

Kathryn V. Lester

NASA Ames Research Center

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Education

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

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

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.

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.

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, AJ, 164, 228
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

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

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

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

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

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

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)