

Kathryn V. Lester

NASA Ames Research Center

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<https://kvlester.github.io>

Education

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| Ph.D. in Astronomy, Georgia State University | 2020 |
| M.S. in Physics, Georgia State University | 2017 |
| B.S. in Astrophysics, Lehigh University | 2014 |

Research Interests

Exoplanets, host star properties, transit light curves, binary stars, radial velocity analysis, light curve modeling, fundamental stellar parameters, high resolution spectroscopy, speckle & long baseline interferometry, intermediate mass stars, and stellar evolution.

Research Experience

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

- Searched for companions around TESS exoplanet hosts using high resolution imaging
- Determining visual orbits and astrophysical parameters of close binaries hosting planets

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

- Determined visual and spectroscopic orbits of A- and F-type binary stars using the CHARA Array.
- Completed photometric, spectroscopic, and apsidal motion analyses of the K2 eclipsing binary, BW Aquarii.

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| Undergraduate Research Assistant | 2013 – 2014 |
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Lehigh University, with Dr. Ginny McSwain

- Fit model spectra to three massive binary stars to determine the atmospheric parameters.

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

- Observed and analyzed the radial velocity shifts of massive binary stars in the Cygnus OB2 Association.

First Author Publications

To see my publication record on ADS, click [here](#). (7 first-author, 27 total, h-index = 9)

8. “Visual Orbits of Spectroscopic Binaries with the CHARA Array. IV. HD 61859, HD 89822, HD 109510, and HD 191692”
K. V. Lester, G. Schaefer, F. Fekel, et al. 2022, *submitted to AJ*
7. “Determining Which Binary Component Hosts the TESS Transiting Planet”.
K. V. Lester, S. B. Howell, D. R. Ciardi, & R. A. Matson. 2022, *AJ*, 164, 56
6. “Speckle Observations of TESS Exoplanet Host Stars. II. Stellar Companions at 1-1000 au and Implications for Small Planet Detection”.
K. V. Lester, R. A. Matson, S. B. Howell, et al. 2021, *AJ*, 162, 75
5. “Visual Orbits of Spectroscopic Binaries with the CHARA Array. III. HD 8374 and HD 24546”.
K. V. Lester, F. Fekel, M. Muterspaugh, et al. 2020, *AJ*, 160, 58
4. “Visual Orbits of Spectroscopic Binaries with the CHARA Array. II. the eclipsing binary HD 185912”.
K. V. Lester, D. R. Gies, G. Schaefer, C. Farrington, et al. 2019, *AJ*, 158, 6

3. “Visual Orbits of Spectroscopic Binaries with the CHARA Array. I. HD 224355”.
K. V. Lester, D. R. Gies, G. Schaefer, C. Farrington, et al. 2019, AJ, 157, 140L
2. “A Photometric, Spectroscopic, and Apsidal Motion Analysis of Eclipsing Binary BW Aquarii”.
K. V. Lester & D. R. Gies. 2018, AJ, 156, 8.
1. “A Young Eclipsing Binary and its Luminous Neighbors in Sh 2-252E”.
K. V. Lester, D. R. Gies, & Z. Guo. 2016, AJ, 152, 194.

Select Contributed Publications

12. A. W. Mann, M. L. Wood, S. P. Schmidt, et al. 2022, AJ, 163, 156
11. P. Wysocki, D. Gies, K. Shepard, **K. V. Lester**, et al. 2022, AJ, 163, 177
10. L. Wang, D. Gies, G. Peters, et al. 2021, AJ, 161, 248
9. S. B. Howell, N. Scott, R. A. Matson, et al. 2021, Frontiers in Astronomy and Space Sciences, 8, 10
8. D. G. Whelan, S. D. Chojnowski, J. Labadie-Bartz, et al. 2021, AJ, 161, 67
7. D. R. Gies, **K. V. Lester**, L. Wang, et al. 2020, ApJ, 902, 25
6. K. Shepard, D. R. Gies, **K. V. Lester**, et al. 2020, ApJ, 888, 82
5. L. Wang, D. R. Gies, **K. V. Lester**, et al. 2020, AJ, 159, 4
4. S. D. Chojnowski, J. Labadie-Bartz, T. Rivinius, et al. 2018, ApJ, 865, 76.
3. M. C. Bentz, M. Batiste, J. Seals, et al. 2016, ApJ, 831, 2
2. D. R. Gies, R. A. Matson, Z. Guo, **K. V. Lester**, et al. 2015, AJ, 150, 178
1. H. A. Kobulnicky, D. C. Kiminki, M. J. Lundquist, et al. 2014, ApJS, 213, 34

