

## Professional Summary

Ph.D. astronomer specializing in galaxy evolution, with experience modeling bursty star formation using emission line diagnostics and photoionization codes. Familiar with analyzing cosmological simulation outputs (FIRE, SIMBA) and developing Python-based tools for research workflows. Proficient in Python and committed to open science, reproducibility, and making research tools more accessible to the broader astrophysics community.

## Education

- July 2025 **Doctor of Philosophy in Physics**, *University of Missouri*, Columbia, MO  
July 2023 **Graduate Certificate in Public Engagement**, *University of Missouri*, Columbia, MO  
October 2018 **Integrated Master of Science in Physics**, *University of Hyderabad*, Hyderabad, TS, India

## Research Experience and Technical Training

- August 2019 **Graduate Researcher**, *University of Missouri*, Columbia, MO  
– July 2025
  - Conducted research to measure how quickly and intensely small galaxies form stars and to study the conditions of their gas and stars.
  - Analyzed large astronomical data sets, developed computer models, and used statistical techniques to understand how these galaxies evolve.
  - Presented research findings at regional and national conferences.
  - Currently drafting two first-author manuscripts.
  - Published in peer-reviewed journals.
- August 2016 **Research Collaborator – Sky Watch Array Project**, *Raman Research Institute*, Bangalore, India  
– December 2018
  - Contributed to development of a wide-band Sky Watch Array Network for low-frequency radio imaging and transient source detection.
  - Assisted in design efforts and feasibility studies for achieving high angular resolution across the Indian subcontinent.
- January - **Master's Thesis Research**, *University of Hyderabad*, Hyderabad, India  
May 2017
  - Thesis title: 'First principles study of the electronic structure of Copper chalcopyrites  $\text{CuMTe}_2$  ( $M = \text{Al, Ga, In}$ )'
  - Conducted first-principles DFT calculations using CASTEP to investigate the electronic structure and band gaps of copper chalcopyrites with potential thermoelectric and optoelectronic applications.
  - Analyzed band structures and density of states to explore orbital hybridization and identify trends in electronic properties across the chalcopyrite series, demonstrating experience with plane-wave pseudopotential methods and solid-state physics.
- December 2016 **Observer – Pulsar Observatory for Students**, *Radio Astronomy Center*, Ooty, India
  - Carried out live observation of pulsar B1946+35 using the Ooty Radio Telescope (ORT).
  - Reduced and analyzed pulsar data to derive characteristic timing and emission properties.
- June 2016 **Summer Undergraduate Research Fellow**, *Mount Abu Observatory*, *Physical Research Laboratory*, Mount Abu, India
  - Conducted three nights of photometric observations of AGN targets: 1H0323+342 and 3C273 using the 1.2m infrared telescope.
  - Studied photometric variability under the guidance of Dr. Shashikiran Ganesh.

---

## Honors/awards

- Summer 2024 **Remington R. Williams Award**, *Board of Curators, University of Missouri*
- Recognized as one of the top student leaders across the University of Missouri System for outstanding leadership, advocacy, and service to the university community.
- Spring 2024 **Mary Elizabeth Gutermuth Award for Community Engagement**, *Graduate School, University of Missouri*
- Honored for a strong commitment to public service through impactful, research-informed outreach and civic engagement with diverse communities.
- Spring 2024 **Sandra K. Abell Science Education Award**, *Graduate School, University of Missouri*
- Awarded for excellence in both scientific research and innovative teaching, demonstrating a deep commitment to advancing science education.

---

## Skills

### Programming Languages

- Python, C, C++, FORTRAN, Bash, R

### Astronomy software packages

- TOPCAT, DS9, IRAF, CLOUDY, Astropy, PyRAF, PyNeb, NumPy, SciPy, emcee

### Operating Systems

- Linux (Ubuntu, openSUSE), macOS, Windows

### Typesetting software and applications

- L<sup>A</sup>T<sub>E</sub>X, Microsoft Office, GitHub Pages, WordPress, Drupal

### Communication & digital media

- Graphic design, content creation, photography, filmmaking (IMDb profile)

### Outreach & Science Policy

- Policy brief writing & research analysis, Public speaking, Science communication, Stakeholder engagement, Organizational leadership, Event planning

---

## Publications

### Published in peer-reviewed journals:

1. Pharo, J., Guo, Y.,..., Teppala, T., et. al., **Dwarf Galaxies Show Little ISM Evolution from  $z \sim 1$  to  $z \sim 0$ : A Spectroscopic Study of Metallicity, Star Formation, and Electron Density**, 2023, ApJ, 959, 48
2. Pharo, J., Guo, Y.,..., Teppala, T., et. al., **The Dwarf Galaxy Population at  $z \sim 0.7$ : A Catalog of Emission Lines and Redshifts from Deep Keck Observations**, 2022, ApJS, 261, 12.

