# Sean K. Terry


PERSONAL

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APPOINTMENTS

**Postdoctoral Associate**, University of Maryland, College Park — 2023 – Present
**Postdoctoral Scholar**, University of California, Berkeley — 2020 – 2023

EDUCATION

**The Catholic University of America**, Ph.D., Physics — 2020
**The Catholic University of America**, M.S., Physics — 2018
**George Mason University**, B.S., Astronomy/Physics — 2015
**Northern Virginia Community College**, A.S., Gen. Science — 2012

RESEARCH AREAS

Gravitational microlensing by stars, exoplanets, free-floating planets, & black holes, adaptive optics, instrumentation, galactic bulge stellar populations

SERVICE & PROFESSIONAL ACTIVITIES

**Professional Activities**

Member – *Roman* Galactic Exoplanet Survey (RGES) Project Infrastructure Team (PIT) — 2023–
Group Lead – RGES Mass Measurement Requirement Verification — 2024
Lead Organizer – KAPA Annual Science Meeting (KASM) — 2021,2022
Member – UC Berkeley Astronomy Climate Advisory Committee — 2022–2023
Collaborator – UCLA Galactic Center Group — 2020–2023
Project Science Team – Keck All-Sky Precision Adaptive Optics (KAPA) — 2020–2023
Representative – Annual NASA GSFC Administrator's Congressional Visits — 2016
LOC – 19th International Conference on Microlensing — 2015

**Professional Memberships**

Member – American Astronomical Society (AAS) — 2015–
Member – Society for Personality and Social Psychology (SPSP) — 2017–2020
Member – Seers Exoplanet Environments Collaboration (SEEC) — 2016–2020,2023–

**Panels & Reviews**

*HST*, *TESS*, *NSF*, *XRP*

Referee for *ApJ, AJ, A&A*

**Outreach**

Guest Speaker, *Physics Club*, Berkeley High School, Berkeley, CA — 2023
Guest Scientist, STEM-Day, Garfield High School, Woodbridge, VA — 2017
CUA Booth, Annual Astronomy Festival on the Mall, Washington, DC — 2015–2017
Proctor, GMU Public Observing Nights, Fairfax, VA — 2013–2015

TEACHING

*ASTR 7AB: Introduction to Astrophysics* – UC Berkeley — 2023
Instructor, *AstroTech*, – UC Berkeley — 2021–2022
*Exoplanets in Fact & Fiction* – American University — 2019
*Astronomy for non-STEM Majors* – George Mason University (TA) — 2014

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

## Advising

**High School Students**

Viveka Chaudry – Sidwell Friends School (current: Brown University) 2022

**Undergraduates**

Allen Chen – UC Berkeley 2022–2023
Theo Pedapolu – UC Berkeley 2021
Ishaan Gandhi – Harvey Mudd College (current: securities industry) 2016
Anshula Gandhi – MIT (current: University of British Columbia M.Sc.) 2016
Mackenzie Kynoch – Dartmouth (current: software industry) 2015

## Grants Awarded

**Lead or Co-lead**

Hubble Space Telescope Cycle 32 #17834
"*Confirming Serendipitous Microlens Host Detections with New and Archival HST Imaging*"
Principle Investigator: S. K. Terry
October 01, 2024 –
Award: $73,700

Hubble Space Telescope Cycle 32 #17776
"*A Precursor Survey of the Roman Galactic Bulge Time Domain Fields*"
Principle Investigator: S. K. Terry
October 01, 2024 –
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*"
Principle Investigator: D. P. Bennett/S. K. Terry (co-PI)
October 01, 2022 –
Award: $24,400/yr

Hubble Space Telescope Cycle 28 #16509
"*Detection of the Astrometric Microlensing Signal by the Binary Black Hole Candidate MOA-2019-BLG-284*"
Principle 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*"
Principle Investigator: J. R. Lu
September 24, 2024 –

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*"
Principle Investigator: J. Blackman
March 1, 2024 – September 18, 2024

NASA/Roman Project Infrastructure Team (PIT)
"*Roman Galactic Exoplanet Survey*"

Principle Investigator: S. Gaudi
October 01, 2023 – November 2028 (expected)

Keck Semesters 2021B | 2023B | 2024B
"*Finding Black Holes with Astrometric Microlensing*"
Principle 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*"
Principle 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*"
Principle Investigator: D. P. Bennett
March 13, 2020 – September 14, 2020

## Observing

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|---|---|
| *JWST* (NIRCam), 17.18 hours | 2024– |
| *HST* (WFC3/ACS), 246 orbits | 2021– |
| Keck (NIRC2/OSIRIS), 21 nights | 2019– |
| GMU 0.8m, 16 nights | 2013–2015 |

## Talks

**Selected invited talks**

7. Talk Series: "A Precursor Survey of the Roman Galactic Bulge Time Domain Fields", Harvard, MIT, Brown, UMass Lowell, December 2024 (pending)
6. "Measuring the Masses of Exoplanets and Compact Objects with the Roman Galactic Bulge Time Domain Survey", *Roman* Virtual Lecture Series, Caltech/IPAC, April 2023
5. "Directly Measuring the Mass of Microlensing Exoplanets with the Roman Space Telescope", University of California San Diego, January 2022
4. "Discovering and Characterizing Exoplanets", Universidad Nacional Autónoma de Honduras, December 2021
3. "PSF-Reconstruction, AIROPA, and the KAPA Project", University of California Los Angeles, June 2021
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

## Publications

**28 total (10 first/second author)**
† = unrefereed publications

28. **Terry, S. K.**, Lu, J. R., Bennett, D. P., et al. "An Isolated Black Hole Confirmed with Astrometric Microlensing", *in prep*
27. **Terry, S. K.**, Bennett, D. P., Bhattacharya, A., et al. "First Direct Identification of a Multi-Star Microlens System Hosting a Planet", *in prep*
26. **Terry, S. K.**, Beaulieu, J.P., Bennett, D. P., Bhattacharya, A., et al. "A Candidate High-Velocity Exoplanet System in the Galactic Bulge", 2024, *submitted to AJ*

25. 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

24. **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

23. 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

22. 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

21. Rektsini, 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

20. Vandorou, A., Dang, L., Bennett, D. P., Koshimoto, N., & 11 coauthors including **Terry, S. K.**, "OGLE-2016-BLG-1195Lb: A Sub-Neptune Beyond the Snow Line of an M-dwarf Confirmed by Keck AO", 2023, *submitted 05/23*

19. †**Terry, S. K.**, Hosek Jr, M., Lu, J. R., Lam, C., et al. "The Galactic Center with *Roman*", 2023, *NASA/Roman White Paper*

18. †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*

17. †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*

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 coauthers 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