

# Andrew Couperus

## Curriculum Vitae

Department of Physics and Astronomy  
Georgia State University  
Atlanta, GA

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### Professional Profile:

I am an observational astronomer and science communicator studying the activity of nearby small stars and its impacts on exoplanets. In addition to conducting astronomy research and teaching, I use the lens of astronomy to engage students and the public with climate change and sustainability topics.

## Education

- 2018–2025 **PhD - Astronomy**, Georgia State University (GSU), Atlanta, GA.  
Defended June 2025 | Research Adviser: Dr. Todd Henry  
Thesis: *The Long-Term Stellar Activity Cycles and Magnetic Predictability of Nearby M Dwarfs*
- 2018–2020 **MS - Physics**, Georgia State University, Atlanta, GA.  
Concentration in Astronomy | Research Adviser: Dr. Todd Henry
- 2014–2017 **BS - Physics (with Great Distinction)**, Clarkson University, Potsdam, NY.  
Minor in Mathematics | Research Adviser: Dr. Joshua Thomas

## Appointments

- Jul. 2025 to present **Visiting Assistant Professor of Astronomy**, Smith College, Northampton, MA.  
– Teaching five courses over the academic year, including AST 100 *A Survey of the Universe*, AST 235 *Introduction to Stellar Structure*, and AST 214 *Astronomy & Public Policy*.
- ongoing **Research Affiliate**, REsearch Consortium On Nearby Stars (RECONS - [www.recons.org](http://www.recons.org)).

## Professional Experience

### Teaching

- 2025 **Workshop Participant**, AAS #245, *Increasing Student Learning and Inclusion in Your Classroom: Strategies from the Faculty Teaching Institute*.
- 2018–2021 **Graduate Teaching Assistant**, Georgia State University.  
– Taught 16 undergraduate intro astronomy lab sections across eight semesters.  
– Helped improve in-person lab activities and train new TAs.  
– Completed online teaching training, developed new online lab materials, led online groups of new TAs, and helped coordinate transition to online lab teaching during the pandemic.

### Research

- 2018–2025 **Graduate Research Assistant**, Georgia State University.  
– Investigated nearby low-mass stars, particularly their stellar magnetic activity, activity evolution, long-term activity cycles, rotation, variability, X-ray emission, and multiplicity. Managed six observing campaigns obtaining short- and long-baseline optical photometry, optical spectroscopy, radial velocities, X-ray imaging, speckle imaging, and ground-based astrometry, alongside a large breadth of archival data sources including *Gaia*, *TESS*, *Kepler*, ZTF, ASAS-SN, and 2MASS.  
– Co-advised undergraduate research student, Summer 2022.

- 2016–2017 **Undergraduate Research Assistant**, Clarkson University.  
 – Helped implement and calibration a new LHIRES III spectrograph at Reynolds Observatory.  
 – Completed spectral observations and analysis for  $\sim 40$  nights of data to refine orbital measurements of high-mass stellar binaries.

### Observing

- 2025A **Canada-France-Hawaii Telescope 3.6m**, Maunakea, Hawai'i.  
 3.6 hrs – Awarded snapshot time with the SPIRou spectropolarimetry instrument as Co-I.
- 2019–2025 **RECONS CTIO/SMARTS 0.9m Program Support**, La Serena, Chile.  
 – Regularly assisted observations and analysis for the RECONS multi-decade 0.9m program.  
 – Coordinated simultaneous observations with the SMARTS 0.9m and 1.5m for a targeted multi-messenger study.
- 2019–2023 **CTIO/SMARTS 0.9m**, La Serena, Chile.  
 68 nights – Experience carrying out multiple 12–20 night in-person observing runs.  
 – 36 nights awarded competitively from NOIRLab proposal 2023A-549259 as PI. Another 36 nights awarded competitively from NOIRLab proposals 2020A-0178 / 2020B-0031 / 2021A-0005 as PI, but lost due to the COVID-19 pandemic.
- 2019–2023 **CTIO/SMARTS 1.5m**, La Serena, Chile.  
 203 hrs – High-resolution spectral observations with the CHIRON echelle spectrograph through RECONS/GSU time.
- 2021–2022 **XMM-Newton**.  
 13 ksec – Awarded low-priority time from GO proposal ID 088170 as Co-I.
- 2020–2022 **Chandra X-ray Observatory**.  
 188 ksec – Awarded time from GO proposal ID 22200260 as Co-I.
- 2019 **Apache Point Observatory - ARC 3.5m**, Sunspot, NM.  
 3 half-nights – Trained with the high-resolution ARCES spectrograph.
- 2019 **Hard Labor Creek Observatory - Miller 0.61m**, Rutledge, GA.  
 3 nights – Collected photometric observations of a rotating asteroid.
- 2016–2017 **Reynolds Observatory - 12in Meade**, Potsdam, NY.  
 $\sim 20$  nights – Acquired low-resolution spectra for a multi-institution project including citizen scientists.

