

# Andrew Couperus

## Curriculum Vitae

Department of Astronomy  
Smith College  
Northampton, MA  
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**Professional Profile:** I am an observational astronomer and science communicator studying the activity of nearby small stars and their exoplanets. In addition to conducting astrophysics 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 - Astrophysics**, 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 - now **Visiting Assistant Professor of Astronomy**, Smith College, Northampton, MA.  
– Member of the Five College Astronomy Department (FCAD)
- ongoing **Research Affiliate**, REsearch Consortium On Nearby Stars (**RECONS** - [recons.org](https://recons.org)).
- 2018–2025 **Graduate Research Assistant**, Georgia State University.

## Professional Experience

### Teaching

- 2025–2026 **Visiting Assistant Professor of Astronomy**, Smith College.
  - Taught 5 undergrad courses over the 2025–2026 academic year, including (AST 100) *A Survey of the Universe*, (AST 235) *Introduction to Stellar Structure*, and the interdisciplinary (AST 214) *Astronomy & Public Policy*. Also designed, successfully proposed for, and taught a new intermediate-level research-focused course, (AST 221) *Current Problems in Low-Mass Stars*.
  - Emphasis on active learning, un-grading, inclusive teaching, and societally-relevant content.
  - Consistently received perfect and near-perfect scores on anonymous student evaluations, alongside *many qualitative endorsements from students*.
- 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 lab sections across eight semesters for the undergraduate intro astronomy courses (ASTR 1010) *Astronomy of the Solar System* and (ASTR 1020) *Stellar and Galactic Astronomy*.
  - Helped improve in-person lab activities and contributed to training 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, long-term activity cycles, rotation, variability, X-ray emission, exoplanets, and multiplicity. Managed six observing campaigns obtaining short- and long-baseline optical photometry, optical spectroscopy, 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 ~40 nights of data to refine orbital measurements of high-mass stellar binaries.

## Observing

- pending* **Chandra X-ray Observatory**, near-Earth orbit.
- PI of 2026 General Observer (GO) proposal for 104.7 hrs, pending review.
  - *Proposed observing time monetary equivalent: ~\$800,000*
- 2025A **Canada-France-Hawai'i Telescope 3.6m**, Maunakea, Hawai'i.
- 3.6 hrs
- Awarded snapshot time with the SPIRou spectropolarimetry instrument as science Co-I.
  - *Observing time award monetary equivalent: ~\$8,000*
- 2019–2025 **RECONS CTIO/SMARTS 0.9m Program Support**, La Serena, Chile.
- Regularly assisted photometric and astrometric observations and analysis for the RECONS multi-decade 0.9m program on nearby stars.
  - Coordinated simultaneous 0.9m and 1.5m observations 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, with another 36 nights awarded as PI via proposals over 2020–2021 but lost due to the COVID-19 pandemic.
  - *Observing time award monetary equivalent: ~\$50,000*
- 2019–2023 **CTIO/SMARTS 1.5m**, La Serena, Chile.
- 203 hrs
- Observations with the high-resolution CHIRON spectrograph through RECONS/GSU time.
- 2021–2022 **XMM-Newton**, near-Earth orbit.
- 13 ksec
- Awarded low-priority time from GO proposal ID 088170 as Co-I.
- 2020–2022 **Chandra X-ray Observatory**, near-Earth orbit.
- 188 ksec
- Awarded as science lead Co-I via GO proposal ID 22200260, alongside a \$65,845 grant from the SAO.
  - *Observing time award monetary equivalent: ~\$400,000*
- 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.
- ~20 nights
- Acquired optical 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 (2 published, 1 fully drafted), 8 co-authored

- Fully drafted & in prep **Andrew A. Couperus**, Todd J. Henry, Eliot H. Vrijmoet, et al., *The Solar Neighborhood. LVI. 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.
- Submitted Madison R. LeBlanc, Tim M. Johns, Todd J. Henry, ... [including **Andrew A. Couperus**], et al., *The Solar Neighborhood LVI: The RMSTAR Catalog of the Nearest 3352 M Dwarf Systems and 305 of their Wide Companions*, submitted to AJ.
- 2026 **Andrew A. Couperus**, Todd J. Henry, Aman Kar, et al., *The Solar Neighborhood. LIII. M Dwarf Twin Binaries — One in Five Twin Sibling Pairs Are Mismatched in Activity and/or Rotation*, AJ, 171, 168, available at [ADS](#) or [AJ](#), 45 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](#).  
– 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](#).  
– 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](#).  
– 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](#).  
– 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](#).  
– 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](#).  
– 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](#).  
– Acquired many observations and processed a portion of the spectra for RV analyses.

## Awards & Funding (Total: \$70,905)

- pending **\$50,000**, Spencer Foundation Education Research Small Grants Program.  
*Using Astronomy to Create a Climate for Change*  
 – PI of proposal seeking to assess the effectiveness of teaching climate change topics from the astronomical perspective in undergrad intro astronomy and physics courses. Pending review.
- 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*
- 2021–2024 **\$65,845**, Smithsonian Astrophysical Observatory, Co-I, via Chandra prop. ID 22200260.  
*Fraternal or Identical? The Magnetic Properties of M Dwarf Twins*
- 2025 **Outstanding Advanced Astronomy Graduate Student Award**, GSU.
- 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**, Clarkson University.
- 2014 **College Academic Award in Engineering Individual Studies**, 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 **Chair, Sustainability Committee**, American Astronomical Society (AAS).  
 – Leading a team of ~10 astronomers in various projects related to sustainability in astronomy.  
 – PI of successful proposal for a special session on astronomy+climate education at AAS #248.
- 2024–2025 **Member, Sustainability Committee**, AAS.
- 2021–present **Member**, Astronomers for Planet Earth (A4E), and A4E Education Working Group.  
 – *Engaging Astronomy Students with a World Climate Simulation* (article available [here](#))
- 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

- [flyer](#) 2026 **Volunteer Presenter**, Astrophysics Speaker Series, EcoTarium Museum, Worcester MA.
- 2025–2026 **Open Night Assistant**, McConnell Rooftop Observatory, Smith College.
- [article](#) 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 with a digital artist to convey astronomy concepts.
- 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, IRAF, LaTeX, Windows, Linux
- Introductory IDL, C++, MATLAB, Bash scripting
- 2012 Certified Microsoft Office Specialist in Word, PowerPoint, and Excel.

## Presentations 16 talks (3 invited), 6 posters

### Talks

- 2026 *What Astronomers Can Do About Climate Change: Education and Communication.*  
 | AAS Meeting #248
- (invited) 2025 *The Magnetic Predictability and Long-Term Stellar Activity Cycles of Nearby M Dwarfs.*  
 | Five College Astronomy Department Colloquium
- 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.*  
| STScI 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

- 2026 *Four Student-Led Projects Reveal New Insights into M Dwarf Stellar Activity Cycles and Their Impact on Exoplanet Habitability and Detection.*  
| AAS Meeting #248
- [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

## Professional References

1. Dr. Todd Henry, RECONS & Georgia State University, thenry88@gsu.edu
2. Dr. James Lowenthal, Smith College, jlowenth@smith.edu
3. Dr. Rachel Osten, STScI & Johns Hopkins University, osten@stsci.edu
4. Dr. Travis Rector, University of Alaska Anchorage, tarector@alaska.edu
5. Dr. Wei-Chun Jao, RECONS & Georgia State University, wjao@gsu.edu