James Sunseri

Astrophysics Graduate Student

jsunseri@princeton.edu | 0000-0003-4274-2662 | james-sunseri.com
linkedin.com/in/jamessunseri | github.com/james11222

Education

Princeton University — Princeton, NJ
Hertz Fellow
Ph.D. Astrophysical Sciences | Advisors: Prof. Romain Teyssier and Prof. Alexandra Amon — *Expected 2028*
M.S. Astrophysical Sciences — *2025*

University of California Berkeley — Berkeley, CA
B.A. Physics; B.A. Astrophysics with High Distinction | Advisors: Prof. Alex Filippenko, Prof. Jia Liu, Prof. Zachary Slepian — *2022*

Research Interests

- Baryonic Feedback, Weak Lensing, CMB Secondaries, and Cosmological Simulations.

Positions

Visiting Student Researcher, Kavli IPMU — Kashiwanoha, Japan
The Effects of Massive Neutrinos and Dark Energy on the Cosmic Web | Advisor: Prof. Jia Liu — *2023*

Student Researcher, UC Berkeley — Berkeley, CA
Transient Based Observational Astronomy | Advisor: Prof. Alex Filippenko — *2018 - 2022*

Student Researcher, University of Florida — Remote
SARABANDE: a python package for measuring 3/4 PCFs with FFTs | Advisor: Prof. Zack Slepian — *2021 - 2023*

Student Researcher, University of Tokyo — Remote
The Effects of Baryonic Feedback on the Cosmic Web | Advisor: Prof. Jia Liu — *2020 - 2023*

NSF Summer Research Experience for Undergraduates, University of Florida — Gainesville, FL
Fast Four Point Statistics of Turbulence in the Interstellar Medium | Advisor: Prof. Zack Slepian — *2021*

LIGO Summer Undergraduate Research Fellowship, Caltech — Pasadena, CA
Measuring The Hubble Constant With Dynamical Tides In Inspiraling Neutron Star Binaries | Advisor: Dr. Hang Yu — *2020*

Publications

1. **Sunseri, James**; Andalman, Zachary L.; & Teyssier, Romain, 2025, *Supermassive Black Hole Growth in Massive Galaxies at Cosmic Dawn*, ArXiv (arXiv:2510.19822)
2. **Sunseri, James**; Amon, Alexandra; Dunkley, Jo; Battaglia, Nicholas; *et al.*, 2025, *Disentangling the Halo: Joint Model for Measurements of the Kinetic Sunyaev-Zeldovich Effect and Galaxy-Galaxy Lensing*, ArXiv (arXiv:2505.20413) [6 citations]
3. Williamson, Victoria; **Sunseri, James**; Slepian, Zachary; Hou, Jiamin; & Greco, Alessandro, 2024, *First Measurements of the 4-Point Correlation Function of Magnetohydrodynamic Turbulence as a Novel Probe of the Interstellar Medium*, ArXiv (arXiv:2412.03967) [3 citations]
4. **Sunseri, James**; Bayer, Adrian E.; & Liu, Jia, 2025, *Power of the cosmic web*, Physical Review D, **112**, 63516 (arXiv:2503.11778) [1 citation]
5. Alvarado, Efrain; Bostow, Kate B.; Patra, Kishore C.; Jacobus, Cooper H.; *et al.* (17 other co-authors, incl. **Sunseri, James**), 2024, *Searching for tidal orbital decay in hot Jupiters*, MNRAS, **534**, 800 (arXiv:2409.04660) [6 citations]
6. Ailawadhi, B.; Dastidar, R.; Misra, K.; Roy, R.; *et al.* (33 other co-authors, incl. **Sunseri, James**), 2023, *Photometric and spectroscopic analysis of the Type II SN 2020ifo with a short plateau*, MNRAS, **519**, 248 (arXiv:2211.02823) [18 citations]
7. **Sunseri, James**; Li, Zack; & Liu, Jia, 2023, *Effects of baryonic feedback on the cosmic web*, Physical Review D, **107**, 23514 (arXiv:2212.05927) [18 citations]
8. **Sunseri, James**; Slepian, Zachary; Portillo, Stephen; Hou, Jiamin; *et al.*, 2023, *SARABANDE: 3/4 point correlation functions with fast Fourier transforms*, RAS Techniques and Instruments, **2**, 62 (arXiv:2210.10206) [14 citations]
9. Murakami, Yukei S.; Jennings, Connor; Hoffman, Andrew M.; Savel, Arjun B.; *et al.* (6 other co-authors, incl. **Sunseri, James**), 2022, *PIPS, an advanced platform for period detection in time series - I. Fourier-likelihood periodogram and application to RR Lyrae stars*, MNRAS, **514**, 4489 (arXiv:2107.14223) [3 citations]