### Industry

- 2017–2018 **Customer Service Technician**, Frazer Computing, Canton, NY.  
 – Worked in a team-based technical environment to support software and characterize user bugs.

## Publications 3 first-author (1 published, 1 written, 1 in prep), 7 co-authored

- In prep **Andrew A. Couperus**, Todd J. Henry, Eliot H. Vrijmoet, et al., *The Solar Neighborhood. LIV. New Photometric Stellar Activity Cycles in Fully Convective M Dwarfs Reveal Cycle Periods Beyond Two Decades and an Occurrence Rate Above 5%*, drafted and in prep.
- Pending submission **Andrew A. Couperus**, Todd J. Henry, Aman Kar, et al., *The Solar Neighborhood. LIII. M Dwarf Twin Binaries — One in Five Sibling Pairs Are Mismatched in Activity and/or Rotation*, written and pending submission,  $\sim 43$  pages.
- 2025 **Andrew A. Couperus**, Todd J. Henry, Rachel A. Osten, et al., *The Solar Neighborhood. LII. M Dwarf Twin Binaries — Presumed Identical Twins Appear Fraternal in Variability, Rotation,  $H\alpha$ , and X-rays*, AJ, 169, 41, available at [ADS](#) or [AJ](#), 34 pages.

- 2024 T.A. Rector, L. Barbier, **Andrew A. Couperus**, et al., *Climate Change Task Force Report for the American Astronomical Society*, arXiv, [arXiv:2406.10451](https://arxiv.org/abs/2406.10451).  
– Aided in AAS emissions assessment, membership climate survey, and writing of report.
- 2024 Aman Kar, Todd J. Henry, **Andrew A. Couperus**, et al., *The Solar Neighborhood LI: A Variability Survey of Nearby M Dwarfs with Planets from Months to Decades with TESS and the CTIO/SMARTS 0.9 m Telescope*, AJ, 167, 196, [doi:10.3847/1538-3881/ad2ddc](https://doi.org/10.3847/1538-3881/ad2ddc).  
– Aided development and guidance of project, some analysis codes, and writing of paper.
- 2022 Wei-Chun Jao, **Andrew A. Couperus**, Eliot H. Vrijmoet, et al., *Estimating the Convective Turnover Time*, ApJ, 940, 145, [doi:10.3847/1538-4357/ac9cd8](https://doi.org/10.3847/1538-4357/ac9cd8).  
– Aided discussions of project, interpretation of analysis, and writing of paper.
- 2021 Joshua D. Thomas, Noel D. Richardson, J. J. Eldridge, ... [including **Andrew A. Couperus**], et al., *The orbit and stellar masses of the archetype colliding-wind binary WR 140*, MNRAS, 504, 5221, [doi:10.1093/mnras/stab1181](https://doi.org/10.1093/mnras/stab1181).  
– Acquired many observations and processed a portion of the spectra for RV analyses.
- 2020 Douglas R. Gies, Kathryn V. Lester, Luqian Wang, **Andrew A. Couperus**, et al., *Spectroscopic Detection of the Pre-White Dwarf Companion of Regulus*, ApJ, 902, 25, [doi:10.3847/1538-4357/abb372](https://doi.org/10.3847/1538-4357/abb372).  
– Aided preliminary RV analyses of the system.
- 2020 Emily A. Gilbert, Thomas Barclay, Joshua E. Schlieder, ... [including **Andrew A. Couperus**], et al., *The First Habitable-zone Earth-sized Planet from TESS. I. Validation of the TOI-700 System*, AJ, 160, 116, [doi:10.3847/1538-3881/aba4b2](https://doi.org/10.3847/1538-3881/aba4b2).  
– Acquired absolute photometric observations to help validate the host star properties.
- 2018 Rachel A. Johnson, Noel D. Richardson, Anthony F. J. Moffat, ... [including **Andrew A. Couperus**], et al., *An Updated Ephemeris for the Single-lined Orbit of the Supergiant  $\mu$  Sagittarii*, RNAAS, 2, 138, [doi:10.3847/2515-5172/aad6ed](https://doi.org/10.3847/2515-5172/aad6ed).  
– Acquired many observations and processed a portion of the spectra for RV analyses.