Invited Talks

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| CHARA & VLTI Science Meeting | 2022 |
| Review Talk: “Binary Star Science Using Interferometry”. | |
| AAS Splinter Session: Stars and the ISM with Gemini’s Fast Turnaround Observations | 2022 |
| Talk: “Speckle & Long Baseline Interferometry of Binary Stars”. [cancelled due to COVID] | |
| NSF virtual site visit at the CHARA Array | 2020 |
| Talk: “Visual Orbits of Spectroscopic Binaries”. | |
| CHARA Summer School | 2020 |
| Talk: “Observing and Data Reduction with CLIMB”. | |
| Agnes Scott College | 2019 |
| Colloquium: “Visual & Spectroscopic Orbits of Binary Stars”. | |

Contributed Talks

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| Bay Area Exoplanet Meeting , “Which Binary Component Hosts the TESS Transiting Planet?” | 2022 |
| Bay Area Exoplanet Meeting , “Close Companions of TESS Exoplanet Host Stars” | 2021 |
| 235th AAS Meeting , “Visual Orbits of Spectroscopic Binaries with the CHARA Array” (dissertation talk) | 2020 |
| CHARA Science Meeting , “Visual Orbits of Spectroscopic Binaries” | 2019 |
| 233rd AAS Meeting , “Visual Orbit and Physical Parameters of the Spectroscopic Binary HD 224355” | 2019 |

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| 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 |
| Lehigh Senior Thesis Fair , “Stellar Parameters of Three Massive Stars in Cygnus OB2” | 2014 |

Competitive Observing Time Awarded

WIYN Observatory

Spectroscopic orbits of exoplanet host binary stars using NEID (30 hours) 2022A, 2022B

Gemini Observatory

Speckle imaging of binary stars and exoplanet hosts using 'Alopeke & Zorro (23 hours) 2018B, 2021B, 2022B

Lick Observatory

Spectroscopic orbits of exoplanet host binary stars using APF (10 hours) 2022A

Teaching Experience

Teaching Assistant

2014 – 2017

Taught and graded weekly labs and projects for introductory stellar and extragalactic astronomy courses.

Grading Assistant

2014

Created online homework questions, helped proctor exams, and graded multiple-choice exam questions for introductory astronomy courses.

Private Tutor

2013 – 2014

Lead weekly tutoring sessions for calculus and French to other undergraduate students.

Leadership & Service

Proposal Review Panel Member

2022

Provided science review, grading, and discussion of NOIRLab telescope proposals.

Grant Proposal Reviewer

2021 – 2022

Provided science review and grading for NASA FINNESST grant proposals.

Panel Member

2019, 2021

Participated in panel discussions about graduate school and career paths for undergraduate physics students.

Journal Referee

2019, 2021

Reviewed submitted manuscripts for JAAVSO and ApJS.

Astronomy Peer Advising Leaders

2016 – 2020

President & Mentor

- Proposed for university funding and maintained the club's budget.
- Lead monthly mentor meetings and delegated tasks for upcoming events.
- 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.

Lehigh Astronomy Club Secretary

2013 – 2014

Arranged officer meetings and managed promotion of club events.

Outreach

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| Podcast Guest | 2021 |
| Spoke about my search for companions to TESS 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. | |
| GSU Astronomy Night in Grant Park | 2016 |
| Operated telescopes during a star party for over 100 elementary school families. | |
| IAU Symposium Volunteer | 2015 |
| Assisted with conference registration and a workshop for local high school students building cereal box spectrographs. | |

Observing Experience

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| Gemini Observatory | 2020 – present |
| 8.1m telescope – 98 nights – speckle interferometry | |
| WIYN Observatory | 2022 |
| 3.5m telescope – 5 nights – multi-object spectroscopy | |
| The CHARA Array | 2017 – 2020 |
| Six 1.0m telescopes – 73 nights – long baseline interferometry | |
| Apache Point Observatory | 2016 – 2020 |
| 3.5m telescope – 49 nights – echelle spectroscopy | |
| Hard Labor Creek Observatory | 2015 |
| 0.6m telescope – 7 nights – relative photometry | |
| Wyoming Infrared Observatory | 2013 |
| 2.3m telescope – 15 nights – longslit spectroscopy | |

Skills & Tools

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| Observations | Longslit & echelle spectroscopy, long-baseline & speckle interferometry, relative photometry |
| Data Analysis | Radial velocities, interferometric visibilities, binary orbit fitting, light curve modeling |
| Programming | Python, IDL, IRAF, HTML/CSS (basic) |
| Software | L ^A T _E X, Microsoft Office, MESA, DS9, ELC, Period04, PyKE, Photoshop (basic) |
| Operating Systems | Mac, Linux, Windows |
| Foreign Languages | French (intermediate) |