### In preparation:

1. Teppala, T., Guo, Y., Pharo, J., ..., et. al., **Quantifying Timescales of Starbursts in Low-Mass Galaxies using Helium Recombination Lines**, 2025.
2. Teppala, T., Guo, Y., **Physical Conditions of Ionized Gas in High- $z$  Galaxies Using JWST/NIRSpec Spectroscopy: A Photoionization Study of Helium Line Anomalies**, 2025.

---

## Selected Presentations

### Oral presentations

- December 2024 **Mid-American Regional Astrophysics Conference (MARAC)**, *Lawrence, KS*
- October 2022 **Mid-American Regional Astrophysics Conference (MARAC)**, *Fayetteville, AR*

### Poster presentations

- June 2025 **246<sup>th</sup> meeting of the American Astronomical Society**, *Anchorage, AK*
- June 2022 **240<sup>th</sup> meeting of the American Astronomical Society**, *Pasadena, CA*

---

## Teaching Experience

- Spring 2023 - **Instructor: ASTRON 1020 - Introduction to Laboratory Astronomy**, *University of Missouri*,  
Spring 2025 Columbia, MO
- Developed and delivered 15 two-hour lectures and laboratory sessions to a group of 20 undergraduate students each semester.
- Spring 2023 - **Discussion TA: PHYSICS 1220 - College Physics II**, *University of Missouri*, Columbia, MO  
Spring 2025
- Led discussion sessions for 70 undergraduate students each semester; explained physics concepts and their applications, and solved problems while engaging the students.
- Fall 2019, **Grader: ASTRON 1010 - Introduction to Astronomy**, *University of Missouri*, Columbia, MO  
Spring 2023
- Graded lab reports of 200 undergraduate students for ASTRON 1010 each semester.
- Fall 2019 **Grader: PHYSICS 3150 - Introduction to Modern Physics**, *University of Missouri*, Columbia, MO
- Graded homework.

---

## Professional Experience

- February - **ALMA Ambassador Program**, *North American ALMA Science Center (NAASC)*, NRAO Head-  
August 2025 quarters, Charlottesville, VA
- Led hybrid workshops providing hands-on training in radio astronomy tools, data analysis, and proposal writing, expanding access to open data infrastructure across the Missouri Space Grant research community.
- June 2024 **AstroAI Workshop**, *Center for Astrophysics, Harvard & Smithsonian Institution*, (Virtual)
- Aimed at advancing applications of artificial intelligence in astronomy through collaborative, hands-on training in AI-driven data analysis and simulations.
- February **DAWN Winter School**, *Cosmic DAWN Center*, (Virtual)  
2022
- Gained exposure to theoretical and observational approaches to galaxy formation in the early universe through lectures and hands-on data analysis sessions.
- January 2019 **Conference on ‘Formation and Evolution of Star Clusters’**, *Maulana Azad National Urdu University (MANUU)*, Hyderabad, India
- Proceedings on recent theoretical and observational developments in the field.
- December **IIST Astronomy and Astrophysics School**, *Indian Institute of Space Science and Technology (IIST)*, Thiruvananthapuram, India  
2015
- Received training in core astrophysical concepts and data analysis methods.
- June 2015 **Pulsar Observatory for Students**, *Radio Astronomy Centre*, Ooty, India
- Aimed at the basics of pulsar astronomy, through lectures and hands-on experiments.
- December **Radio Astronomy Winter School**, *Inter-University Centre for Astronomy and Astrophysics (IUCAA)*, Pune, India  
2014
- Focused on observational radio astronomy techniques and astrophysical applications, jointly organized by IUCAA and NCRA.

