cycle 3 #6078  
*“Confirmation of a Jovian Planet Analog Orbiting a White Dwarf, Rare Low-mass Neutron Star or Black Hole”*  
 Principal Investigator: J. Blackman  
 March 1, 2024 – September 18, 2024  
 Award: \$120,000

NASA/Roman Project Infrastructure Team (PIT)  
*“Roman Galactic Exoplanet Survey”*  
 Principal Investigator: S. Gaudi  
 October 01, 2023 – November 2028 (expected)  
 Award: \$2,000,000/yr

Keck Semesters 2021B | 2023A | 2024B  
*“Finding Black Holes with Astrometric Microlensing”*  
 Principal Investigator: J. R. Lu  
 August – September 2021 | May – July 2023 | August – September 2024

Keck Semester 2021A  
*“Testing Core Accretion with Microlens Planet Host Star Masses”*  
 Principal Investigator: D. P. Bennett  
 May 17, 2021 – July 13, 2021

Hubble Space Telescope Cycle 27 #16067  
*“Mass Measurement of Isolated Black Hole Candidate MOA-2019-BLG-284L via Lensed Image Separation”*  
 Principal Investigator: D. P. Bennett  
 March 13, 2020 – September 14, 2020

AWARDED  
 OBSERVING  
 TIME  
 (NON-FUNDED)

Keck (NIRC2/OSIRIS), 21 nights  
 GMU 0.8m, 16 nights  
 2019–  
 2013–2015

TALKS

### Invited

10. “A Precursor Survey of the Roman Galactic Bulge Time Domain Fields”, Harvard | Center for Astrophysics, December 2024
9. “A Precursor Survey of the Roman Galactic Bulge Time Domain Fields”, UMass Lowell, December 2024
8. “A Precursor Survey of the Roman Galactic Bulge Time Domain Fields”, The Catholic University of America, November 2024
7. “Measuring the Masses of Exoplanets and Compact Objects with the Roman Galactic Bulge Time Domain Survey”, *Roman* Virtual Lecture Series, Caltech/IPAC, April 2023
6. “Directly Measuring the Mass of Microlensing Exoplanets with the Roman Space Telescope”, University of California San Diego, January 2022
5. “Discovering and Characterizing Exoplanets”, Universidad Nacional Autónoma de Honduras, December 2021
4. “PSF-Reconstruction, AIROPA, and the KAPA Project”, University of California Los Angeles, June 2021

3. “A Sub-Saturn Exoplanet Inside the Mass Desert Predicted by Core Accretion”, University of Maryland, November 2020
2. “Comparing HST Observations of Bulge Stars to Galactic Population Synthesis Models in Preparation for the WFIRST Microlensing Survey”, NASA GSFC, November 2019
1. “Probing the Galactic Bulge Stellar Population as Precursor Science for WFIRST”, University of Maryland, May 2018

### Contributed

18. “Following up Free-Floating Planet Candidates with Keck Adaptive Optics”, Rogue Worlds 2024, Osaka Japan, December 2024
17. “A Precursor Survey of the Roman Galactic Bulge Time Domain Fields”, Massachusetts Institute of Technology, December 2024
16. “A Precursor Survey of the Roman Galactic Bulge Time Domain Fields”, Brown University, December 2024
15. “A Precursor Survey of the Roman Galactic Bulge Time Domain Fields”, Boston College, December 2024
14. “A High-Velocity Exoplanet System in the Galactic Bulge”, RGES PIT Annual Meeting #2, October 2024
13. “Characterizing Low Mass Cold Exoplanets with the Nancy Grace Roman Space Telescope”, Chesapeake Bay Area Exoplanet Meeting (chExo) #11, May 2024
12. “Unveiling MOA-2007-BLG-192: A Low-mass M Dwarf Hosting a Likely Super-Earth”, Lawrence Livermore National Lab (LNL), February 2024
11. “A New Method to Break the Central Perturbation Degeneracy in High Magnification Microlensing Events”, Institut D’Astrophysique de Paris, September 2022
10. “Direct Mass Measurements for Microlensing Exoplanets”, University of California Berkeley, September 2021
9. “Roman Space Telescope Mass-measurement Method Determines a Mass of  $66 \pm 8 M_{\oplus}$  for MOA-2009-BLG-319Lb”, Chesapeake Bay Area Exoplanet Meeting (chExo) #8, June 2020
8. “Preparing for the WFIRST Microlensing Survey: Stellar Populations in the Galactic Bulge”, George Mason University, November 2017
7. “Precursor Science for the WFIRST Mission”, Sagan Exoplanet Summer Workshop, Caltech, August 2017
6. “A Deep Study of the Stanek Field as Precursor Science for the WFIRST Microlensing Field of Regard”, George Washington University, July 2017
5. “Bayesian Modeling of Gravitational Microlensing Events”, George Washington University, June 2016
4. “A New Toolkit for Modeling Gravitational Microlensing Events”, The College of William & Mary, March 2016
3. “Exoplanet Detection with WFIRST”, The Catholic University of America, July 2015
2. “A New Near-IR Luminosity Function in the WFIRST Microlensing Fields”, 19th International Conference on Gravitational Microlensing, January 2015
1. “Light Curve Analysis of HD 189733b, WASP-33b and KELT-1b”, George Mason University, November 2013

