# Ben Sherwin

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## Education

**Stanford University** — Stanford, CA
*PhD in Physics* — *Expected 2029*

**University of Florida** — Gainesville, FL
*BS in Physics, Astrophysics, and Mathematics* — *2024*

## Research Interests

I am most interested in observational and theoretical cosmology with an emphasis on combining information from the Cosmic Microwave Background with surveys of large-scale structure.

## Research Positions

**Graduate Student in Physics, Stanford University** — 2025
*Modified 3x2 Analysis, Photo-z for CMB Lensing × Lyman Break Galaxies | Advisor: Prof. Josh Frieman*

**Undergraduate Researcher in Astronomy, University of Florida** — 2022-2024
*Searching for Parity Violation Using Topological Data Analysis on the 4PCF | Advisor: Prof. Zack Slepian*

**NSF REU Student, Georgia Institute of Technology** — 2023
*Predicting the UV Escape Fraction of Simulated Galaxies during Reionization with ML | Advisor: Prof. John Wise*

**Undergraduate Researcher in Physics, University of Florida** — 2021-2022
*Forward Modeling of Merger Event to Determine Black Hole Properties | Advisor: Prof. Imre Bartos*

## Publications

- J. Tayar et al. (inc. **B. Sherwin)**, "The Importance of Neural Network Hyperparameters in Age Inference Quality" (2023), Research Notes of the AAS
- **B. Sherwin**, S. Sethuram, C. Brummel-Smith, J.H. Wise, "Predicting the UV Escape Fraction of the First Galaxies in the Renaissance Simulations with Machine Learning" (2023), Research Notes of the AAS
- **B. Sherwin**, "Analyzing Phenotypic Properties of Bladder Cancer Using Ordinary Differential Equations" (2019), bioRxiv

## Posters and Talks

- *Cosmology Pedagogy Talk*, Meetings of Astrophysics Students at Stanford, 2025
- *Cosmic Neutrino Background: A Story of Epic Proportions*, Meetings of Astrophysics Students at Stanford, 2025
- *Predicting the UV Escape Fraction of the First Galaxies in the Renaissance Simulations with Machine Learning*, 243rd AAS Meeting, 2024
- *Searching for Parity Violation Using Topological Data Analysis on the Galaxy 4-Point Correlation Function*, UF Research Symposium, 2023

## Teaching

- Physics 16: The Origin and Development of the Cosmos, 2025
- Physics 44: Electricity and Magnetism Lab, 2025

## Awards

- NSF Graduate Research Fellowship ($159,000)
- Fletcher Jones Foundation Fellowship ($15,600)
- UF Platinum Presidential Scholarship ($40,000)
- UF College of Liberal Arts Excellence Award ($3,500)

## Service and Leadership

**Program Manager, Stanford PIE (Physics Inclusion and Equity) Program** 2025
*Led program assisting 200 undergraduate students across the U.S. with the graduate school application process*

**Executive Member, Graduate Students of Applied Physics and Physics (GSAPP)** 2025
*Planned social and departmental events for over 400 Stanford graduate students*

**President, UF Society of Physics Students** 2022-2024
*Spearheaded efforts to increase faculty-student engagement; hosted events for research/career opportunities*

**Member, UF Physics IDEA (Inclusion, Diversity, and Equity Alliance)** 2022-2024
*Worked with faculty, staff, and students to broaden participation in physics at all levels*

**Ambassador, Center for Undergraduate Research** 2023-2024
*Promoted undergraduate research in the UF College of Liberal Arts and Sciences*

**Member, University Liaison Council** 2023-2024
*Communicated across departments to encourage students to begin research in underrepresented fields*

## Outreach and Mentorship

**Tour Guide, SLAC National Accelerator Laboratory** 2025
*Led public and educational tours of SLAC*

**Mentor, Stanford Undergraduate Directed Reading Program** 2025
*Helped students understand a DESI results paper and gave introductory cosmology lectures*

**Lecturer, Stanford Splash Program** 2025
*Created a one-day class on the cosmic distance ladder for 30 high school students*

**Booth Leader, KIPAC Community Day** 2025
*Led a team of volunteers to demonstrate the concept of general relativity to 8000 attendees*

**Pen Pal, Letters to a Pre-Scientist** 2025
*Wrote letters each quarter to a middle-schooler interested in space*

**Author, Astrobites** 2025
*Wrote blog posts to convey the main ideas of astrophysics papers at an undergraduate level*

**Panel Member, Ethics in Physics Workshop** 2025
*Contributed to discussions about ethical research and issues in physics*

**Treasurer, Science Communigators** 2021-2022
*Handled financials and organized events for writing, video production, and journalism*

**Lead Organizer, UN International Women in Science Day** 2023-2024
*Coordinated efforts across STEM departments to connect to local K-12 students with demos*