## Presentations 14 talks (2 invited), 5 posters

### Talks

- 2025 *The Interconnection of Astronomy and Climate Change*.  
| GSU Graduate Conference for Research, Scholarship, and Creative Activity #3
- 2025 *The AAS Climate Change Task Force Report*.  
| AAS Meeting #245
- 2025 *The Magnetic Predictability and Stellar Activity Cycles of Nearby M Dwarfs*.  
| AAS Meeting #245
- 2024 *Twin M Dwarfs Appear Both Fraternal and Identical in Activity and Rotation*.  
| GSU Stellar Symposium
- (invited) 2024 *Climate Change and the American Astronomical Society*.  
| GSU Department Seminar
- [abstract](#) 2024 *Seeing Double: Are Twin M Dwarfs Fraternal or Identical in Activity and Rotation*.  
| AAS Meeting #243, 254.05

- 2023 *Seeing Double: Are Twin M Dwarfs Fraternal or Identical in Activity.*  
| GSU Stellar Symposium
- (invited) 2022 *Twinkle Twinkle Little Star ET Wonders How You Are.*  
| STScl Special Seminar
- 2022 *M Dwarf Stellar Activity — A Coming-of-Age Story.*  
| Clarkson University Summer Undergraduate Research Program
- 2022 *M Dwarf Stellar Activity — A Coming-of-Age Story.*  
| GSU Galaxies to Gluons Summer Seminar Series
- abstract 2022 *Stellar Cycles in Fully Convective M Dwarfs: Astronomy Beyond a Funding Cycle.*  
| Skumanich Conference, id.29
- 2021 *Twinkle Twinkle Little Star ET Wonders How You Are.*  
| GSU Undergraduate Research Program Summer Seminar Series
- abstract 2020 *Characterizing M Dwarf Stellar Cycles with Two Decades of RECONS Data.*  
| AAS Meeting #236, 319.01
- 2016 *Benchmarking of the Shelyak LHIRES III Spectrograph.*  
| Clarkson SURE Conference

## Posters

- poster 2024 *Twin M Dwarfs Appear Both Fraternal and Identical in Activity and Rotation.*  
| Cool Stars 22 Conference
- abstract 2022 *The Long-Term Photometric Variability of Nearby M Dwarfs and Exoplanet Hosts.*  
| AbSciCon2022 Conference
- poster 2021 *Twinkle Twinkle Little Star: ET Wonders How You Are.*  
| Cool Stars 20.5 Conference
- abstract 2021 *Twinkle Twinkle Little Star: ET Wonders How You Are.*  
| AAS Meeting #237, 141.04
- 2016 *The Science at Clarkson's Reynolds Observatory.*  
| Astronomical Society of New York Conference

## Awards & Funding 🏆 📦

- 2025 **\$5,060**, NASA SCoPE Seed Grant Proposal (awarded but declined due to scheduling).  
*Engaging Children and Adults with (Exo) Planetary Astronomy at Local Libraries*
- 2025 **Outstanding Advanced Astronomy Graduate Student Award**, GSU.
- 2021–2024 **\$65,845**, Smithsonian Astrophysical Observatory, Co-I, via Chandra prop. ID 22200260.  
*Fraternal or Identical? The Magnetic Properties of M Dwarf Twins*
- 2021 **Outstanding Junior Astronomy Graduate Student Award**, GSU.
- 2020 **Exceptional Department Service Award**, GSU.
- 2020 **Outstanding Astronomy Graduate Teaching Assistant Award**, GSU.
- 2020 **Honorable Mention**, NSF Graduate Research Fellowship Program.
- 2015–2017 **Presidential Scholar**, Five Semesters, Clarkson University.
- 2014–2017 **Clarkson Merit Scholarship**, Clarkson University.
- 2014 **College Academic Award in Engineering Individual Studies**, SUNY Canton.