PRESS

“Fastest Known Planetary System Might Have Been Pushed by Our Galaxy’s Supermassive Black Hole”, *Scientific American*: <https://tinyurl.com/4y5nh8zh>, 2024

“The Sun Will Destroy the Earth One Day, Right? Maybe Not”  
*The New York Times*: <https://tinyurl.com/mvatztzm>, 2024

“UC Berkeley Astronomers Discover Likely Rogue Black Hole Wandering Galaxy”  
*CBS News*: <https://tinyurl.com/4wmu5akc>, 2022

“Telescopes Team Up to Find Distant Uranus-Sized Planet Through Microlensing”  
*NASA*: <https://tinyurl.com/4c6y8z2a>, 2015

“Students Collaborate with KELT Project to Deepen Understanding of Solar System”  
*GMU*: <https://tinyurl.com/mtwpvszn>, 2014

REFEREED  
PUBLICATIONS

26 total (9 first/second author)

26. **Terry, S. K.**, Bachelet, E., Crisp, A., et al. “Predictions of the Nancy Grace Roman Space Telescope Galactic Exoplanet Survey. IV. Bound Planet Mass Measurements”, *in prep*
25. **Terry, S. K.**, Lu, J. R., Bennett, D. P., et al. “An Isolated Black Hole Confirmed with Astrometric Microlensing”, *in prep*
24. Bennett, D. P., Bhattacharya, A., Beaulieu, J.P., & 7 coauthors including **Terry, S. K.**, “Image-Constrained Modeling with Hubble and Keck Images Reveals that OGLE-2012-BLG-0563Lb is a Jupiter-Mass planet Orbiting a K Dwarf”, 2024, *submitted*
23. Reksini, N., Ranc, C., Koshimoto, N., & 12 coauthors including **Terry, S. K.**, “OGLE-2014-BLG-1760: A Jupiter-Sun analogue residing in the Galactic Bulge”, 2024, *submitted*
22. **Terry, S. K.**, Beaulieu, J.P., Bennett, D. P., Bhattacharya, A., et al. “A Candidate High-Velocity Exoplanet System in the Galactic Bulge”, 2024, *accepted in AJ*
21. Zhang, K., Zang, W., El-Badry K., & 6 coauthors including **Terry, S. K.**, “An Earth-Mass Planet and a Brown Dwarf Orbiting a White Dwarf”, 2024, *Nature Astronomy*, 1–8
20. **Terry, S. K.**, Beaulieu, J.P., Bennett, D. P., Hamdorf, E., et al. “Unveiling MOA-2007-BLG-192: An M Dwarf Hosting a Likely Super-Earth”, 2024, *AJ*, 168, 72
19. Nunota, K., Koshimoto, N., Suzuki, D., & 6 coauthors including **Terry, S. K.**, “Measurement of Dependence of Microlensing Planet Frequency on The Host Star Mass and Galactocentric Distance by Using a Galactic Model”, 2024, *ApJ*, 967, 77
18. Bennett, D. P., Bhattacharya, A., Beaulieu, J.P., & 13 coauthors including **Terry, S. K.**, “Keck and Hubble Observations Show That MOA-2008-BLG-379Lb Is a Super-Jupiter Orbiting an M Dwarf”, 2024, *AJ*, 168, 15
17. Reksini, N., Batista, V., Ranc, C., Bennett, D. P., & 9 coauthors including **Terry, S. K.**, “Precise Mass Measurement of OGLE-2013-BLG-0132Lb: A Saturn Mass Planet Orbiting an M Dwarf”, 2023, *AJ*, 167, 145
16. Bhattacharya, A., Bennett, D. P., Beaulieu, J., & 11 coauthors including **Terry, S. K.**, “Confirmation of Color-dependent Centroid Shift Measured After 1.8 Years with HST”, 2023, *AJ*, 165, 206
15. **Terry, S. K.**, Lu, J. R., Turri, P., Ciurlo, A., et al. “AIROPA IV: Validating Point Spread Function Reconstruction on Various Science Cases”, 2023, *JATIS*, 9(1), 019007
14. **Terry, S. K.**, Bhattacharya, A., Bennett, D. P., Bond, I.A., et al. “Adaptive Optics Imaging Can Break the Central Caustic Cusp Approach Degeneracy in High-magnification Microlensing Events”, 2022, *AJ*, 164, 217

