Kathryn V. Lester

Visiting Assistant Professor
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Research Interests

binary stars (spectroscopic, visual, eclipsing), orbital motion, stellar evolution, radial velocities, astrometry, exoplanets, planet host stars, observational astronomy: high resolution spectroscopy, long baseline interferometry, speckle interferometry, time series photometry

Education

Ph.D. in Astronomy, Georgia State University 2020

M.S. in Physics, Georgia State University 2017

B.S. in Astrophysics, Lehigh University 2014

Appointments

Visiting Assistant Professor, Mount Holyoke College 2023 – present

NASA Postdoctoral Fellow, Ames Research Center, with Dr. Steve Howell 2020 – 2023

Graduate Research Assistant, Georgia State University, with Dr. Douglas Gies 2014 – 2020

Undergraduate Research Assistant, University of Wyoming, with Dr. Chip Kobulnicky 2013

Teaching Experience

Mount Holyoke College, Instructor 2023 – present
- ASTR 100: Stars & Galaxies – introductory astronomy course for non-science majors.
- ASTR 226: Cosmology – intermediate level course for science majors.
- ASTR 228: Astrophysics I – introductory astronomy course for physics & astronomy majors.
- ASTR 335: Astrophysics II – upper level stellar structure course for astronomy majors.
- ASTR 352: Astrophysics III – upper level extragalactic course for astronomy majors.

Georgia State University, Teaching Assistant 2014 – 2017
- ASTR 1010 – weekly labs for introductory stellar astronomy course.
- ASTR 1020 – weekly labs for introductory extragalactic astronomy course.

First Author Publications

My full publication record is listed on ADS and on the last page. (9 first-author, 41 total, h-index = 16)

9. K. V. Lester, S. B. Howell, R. A. Matson, et al. 2023, AJ, 166, 166, "Visual Orbits and Alignments of Planet Hosting Binary Systems"

8. K. V. Lester, G. Schaefer, F. Fekel, et al. 2022, AJ, 164, 228, "Visual Orbits of Spectroscopic Binaries with the CHARA Array. IV. HD 61859, 89822, 109510, and 191692"

7. K. V. Lester, S. B. Howell, D. R. Ciardi, & R. A. Matson. 2022, AJ, 164, 56, "Determining Which Binary Component Hosts the TESS Transiting Planet"

6. K. V. Lester, R. A. Matson, S. B. Howell, et al. 2021, AJ, 162, 75, "Speckle Observations of TESS Exoplanet Host Stars. II. Stellar Companions at 1-1000 au and Implications for Small Planet Detection"

5. K. V. Lester, F. Fekel, M. Muterspaugh, et al. 2020, AJ, 160, 58, 1, "Visual Orbits of Spectroscopic Binaries with the CHARA Array. III. HD 8374 and HD 24546"

4. K. V. Lester, D. R. Gies, G. Schaefer, C. Farrington, et al. 2019, AJ, 158, 6, "Visual Orbits of Spectroscopic Binaries with the CHARA Array. II. the eclipsing binary HD 185912"

3. K. V. Lester, D. R. Gies, G. Schaefer, C. Farrington, et al. 2019, AJ, 157, 140L , "Visual Orbits of Spectroscopic Binaries with the CHARA Array. I. HD 224355"

2. K. V. Lester & D. R. Gies. 2018, AJ, 156, 8, "A Photometric, Spectroscopic, and Apsidal Motion Analysis of Eclipsing Binary BW Aquarii"

1. K. V. Lester, D. R. Gies, & Z. Guo. 2016, AJ, 152, 194, "A Young Eclipsing Binary and its Luminous Neighbors in Sh 2-252E"

Awards & Fellowships

Massachusetts Space Grant Consortium student summer fellowships ($13,000)	2024 – 2025
NASA Award for time on the Keck Observatory ($12,000)	2023 – 2025
NASA Award for time on the WIYN Observatory ($5,000)	2023 – 2024
NASA Postdoctoral Fellowship ($285,000)	2020 – 2023
Outstanding Advanced Graduate Student Award, Georgia State University	2020
Outstanding Second Year Graduate Student, Georgia State University	2016
Departmental Honors, Lehigh University	2014

