Kathryn V. Lester

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Research Interests: Exoplanet hosts stars, spectroscopic binary stars, radial velocity analysis, visual binary stars, eclipsing binary stars, light curve modeling, fundamental stellar parameters, high resolution spectroscopy, interferometric observations, transit photometry, massive stars, stellar evolution.

Education

Ph.D in Astronomy.	Georgia State Univeristy	May 2020
M.S. in Physics.	Georgia State Univeristy	December 2017
B.S. in Astrophysics.	Lehigh University	May 2014

Research Positions

NASA Postdoctoral Fellow 2020 - present
Ames Research Center, with Dr. Steve Howell
- Searching for companions around and determining visual orbits of TESS exoplanet host binaries using high resolution imaging.

Graduate Research Assistant 2014 - 2020
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
Lehigh University, with Dr. Ginny McSwain
- Fit model spectra to three binary stars in the Cyg OB2 association to determine atmospheric parameters.

Undergraduate Research Assistant 2013
University of Wyoming, with Dr. Chip Kobulnicky
- Measured and analyzed the radial velocity shifts of WIRO spectra in search of massive binary stars as part of the Cygnus OB2 Radial Velocity Survey

First Author Publications

To see my publication record on ADS, click *here*.

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

11. P. Wysocki, D. Gies, K. Shepard, 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

Observing Experience

Gemini Observatory — HI, USA & Chile
8.1m telescope - 88 nights — 2020 - present
Speckle interferometry of binary stars and exoplanet host stars

The CHARA Array — Mt. Wilson, CA
Six 1.0m telescopes - 73 nights — 2017 - 2020
Interferometric observations of binary stars using CLIMB

Apache Point Observatory — Sunspot, NM
3.5m telescope - 49 nights — 2016 - 2020
Echelle spectroscopy of binary stars using ARCES

Hard Labor Creek Observatory — Rutlege, GA
0.6m telescope - 7 nights — 2015
Relative photometry of eclipsing binaries and AGN

Wyoming Infrared Observatory — Mt. Jelm, WY
2.3m telescope - 15 nights — 2014
Longslit spectroscopy of binary star candidates

Telescope Time Awarded

WIYN Observatory
Spectroscopic orbits of exoplanet host binary stars using NEID — 2022A, 2022B

Lick Observatory
Spectroscopic orbits of exoplanet host binary stars using APF — 2022A

Gemini Observatory
Speckle imaging of exoplanet host binary stars using 'Alopeke & Zorro 2021B, 2022B
Speckle imaging of spectroscopic binary stars using 'Alopeke 2018B

Invited Talks

CHARA & VLTI Science Meeting 2022
Talk: "Review of 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".

Agnes Scott College 2019
Colloquium: "Visual & Spectroscopic Orbits of Binary Stars".

Contributed Talks

Bay Area Exoplanet Meeting 2022
"Which Binary Component Hosts the TESS Transiting Planet?".

Bay Area Exoplanet Meeting 2021
"Close Companions of TESS Exoplanet Host Stars".

235th AAS Meeting 2020
Dissertation Talk: "Visual Orbits of Spectroscopic Binaries with the CHARA Array".

CHARA Science Meeting 2019
"Visual Orbits of Spectroscopic Binaries".

233rd AAS Meeting 2019
"Visual Orbit and Physical Parameters of the Spectroscopic Binary HD 224355".

Georgia Regional Astronomers Conference 2018
"Visual Orbits of Spectroscopic Binary Stars: HD 224355".

GSU Women In STEM Conference 2018
"Visual & Spectroscopic Orbits of Binary Stars".

Lehigh Senior Thesis Fair 2014
"Stellar Parameters of Three Massive Stars in Cygnus OB2".

Teaching Experience

GSU Lab Instructor 2014 - 2017
Taught and graded weekly labs for introductory stellar and extragalactic astronomy courses.

Grading Assistant 2014
Graded online homework and exams for introductory stellar astronomy course.

Private Tutor 2013 - 2014
Lead weekly tutoring sessions for calculus and French to other undergraduate students.

Leadership & Service Experience

Astronomy Peer Advising Leaders (AstroPALs) 2016 - 2020
President & Mentor
- Proposed for and maintained the club budget, lead monthly mentor meetings and events, and organized orientation for incoming graduate students.
- Provided advice and support during monthly one-on-one meetings with junior graduate student mentee.
- Organized group professional development meetings for all mentees.

TAC Panel Member 2022
Provided science review and grading for 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 possible career paths for undergraduate physics students.

Journal Referee 2019, 2021
Reviewed submitted manuscripts for JAAVSO and ApJS.

Lehigh Astronomy Club Secretary 2013 - 2014
Arranged and took notes during meetings and managed promotion of club events.

Outreach Experience

Podcast Guest 2021
Spoke about my research 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 hosted by GSU and Rabun County Tourism Authority.

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

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.

Workshop Volunteer 2015
Assisted with workshop for local high school students building cereal box spectrographs during IAU Symposium 314.

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	IDL, IRAF, Python, HTML/CSS (basic)
Software	LaTeX, Microsoft Office, MESA, DS9, ELC, Period04, PyKE, Photoshop (basic)
Operating Systems	Mac, Linux, Windows
Foreign Languages	French (intermediate)

Honors & Awards

Georgia State University	Outstanding Advanced Graduate Student Award Outstanding Second Year Graduate Student Sigma Pi Sigma
Lehigh University	Phi Beta Kappa Physics Departmental Honors Eckardt Scholar