10. Zheng, WeiKang; Stahl, Benjamin E.; de Jaeger, Thomas; Filippenko, Alexei V.; *et al.* (84 other co-authors, incl. **Sunseri, James**), 2022, *The Lick Observatory Supernova Search follow-up program: photometry data release of 70 SESNe*, MNRAS, **512**, 3195 (arXiv:2203.05596) [14 citations]
11. Kilpatrick, Charles D.; Coulter, David A.; Arcavi, Iair; Brink, Thomas G.; *et al.* (79 other co-authors, incl. **Sunseri, James**), 2021, *The Gravity Collective: A Search for the Electromagnetic Counterpart to the Neutron Star-Black Hole Merger GW190814*, ApJ, **923**, 258 (arXiv:2106.06897) [35 citations]

Posters & Research Talks

- **Supermassive Black Hole Growth in Massive Galaxies at Cosmic Dawn**: Cosmic Ecosystems Conference Poster, Perimeter Institute - 2025
- **The Effects of Baryons on the Cosmic Web**: Kavli IPMU, Chiba University, University of Tokyo, Nagoya University - 2023 [Slides]
- **Fast Four Point Statistics for the Turbulent Interstellar Medium**: University of Florida REU Program - 2022
- **New Four-Band Photometry of RR Lyrae Stars in M3**: 238th AAS Meeting iPoster - 2021
- **Measuring the Hubble Constant With Dynamical Tides In Inspiraling Neutron Star Binaries**: Caltech LIGO SURF program, 237th AAS Meeting iPoster - 2020 (Featured on AstroBites)

Outreach

The McClintock Letters Project — Lodi News Sentinel
Op-Ed, "Don't dim the stars: why budget cuts to NASA and the NSF matter — *2025*

TEDxAustin Youth — Austin, TX
Guest Speaker, "The Essential Skill You Can't Afford To Ignore In Today's Digital World — *2023*

World of Wonders Science Museum — Lodi, CA
Designed curriculum for summer camps and local middle schools — *2017 - 2022*

SPLASH at UC Berkeley — Berkeley, CA
Taught basic programming skills via astrophysical simulations to local high school students — *2021*

Teaching

Head TA — Berkeley, CA
Astro C10 - Introduction to Astronomy — *Fall 2022*

Undergraduate TA — Berkeley, CA
Astro C10 - Introduction to Astronomy — *Fall 2020*

Head Facilitator — Berkeley, CA
Python Decal - Introduction to Computational Methods for Astronomers — *Fall 2020 - Fall 2022*

Mentorship

Undergraduate Students
Research projects led by undergraduates that I co-advised

- **Victoria Williamson** - UF Undergrad (2023-2024) → Rutgers PhD Program - ArXiv:2412.03967
- **Taeho Kim** - Princeton Undergrad - Dissecting the Morphology of the Multiphase Galactic Web

Numerical Spin Analysis of Relativistic Bondi Accretion in M87* — Berkeley, CA
Research Mentor for Undergraduate Laboratory at Berkeley (ULAB), research poster can be found here — *2021 - 2022*

UC Berkeley Compass Mentor — Berkeley, CA
Peer mentor for a younger undergraduate student — *2021*

Berkeley High School RISE Mentor — Berkeley, CA
An academic tutor and mentor to struggling high school students from under-represented backgrounds — *2018 - 2020*

Awards

- Fannie and John Hertz Foundation Fellowship
- Department of Energy Computational Science Graduate Research Fellowship (DOE CSGF) - (***Declined***)
- Outstanding (U)GSI Teaching Award
- Chambliss Award for Best Research Poster at 238th AAS Meeting (shared)
- Recipient of the Northern California Scholarship Foundations Award
- Q728 Lui, P & Chang, J Phys Scholarship
- Berkeley Scholarship
- 7 Separate Astronomy Departmental Scholarships for Teaching
- Ehrman, Albert Scholarship
- Berkeley CARES Award
- Edward Frank Kraft Award