Invited Talks

Mount Holyoke College Astronomy Club, "Journey to Becoming an Astronomer"	2024
Planetary Science Institute, "Characterizing Planet Host Binary Systems"	2023
CHARA & VLTI Science Meeting, "Binary Star Science Using Interferometry"	2022
AAS Splinter Session, "Speckle & Long Baseline Interferometry of Binary Stars"	2022
NSF virtual site visit at the CHARA Array, "Visual Orbits of Spectroscopic Binaries"	2020
CHARA Summer School, "Observing and Data Reduction with CLIMB"	2020
Agnes Scott College, "Visual & Spectroscopic Orbits of Binary Stars"	2019

Competitive Observing Time Awarded

Gemini Observatory – speckle imaging with ‘Alopeke & Zorro – 11 nights in total	2021B – 2025B
WIYN Observatory – spectroscopy with NEID – 9.3 nights in total	2022A – 2025B
The CHARA Array – interferometry with MIRC-X/MYSTIC – 5.5 nights in total	2024B – 2025A
Las Cumbres Observatory – spectroscopy with NRES – 9.7 nights	2023A, 2024B – 2025B
Keck Observatory – spectroscopy using HIRES – 0.5 nights	2023A
CTIO – spectroscopy using CHIRON – 1 night	2023A

Professional Service

Panel Reviewer 2021 – 2024
– provided science review and grading for NASA FINESST & XRP grants

Telescope Allocation Committee Member 2022 – 2024
– provided science review, grading, and discussion of NOIRLab proposals

Journal Referee 2019, 2021
– reviewed submitted manuscripts for JAAVSO and ApJS

Department Service

FCAD Senior Thesis Prize Reviewer 2024 – 2025
– reviewed and graded senior theses from Five Colleges astronomy students for the Mary Irvine Prize

Senior Thesis Committee Member 2025
– served as the external department committee member for a chemistry senior thesis

FCAD Research Bootcamp Volunteer & Organizer 2024 – 2025
– co-organized a week-long introduction to research for Five Colleges summer interns

Career Panel Member 2019 – 2024
– participated in several panel discussions about graduate school and career paths for undergraduate students

Astronomy Peer Advising Leaders, President & Mentor 2016 – 2020
– Proposed for university funding, maintained the club’s budget, and lead monthly mentor meetings
– Organized and lead new student orientation, professional development workshops, and mock qualifying exams for graduate students
– Provided advice and support during monthly one-on-one meetings with junior graduate student mentees

Mentorship

Undergraduate Research Students
– Josephine Singleton (Mount Holyoke College ’26) Summer 2024 – Summer 2025
– Alex Twomey (Mount Holyoke College ’26) Summer 2025
– Sally Shepherd (Mount Holyoke College ’27) Summer 2025
– Viktoria Sargent (Mount Holyoke College ’27) Summer 2025
– Azmé Tariq (Mount Holyoke College ’25) Spring 2025

Outreach

STEMPOC Mixer Volunteer 2023 – present
– Faculty representative at a mixer for STEM students of color, talked about influential astronomers of color and the astronomy program

Williston Observatory Open House Volunteer 2023 – present
– Operated historic reflector & lawn telescopes and discussed astronomy with the general public

Podcast Guest 2021
– Spoke about my search for companions to exoplanet hosts on the "365 Days of Astronomy" podcast

Hard Labor Creek Observatory Volunteer 2014 – 2020
– Operated telescopes and answered questions from the public during monthly open houses

Solar Eclipse Event 2017
– Operated solar telescopes and engaged with the public during a solar eclipse viewing party

Urban Life Observatory Volunteer 2014 – 2017
– Operated telescopes during on-campus observing sessions for astronomy lab students

Girl Scout Workshop Volunteer 2014 – 2017
– Assisted with workshop activities, including building pinhole cameras and filter wheels

Observing Experience

Summary: over 2600 hrs of experience with spectroscopy and interferometry on ground-based telescopes

The CHARA Array – Six 1.0m telescopes – 78 nights – long baseline interferometry 2017 – 2025

