

# Ana Sofía M. Uzsoy

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## Education

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### Harvard University

PhD, Astronomy & Astrophysics (in progress)

Cambridge, MA, USA

September 2022 - present

- Advisor: Doug Finkbeiner
- Thesis Committee: Daniel Eisenstein, Ashley Villar, Aneta Siemiginowska

### University of Cambridge

M.Phil, Machine Learning and Machine Intelligence

Cambridge, UK

September 2021 - August 2022

- Advisor: Kaisey Mandel
- Thesis: *Scalable Bayesian Inference for Probabilistic Spectrotemporal Models of Type Ia Supernovae*

### North Carolina State University (NCSU)

B.S. Computer Science, B.S. Physics

Raleigh, NC, USA

August 2017 - May 2021

- *Summa cum laude*, Dean's List (All Semesters)
- Minors: Mathematics, Oboe Performance

## Work Experience

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### Google

Santa Barbara, CA, USA (remote)

Software Engineering Intern, Quantum AI team

June 2021 – August 2021

- Wrote new methods to improve quantum computing simulators in Cirq (Google's quantum computing library) by modeling noise from quantum hardware.
- Wrote internal software design documents and public documentation for Cirq.

### Google

Mountain View, CA, USA (remote)

Software Engineering Intern, Tensorflow/Keras/Kaggle teams

May 2020 – July 2020

- Created natural language processing (NLP) machine learning code examples using TensorFlow 2 for Kaggle, Google's online machine learning and data science competition platform.
- Designed and led launch of new NLP-focused Kaggle competition that remains active.
- Wrote text generation code featured in Google's Data Analyst Professional Certificate Course.

### NASA Langley Research Center

Hampton, VA, USA

Intern

June 2019 – August 2019

- Worked on team for SAGE III ISS (Stratospheric Aerosol & Gas Experiment III on the International Space Station), an atmospheric science experimental apparatus aboard the ISS.
- Wrote data analysis pipeline to identify cloud interference in spectroscopic atmosphere measurements using machine learning.

## Achievements

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- 2021 **National Science Foundation Graduate Research Fellowship**, awarded to outstanding graduate students in STEM disciplines at US institutions
- 2021 **Churchill Scholarship**, national scholarship providing funding for American students in STEM disciplines to complete an MPhil at the University of Cambridge
- 2021 **Rodney I. McCormick Award**, awarded by NCSU Physics Department to a graduating senior for excellence in undergraduate research
- 2020 **Phi Beta Kappa**, inducted into national honor society for high-achieving undergraduates
- 2020 **First place poster prize**, McCormick Symposium, the NCSU Physics Department Annual Undergraduate Research Symposium
- 2020 **NCSU Computer Science Department Faculty Senior Scholar**, awarded to a rising senior based on academic excellence, intellectual breadth, and depth of character
- 2019 **Barry M. Goldwater Scholarship**, a national scholarship awarded to promising undergraduates who plan to pursue a STEM research career
- 2017 **Park Scholarship**, a full-ride merit scholarship to NCSU awarded on the basis of outstanding accomplishments and potential in scholarship, leadership, character, and service

## Publications

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### JOURNAL ARTICLES

- Uzsoy, A. S. M.**, Saydjari, A. K., Dey, A., Raichoor, A., Finkbeiner, D. P., et al. (2025). Bayesian Component Separation for DESI LAE Automated Spectroscopic Redshifts and Photometric Targeting. <https://arxiv.org/abs/2504.06870> (submitted to ApJ)
- Grayling, M., Thorp, S., Mandel, K. S., Dhawan, S., **Uzsoy, A. S. M.**, et al. (2024). Scalable hierarchical BayeSN inference: investigating dependence of SN Ia host galaxy dust properties on stellar mass and redshift. *Monthly Notices of the Royal Astronomical Society*, 531(1), 953–976.
- Uzsoy, A. S. M.**, Thorp, S., Grayling, M., & Mandel, K. S. (2024). Variational inference for acceleration of SN Ia photometric distance estimation with BayeSN. *Monthly Notices of the Royal Astronomical Society*, 535(3), 2306–2321.
- Saydjari, A. K., **Uzsoy, A. S. M.**, Zucker, C., Peek, J. E. G., & Finkbeiner, D. P. (2023). Measuring the 8621 Å Diffuse Interstellar Band in Gaia DR3 RVS Spectra: Obtaining a Clean Catalog by Marginalizing over Stellar Types. *The Astrophysical Journal*, 954(2), 141.
- Uzsoy, A. S. M.**, Zareiesfandabadi, P., Jennings, J., Kemper, A. F., & Elting, M. W. (2021). Automated tracking of *S. pombe* spindle elongation dynamics. *Journal of Microscopy*, 284(1), 83–94.
- Uzsoy, A. S. M.**, Rogers, L. A., & Price, E. M. (2021). Radius and Mass Distribution of Ultra-short-period Planets. *The Astrophysical Journal*, 919(1), 26.