13. Ciurlo, A., Turri, P., Witzel, G., & 12 coauthors including **Terry, S. K.**, “AIROPA II: Modeling Instrumental Aberrations for Off-Axis Point Spread Functions in Adaptive Optics”, 2022, *JATIS*, 8(3), 038007
12. Lu, J. R., **Terry, S. K.**, Turri, P., et al. “AIROPA: Off-axis adaptive optics PSF reconstruction in simulation, on-bench, and on-sky”, 2022, *SPIE Proc.*, 12185, 3Y
11. Wizinowich, P., Lu, J. R., Cetre, S., & 31 coauthors including **Terry, S. K.**, “Keck All sky Precision Adaptive optics program overview”, 2022, *SPIE Proc.*, 12185, 193-207
10. Chu, D., Ning, W., Do, T., & 8 coauthors including **Terry, S. K.**, “Evaluating the performance of the Keck Observatory adaptive optics systems on crowded field data using different adaptive optics configurations”, 2022, *SPIE Proc.*, 12185, 45
9. Turri, P., Lu, J. R., Witzel, G., & 7 coauthors including **Terry, S. K.**, “AIROPA III: Testing Simulated and On-Sky Data”, 2022, *JATIS*, 8(3), 039002
8. Lam, C., Lu, J. R., Udalski, A., & 44 coauthors including **Terry, S. K.**, “An Isolated Mass Gap Black Hole or Neutron Star Detected with Astrometric Microlensing”, 2022, *ApJL*, 933, L23
7. Lam, C., Lu, J. R., Udalski, A., & 44 coauthors including **Terry, S. K.**, “Supplement: An Isolated Mass Gap Black Hole or Neutron Star Detected with Astrometric Microlensing”, 2022, *ApJS*, 260, 55
6. Blackman, J., Beaulieu, J., Bennett, D. P., & 11 coauthors including **Terry, S. K.**, “A Jovian Analog Orbiting a White Dwarf Star”, 2021, *Nature*, 598, 272
5. Bhattacharya, A., Bennett, D. P., Beaulieu, J., & 11 coauthors including **Terry, S. K.**, “MOA-2007-BLG-400Lb: A Super-Jupiter Mass Planet Orbiting a Galactic Bulge K-dwarf Revealed by Keck Adaptive Optics Imaging”, 2021, *AJ*, 162, 60
4. **Terry, S. K.**, Bhattacharya, A., Bennett, D. P., Bond, I.A., et al. “MOA-2009-BLG-319Lb: A Sub-Saturn Planet Inside the Predicted Mass Desert”, 2021, *AJ*, 161, 54
3. **Terry, S. K.**, Barry, R. K., Bennett, D. P., Bhattacharya, A., Anderson, J., Penny, M. T., “Comparing Observed Stellar Kinematics and Surface Densities in a Low Latitude Bulge Field to Galactic Population Synthesis Models”, 2020, *ApJ*, 889, 126
2. Bennett, D. P., Bhattacharya, A., Beaulieu, J., & 9 coauthors including **Terry, S. K.**, “Keck Observations Confirm a Super-Jupiter Planet Orbiting M-dwarf OGLE-2005-BLG-071L”, 2020, *AJ*, 159, 68
1. Bennett, D. P., Bhattacharya, A., Anderson, J., & 15 coauthors including **Terry, S. K.**, “Confirmation of the Planetary Microlensing Signal and Star and Planet Mass Determinations for Event OGLE-2005-BLG-169”, 2015, *ApJ*, 808, 169

NON-REFEREED  
PUBLICATIONS

**6 total (4 first/second author)**

6. **Terry, S. K.**, Hosek Jr, M., Lu, J. R., Lam, C., et al. “The Galactic Center with *Roman*”, 2023, *NASA/Roman White Paper*
5. Lam, C. Y., Abrams, N., Andrews, J., & 34 coauthors including **Terry, S. K.**, “Characterizing the Galactic Population of Isolated Black Holes”, 2023, *NASA/Roman White Paper*
4. Street, R. A., Gough-Kelly, S., Lam, C., & 12 coauthors including **Terry, S. K.**, “Maximizing Science Return by Coordinating the Survey Strategies of Roman with Rubin, and Other Major Facilities”, 2023, *NASA/Roman White Paper*
3. **Terry, S. K.**, “Breaking a New Degeneracy in High Magnification Microlensing Events”, 2021, *American Astronomical Society*, 237, 218.03
2. **Terry, S. K.**, “Direct Mass Measurements for Planets Discovered by Gravitational Microlensing”, 2020, *American Astronomical Society*, 235, 402.01

1. Gilbert, E., **Terry, S. K.**, Pfeifle, R, “A New Luminosity Function for Stars in the Galactic Bulge”, 2015, *American Astronomical Society*, 225, 102.02