Gemini Observatory – 8.1m telescope – 110 nights – speckle interferometry 2020 – 2023

WIYN Observatory – 3.5m telescope – 5 nights – multi-object spectroscopy 2022

Apache Point Observatory – 3.5m telescope – 49 nights – echelle spectroscopy 2016 – 2020

Hard Labor Creek Observatory – 0.6m telescope – 7 nights – relative photometry 2015

Wyoming Infrared Observatory – 2.3m telescope – 15 nights – longslit spectroscopy 2013

Skills & Tools

Observations – Longslit & echelle spectroscopy, long-baseline & speckle interferometry, photometry

Data Analysis – Radial velocities, interferometric visibilities, binary orbit fitting, light curve modeling

Programming – Python, IDL, IRAF, Bash terminal, HTML/CSS (basic)

Software – LaTeX, Microsoft Office, Google Suite, MESA, DS9, Period04, Photoshop (basic)

Operating Systems – Mac, Linux, Windows

Foreign Languages – French (basic)

Other – science communication, technical writing, project management

Memberships

Planetary Science Institute, associate research scientist	2023 – present
American Astronomical Society, full member	2014 – present

Contributed Talks & Posters

Binary Stars in the Space Era, "Orbits of Planet Hosting Binary Systems"	2025
AAS #245, "Visual Orbits & Alignments of Planet Hosting Binary Systems"	2025
AAS #243, "Visual Orbits & Alignments of Planet Hosting Binary Systems"	2024
EPRV5 Meeting, "Orbits & Inclinations of Planet Host Binaries" (poster)	2023
AAS #241, "Detection Sensitivity of Transiting Planets in Single vs Binary Stars"	2023
NASA Postdoc Symposium, "How Does Host Star Multiplicity Affect Planet Formation?"	2022
Bay Area Exoplanet Meeting, "Which Binary Component Hosts the TESS Transiting Planet?"	2022
AAS #240, "Which Binary Component Hosts the TESS Transiting Planet?" (poster)	2022
Bay Area Exoplanet Meeting, "Close Companions of TESS Exoplanet Host Stars"	2021
AAS #237, "Close Companions of TESS Exoplanet Host Stars" (poster)	2021
AAS #235, "Visual Orbits of Spectroscopic Binaries with the CHARA Array" (dissertation talk)	2020
CHARA Science Meeting, "Visual Orbits of Spectroscopic Binaries"	2019
AAS #233, "Visual Orbit and Physical Parameters of the Spectroscopic Binary HD 224355"	2019
Georgia Regional Astronomers Conference, "Visual Orbit of the Spectroscopic Binary HD 224355"	2018
GSU Women In STEM Conference, "Visual & Spectroscopic Orbits of Binary Stars"	2018
AAS #231, "A Photometric, Spectroscopic & Apsidal Motion Analysis of BW Aqrs" (poster)	2018
AAS #227, "Photometric & Spectroscopic Analysis of EPIC 202062176" (poster)	2016
Lehigh Senior Thesis Fair, "Stellar Parameters of Three Massive Stars in Cygnus OB2"	2014
AAS #223, "The Cygnus OB2 Radial Velocity Survey: MT216, MT234, MT485" (poster)	2014

Peer-Reviewed Publications

My full publication record is also listed on ADS here. Asterisk denotes an undergraduate co-author.

42. **Lester, K. V.**, Singleton, J.*, Sargent, V.*, Shepherd, S.*, Twomey, A.*, et al. *in preparation*
41. Hejazi, N., Lepine, S., Nordlander, T., et al. 2025, AJ, 170, 1, 18.
40. Howell, S. B., Martínez-Vázquez, C. E., Furlan, E., et al. 2025, Frontiers Astronomy, 12, 1608411.
39. Armstrong, D. J., Osborn, A., Burn, R., et al. 2025, MNRAS, 537, 4, 3175
38. Matson, R. A., Gore, R., Howell, S. B., et al. 2025, AJ, 169, 76.
37. Schulte, J., Rodriguez, J. E., Bieryla, A., et al. 2024, AJ, 168, 32.
36. Hori, Y., Fukui, A., Hirano, T., et al. 2024, AJ, 167, 289.