### REFEREED WORKSHOP PAPERS

- Uzsoy, A. S. M.**, Lamman, C., & Weber, M. (2025). Manifold Learning for Cosmic Structures. *Machine Learning and the Physical Sciences Workshop @ NeurIPS 2025*. (accepted).
- de Soto, K., **Uzsoy, A. S.**, & Villar, V. A. (2024). Sharing Space: A Survey-agnostic Variational Autoencoder for Supernova Science. *Machine Learning and the Physical Sciences Workshop @ NeurIPS 2024*. [[pdf](#)].

## Presentations

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### TALKS

- University of Toronto/CITA Cosmology Lunch, 2025 October 10, Toronto, Canada
- UT Austin Galaxies & Cosmology Seminar, 2025 October 6, Austin, TX
- Open SkAI Workshop, 2025 September 5, Chicago, IL
- University of Cambridge Astro Data Science Seminar, 2025 July 21, Cambridge, England
- AstroAI Seminar, Center for Astrophysics | Harvard & Smithsonian, 2025 May 19, Cambridge, MA
- Universidad de La Serena; 2025 April 24; La Serena, Chile
- Escape of Lyman Radiation from Galactic Labyrinths; 2025 April 11; Crete, Greece
- Princeton Astro Machine Learning Journal Club; 2025 February 6; Princeton, NJ
- Transient Tea, Center for Astrophysics | Harvard & Smithsonian; 2025 January 24; Cambridge, MA
- DESI Lunch, Lawrence Berkeley National Lab; 2024 October 9; Berkeley, CA
- Stanford KIPAC Visitor Tea; 2024 October 8; Palo Alto, CA
- Astromerique Seminar, U. of Montreal Ciela Institute; 2024 October 1; Montreal, Canada (virtual)
- NSF IAIFI Summer Workshop, MIT; 2024 August 13; Cambridge, MA
- DESI Collaboration Meeting; 2024 July 12; Marseille, France
- NSF's NOIRLab; 2024 May 24, Tucson, AZ
- Harvard CHASC Astrostatistics Seminar; 2024 February 7; Cambridge, MA
- NCSU Physics Department McCormick Symposium; 2021 May 5; Raleigh, NC (virtual)
- University of Chicago STEM Research Symposium; 2018 August 1; Chicago, IL
- Leadership Alliance National Symposium; 2018 July 27-29; Hartford, CT

### POSTERS

- DESI Collaboration Meeting; 2025 July 7-11; Berkeley, CA

- Rare Gems in Big Data; 2024 May 20-24; Tucson, AZ
- 243rd American Astronomical Society Meeting; 2024 January 7-12; New Orleans, LA
- NCSU Physics Department McCormick Symposium; 2020 May 6; Raleigh, NC (virtual)
- 235th American Astronomical Society Meeting; 2020 January 4-8; Honolulu, HI
- 2019 American Society for Cell Biology Meeting; 2019 December 7-11; Washington, DC
- Triangle Cytoskeleton Meeting; 2019 September 30; Saxapahaw, NC
- NCSU Spring Undergraduate Research Symposium; 2019 April 24; Raleigh, NC
- NCSU Physics Department McCormick Symposium; 2019 April 22; Raleigh, NC
- Triangle Cytoskeleton Meeting; 2018 September 24; Saxapahaw, NC
- Intel International Science & Engineering Fair, 2017 May 14-19; Los Angeles, CA

## Teaching & Service

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### Leadership Team, AstroAI

*February 2025 - present*

- Serve on committees and help organize talks and workshops for AstroAI, a center dedicated to interdisciplinary research at the intersection of artificial intelligence and astrophysics at the Center for Astrophysics | Harvard & Smithsonian.

### Teaching Fellow, Machine Learning for Astrophysics

*Spring 2024, 2025*

- Guest lectured, held office hours, graded assignments, provided feedback, and supported students in Astro 205, a graduate course on machine learning techniques for astrophysics at Harvard.

### Scientific/Local Organizing Committee, AstroAI Workshop

*February 2024 - June 2024*

- Helped arrange speakers, coordinated volunteers, reviewed abstracts, and chaired sessions for the 2024 AstroAI Workshop at the Center for Astrophysics | Harvard & Smithsonian.

### President, NCSU Women in Physics

*August 2020-May 2021*

- Organized a peer-mentoring program, speaker series and social events to promote a community of women and gender minorities in the NCSU physics department.

### NCSU College of Sciences Student Ambassador

*August 2018-May 2021*

- Represented the NCSU College of Sciences and physics department at university events for current and prospective students.

## Skills

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|                      | Python, Julia (advanced)                                       |
| <b>Programming</b>   | C, R, Java, MATLAB (intermediate)                              |
|                      | C++, HTML/CSS, Assembly (familiar)                             |
| <b>Technology</b>    | $\text{\LaTeX}$ , Git/GitHub, UNIX, Bash, Mathematica          |
| <b>Miscellaneous</b> | Spanish (fluent), Soldering, Circuit wiring, Bacterial culture |