

# Kathryn V. Lester

NASA Ames Research Center

kathryn.v.lester@nasa.gov

<https://kvlester.github.io>

**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

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

## Research Positions

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**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

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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

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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

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### Gemini Observatory

8.1m telescope - 88 nights  
Speckle interferometry of binary stars and exoplanet host stars

HI, USA & Chile  
2020 - present

### The CHARA Array

Six 1.0m telescopes - 73 nights  
Interferometric observations of binary stars using CLIMB

Mt. Wilson, CA  
2017 - 2020

### Apache Point Observatory

3.5m telescope - 49 nights  
Echelle spectroscopy of binary stars using ARCIS

Sunspot, NM  
2016 - 2020

### Hard Labor Creek Observatory

0.6m telescope - 7 nights  
Relative photometry of eclipsing binaries and AGN

Rutledge, GA  
2015

### Wyoming Infrared Observatory

2.3m telescope - 15 nights  
Longslit spectroscopy of binary star candidates

Mt. Jelm, WY  
2014

## Telescope Time Awarded

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### 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  
Speckle imaging of spectroscopic binary stars using 'Alopeke

2021B, 2022B  
2018B

## **Invited Talks**

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### **CHARA & VLT 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**

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### **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**

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### **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

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### 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

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### 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

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

## Honors & Awards

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