---

## Approved Observing Proposals

- March 2024 **Securing Spectroscopic Redshifts in a Galaxy-Galaxy Lensing System at Redshift of  $\sim 1$**   
*As Co-Investigator; Principal Investigator: Yicheng Guo*  
Gemini Observatory 2024A Fast Turnaround Proposal  
Awarded 2 hours

---

## Leadership, Service, & Outreach

- October 2024 – July 2025 **Founder, President**, *Mizzou Science Policy Advocacy Network (M-SPAN)*, University of Missouri, Columbia, MO
- Established and led a student organization promoting science policy engagement.
  - Drafted policy briefs and coordinated advocacy events, applying collaborative and team-based approaches.
  - Testified before the Missouri House Committee on Higher Education and Workforce Development, providing research-informed recommendations on public policy.
- June 2021 – July 2025 **Student Volunteer**, *Laws Observatory*, University of Missouri, Columbia, MO
- Operated telescopes and facilitated hands-on demonstrations during weekly public observing nights, reaching thousands of community members.
  - Maintained observatory facilities and logged public engagement records to support long-term outreach tracking.
  - Provided interpretation of astronomical phenomena and equipment usage in accessible terms to general audiences.
- February 2024 – May 2025 **AVID Mentor**, *The Bridge - College of Education & Human Development*, University of Missouri, Columbia, MO
- Mentored sophomore students at Battle High School to prepare them for college and future careers.
  - Mentored 7th-grade students at Lange Middle School, guiding them to explore their potential and learn through hands-on experiences.
- Apr 2024 – Apr 2025 **Vice President**, *Graduate Professional Council*, University of Missouri, Columbia, MO
- Chaired assembly meetings, prepared agendas, and managed internal operations for the graduate student body.
  - Represented graduate student interests before university administration and advocated for cooperative policy changes to improve student experience.
- January 2021 – December 2024 **Outreach Coordinator**, *Department of Physics & Astronomy*, University of Missouri, Columbia, MO
- Led public engagement activities, including stargazing nights and science demonstrations for diverse local audiences, aligning with the goals of community-based astronomy.
  - Designed and delivered effective science communication presentations to the public and school-age students.
  - Coordinated with faculty, staff, and graduate students to organize department-wide outreach events, increasing departmental visibility and STEM interest in the local community.
- January - April 2024 **Organizer and Member - Eclipse Stars Program**, *University of Missouri*, Columbia, MO
- Led planning and logistics for a high-profile eclipse event on campus in partnership with MU Extension and the Astronomical Society of the Pacific.
  - Supported technical setup, safety procedures, and public communication at multiple viewing locations along the path of totality in Missouri.
  - Created engaging materials and coordinated volunteers to ensure inclusive access to the eclipse experience.
- August 2023 - April 2024 **Assistant Director of Programming**, *Graduate Professional Council*, University of Missouri, Columbia, MO
- Co-led the Programming Committee of the Graduate Professional Council; assisted GPC events and the Research & Creative Activities Forum (RCAF).
- June 2023 - April 2024 **Co-Director - Publicity Team**, *Missouri International Student Council*, University of Missouri, Columbia, MO
- Co-led the Publicity Team of the Missouri International Student Council; responsible for the organization's image on campus: social media, graphic design, photography, and videography.
- August – October 2023 **NASA Partner Eclipse Ambassador**, *University of Missouri*, Columbia, MO
- Organized a public eclipse viewing party in collaboration with MU Extension and the Division of Inclusion, Diversity, and Equity, attracting ~250 attendees.
  - Received media coverage from the Columbia Missourian and KOMU, enhancing university and event visibility.

---

## Professional Memberships

January 2024 - present **Member, American Association for the Advancement of Science**

January 2024 - present **Member, National Science Policy Network**

April 2022 - present **Member, Sigma Pi Sigma**

September 2021 - present **Member, American Astronomical Society**

---

## Languages

**English** - Proficient  
**Telugu** - Native, proficient  
**Hindi** - Intermediate  
**German** - Beginner  
**American Sign Language (ASL)** - Beginner

---

## Professional References

### **Dr. Yicheng Guo**

*Associate Professor*

Department of Physics and Astronomy  
701 S College Ave  
Columbia, MO 65201  
Phone: (413) 575-4657  
Email: guoyic@missouri.edu

### **Dr. Haojing Yan**

*Professor*

Department of Physics and Astronomy  
701 S College Ave  
Columbia, MO 65201  
Phone: (573) 882-2974  
Email: yanha@missouri.edu

### **Dr. John Pharo**

*Postdoctoral Researcher*

Leibniz Institute for Astrophysics Potsdam (AIP)  
An d. Sternwarte 16  
14482 Potsdam, Germany  
Phone: +49 331 7499 384  
Email: jpharo@aip.de