35. Littlefield, C., Howell, S. B., Ciardi, D. R., et al. 2024, AJ, 167, 74.
34. **Lester, K. V.**, Howell, S. B., Matson, R. A., et al. 2023, AJ, 166, 166.
33. Mistry, P., Pathak, K., Prasad, A., et al. 2023, AJ, 166, 9.
32. Vowell, N., Rodriguez, J. E., Quinn, S. N., et al. 2023, AJ, 165, 268.
31. Tey, E., Huang, C. X., Kunimoto, M., et al. 2023, AJ, 165, 93.
30. Knudstrup, E., Gandolfi, D., Nowak, G., et al. 2023, MNRAS, 519, 5637.
29. **Lester, K. V.**, Schaefer, G. H., Fekel, F. C., et al. 2022, AJ, 164, 228.
28. **Lester, K. V.**, Howell, S. B., Ciardi, D. R., et al. 2022, AJ, 164, 56.
27. E. V., Weiss, L. M., Dressing, C. D., et al. 2022, AJ, 163, 293.
26. Mann, A. W., Wood, M. L., Schmidt, S. P., et al. 2022, AJ, 163, 156.
25. Wysocki, P., Gies, D., Shepard, K., et al. 2022, AJ, 163, 177.
24. Bouma, L. G., Curtis, J. L., Masuda, K., et al. 2022, AJ, 163, 121.
23. Wilson, T. G., Goffo, E., Alibert, Y., et al. 2022, MNRAS, 511, 1043.
22. Wittenmyer, R. A., Clark, J. T., Trifonov, T., et al. 2022, AJ, 163, 82.
21. Schanche, N., Pozuelos, F. J., Gunther, M. N., et al. 2022, A&A, 657, A45.
20. Wong, I., Shporer, A., Zhou, G., et al. 2021, AJ, 162, 256.
19. Wells, R. D., Rackham, B. V., Schanche, N., et al. 2021, A&A, 653, A97.
18. Hedges, C., Hughes, A., Zhou, G., et al. 2021, AJ, 162, 54.
17. **Lester, K. V.**, Matson, R. A., Howell, S. B., et al. 2021, AJ, 162, 75.
16. Wang, L., Gies, D. R., Peters, G. J., et al. 2021, AJ, 161, 248.
15. Howell, S. B., Scott, N. J., Matson, R. A., et al. 2021, Frontiers in Astronomy, 8, 10.
14. Whelan, D. G., Chojnowski, S. D., Labadie-Bartz, J., et al. 2021, AJ, 161, 67.
13. Gies, D. R., **Lester, K. V.**, Wang, L., et al. 2020, ApJ, 902, 25.
12. **Lester, K. V.**, Fekel, F. C., Muterspaugh, M., et al. 2020, AJ, 160, 58.
11. Wang, L., Gies, D. R., **Lester, K. V.**, et al. 2020, AJ, 159, 4.
10. Shepard, K., Gies, D. R., **Lester, K. V.**, et al. 2020, ApJ, 888, 82.
9. **Lester, K. V.**, Gies, D. R., Schaefer, G. H., et al. 2019, AJ, 158, 218.
8. **Lester, K. V.**, Gies, D. R., Schaefer, G. H., et al. 2019, AJ, 157, 140.
7. Morris, B., Dorn-Wallenstein, T., Levesque, E., et al. 2019, JOSS, 4, 1130.
6. Chojnowski, S. D., Labadie-Bartz, J., Rivinius, T., et al. 2018, ApJ, 865, 76.
5. **Lester, K. V.** & Gies, D. R. 2018, AJ, 156, 8.
4. **Lester, K. V.**, Gies, D. R., & Guo, Z. 2016, AJ, 152, 194.
3. Bentz, M. C., Batiste, M., Seals, J., et al. 2016, ApJ, 831, 2.
2. Gies, D. R., Matson, R. A., Guo, Z., et al. 2015, AJ, 150, 178.
1. Kobulnicky, H. A., Kiminki, D. C., Lundquist, M. J., et al. 2014, ApJs, 213, 34.