Kathryn V. Lester

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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, 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.

Research Experience

NASA Postdoctoral Fellow 2020 - present
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
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 first-author, 27 total, h-index = 9, total citations = 206)

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

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 for introductory stellar and extragalactic astronomy courses at GSU.

Grading Assistant 2014
Created online homework questions and graded multiple-choice exams for introductory stellar astronomy course.

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 (AstroPALs) 2016 - 2020
President & Mentor

- Proposed for and maintained the club budget, lead monthly mentor meetings, and organized orientation for incoming graduate students.
- Provided advice and support during monthly one-on-one meetings with junior graduate student mentees.
- Organized and lead professional development workshops for junior graduate students.

Lehigh Astronomy Club Secretary 2013 - 2014
Arranged and took notes during 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 HI, USA & Chile
8.1m telescope - 98 nights - speckle interferometry 2020 - present

The CHARA Array Mt. Wilson, CA
Six 1.0m telescopes - 73 nights - long baseline interferometry 2017 - 2020

Apache Point Observatory Sunspot, NM
3.5m telescope - 49 nights - echelle spectroscopy 2016 - 2020

Hard Labor Creek Observatory Rutlege, GA
0.6m telescope - 7 nights - relative photometry 2015

Wyoming Infrared Observatory Mt. Jelm, WY
2.3m telescope - 15 nights - longslit spectroscopy 2013

Professional Memberships

American Astronomical Society 2014 - present
Sigma Pi Sigma 2014 - present
Phi Beta Kappa 2013 - present

Honors & Awards

NASA Postdoctoral Fellowship 2020
Outstanding Advanced Graduate Student Award, Georgia State University 2020
Outstanding Second Year Graduate Student, Georgia State University 2016
Departmental Honors, Lehigh University, 2014

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	LaTeX, Microsoft Office, MESA, DS9, ELC, Period04, PyKE, Photoshop (basic)
Operating Systems	Mac, Linux, Windows
Foreign Languages	French (intermediate)