2013–2014 **President's Honors List**, Two Semesters, SUNY Canton.

## Professional Service

- 2020–2025 **Graduate Student Mentor**, AstroPALs, GSU.
  - Directly mentored 2 students, developed and led 5 focus group sessions and co-led several others, and regularly aided the Astronomy Peer Advising Leaders (AstroPALs) steering committee.
- 2023 **Astronomy Student Representative**, Department Graduate Committee, GSU.
- 2018–2022 **Stellar Journal Club Rotating Discussion Leader**, GSU.
- 2020 **Astro/Physics Graduate Student DEI Committee Member**, GSU.

(See *Climate Change Education, Action, & Service* for additional service items.)

## Climate Change Education, Action, & Service

- 2025–present **Sustainability Committee Chair**, American Astronomical Society (AAS).
- 2024–2025 **Sustainability Committee Member**, AAS.
- 2021–present **Member**, Astronomers for Planet Earth ([A4E](#)).
- 2022–2025 **Astronomy × Climate Change Guest Lecturer**, GSU.
  - Taught guest lectures for 3 graduate and undergraduate astronomy classes to discuss content at the intersection of astronomy and climate change.
  - Provided help for ~10 others to include such content in their classes and research efforts.
- 2024 **Invited Speaker**, *Climate Change and the American Astronomical Society*, GSU.
- 2024 **Workshop Participant**, AAS #243, *Saving Astronomy Workshop: Light Pollution, Satellite Constellations, and Climate Change*.
  - Worked with interdisciplinary professionals spanning architects to rocket scientists in order to develop action items for advancing light pollution and satellite contamination mitigation efforts.
- 2022–2024 **Climate Change Task Force Member**, AAS.
  - [report](#) – Helped assess AAS CO2 emissions, survey AAS membership regarding climate action, investigate virtual meeting methods, and write report with recommendations for AAS leadership.
- 2021 **Completed Climate Leadership Training**, The Climate Reality Project.

## Public Outreach

- 2025 **S&T Magazine Focal Point Author**, November 2025 Issue, *A Flare in Real Time*.
- 2024–2025 **Volunteer Presenter** ×2, Three Taverns Brewery: Astronomy Night Lecture Series.
- 2018–2025 **Open Night Assistant**, Hard Labor Creek Observatory, GSU.
- 2024 **Science Activity Leader**, John Lewis Elementary School STEM Night.
- 2021 & 2022 **GSU Committee Member and Activity Leader**, Atlanta Science Festival.
- [art](#) 2021 **Science Partner**, Science.Art.Wonder, Georgia Institute of Technology.
  - Collaborated to convey astronomy concepts with a digital artist.
- 2019 **Program Assistant**, Georgia Science Olympiad Regional Tournament, GSU.
- 2019 **Science Activity Leader**, Trip Elementary School Science Night.
- 2017 **Color Images of the Orion Nebula**, Reynolds Observatory, Clarkson University.
  - Created new composite color images of the Orion Nebula for use in public engagement.

2016–2017 **Open Night Assistant**, Reynolds Observatory, Clarkson University.

Summer 2016 **Mentor & Program Aid**, IMPETUS High School Program, Clarkson University.

## Technical skills

Proficient Python, Jupyter Notebooks, LaTeX, IRAF, Windows, Linux

Introductory IDL, Bash Scripting, C++, MATLAB

2012 Certified Microsoft Office Specialist in Word, PowerPoint, and Excel.

## Professional References

1. Dr. Todd Henry, RECONS & Georgia State University, thenry88@gsu.edu
2. Dr. Rachel Osten, STScl & Johns Hopkins University, osten@stsci.edu
3. Dr. Travis Rector, University of Alaska Anchorage, tarector@alaska.edu