

Jaelyn S. Roth

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EDUCATION

- Vanderbilt University**, Nashville, TN Aug 2023 — Present
Ph.D., Astrophysics, *3rd year*
Advisor: Kelly Holley-Bockelmann, Ph.D.
- Denison University**, Granville, OH Aug 2019 — May 2023
B.S., Physics, *Summa Cum Laude*
Thesis: Investigating Methods for Improving Image Deconvolution of Extragalactic Radio Jets
Advisor: Daniel C. Homan, Ph.D.

PROFESSIONAL AFFILIATIONS

- Establishing Multi-messenger astronomy Interdisciplinary Training (EMIT) Program**
Graduate Student Scholar Apr 2024 — Present
- Laser Interferometer Space Antenna (LISA) Consortium**, Astrophysics WG
Core Member May 2025 — Present
Associate Member Mar 2024 — May 2025

PUBLICATIONS

- [1] Kelly Holley-Bockelmann, Fazeel Mahmood Khan, Isaiah Williams, **Jaelyn Roth**, Michael Rizzo Smith, Kaitlin Porter, Jillian Bellovary, Andrea Derdzinski, and Andrea V. Macciò. “Handy Relation between Binary Black Hole Merger Times and Host Galaxy Properties”. In: 995.1, L32 (Dec. 2025), p. L32. DOI: [10.3847/2041-8213/ae1ccd](https://doi.org/10.3847/2041-8213/ae1ccd), arXiv: [2508.14253](https://arxiv.org/abs/2508.14253) [astro-ph.GA].
- [2] D. C. Homan, **J. S. Roth**, and A. B. Pushkarev. “Residual Entropy as a Diagnostic and Stopping Metric for CLEAN”. In: *The Astronomical Journal* 167.1 (Dec. 2023), p. 11. DOI: [10.3847/1538-3881/ad0beb](https://doi.org/10.3847/1538-3881/ad0beb). URL: <https://dx.doi.org/10.3847/1538-3881/ad0beb>.

PRESENTATIONS

- The effect of galaxy-informed massive black hole merger timescales for LISA**
(Contributed talk) Dec 2025
Roth, J., Holley-Bockelmann, K., Tremmel, M., and Bellovary, J.
LISA Astrophysics WG Meeting 2025
- Handy Merger Time Delay for Massive Black Hole Binaries in Cosmological Simulations**
(Contributed talk) Aug 2025
Roth, J., Holley-Bockelmann, K., Tremmel, M., and Bellovary, J.
N-Body Shop Excellence Conference 2025
- Incorporating satellite orbit into MBHB merger time delays in Romulus25**
(Contributed talk) July 2024
Roth, J., Holley-Bockelmann, K., Tremmel, M., and Bellovary, J.
15th International LISA Symposium 2024
- Entropy as a Stopping Metric for Deconvolving VLBI Images of AGN Jets** (iPoster) Jan 2023
Roth, J. and Homan, D. C.
AAS241 Chambliss Astronomy Achievement Student Award Winner
- Entropy as a Stopping Metric for Deconvolving Extragalactic Radio Images** (Poster) Sept 2022
Roth, J. and Homan, D. C.
Denison University Research Symposium
- Investigating the CLEAN Algorithm to Improve Imaging of Extragalactic Radio Jets** (Poster) Sept 2021
Roth, J. and Homan, D. C.
Denison University Research Symposium

TEACHING

Vanderbilt University, Dept. of Physics & Astronomy

Teaching Assistant; ASTR 1010-L

Fa2023 — Sp2025

EXPLO School, Pre-College Program

Instructor; Soft Robotics

Su2023

Residential Advisor

Teaching Assistant; Mechanical Engineering, Forensic Biology

Denison University, Dept. of Physics & Astronomy

Course Assistant; PHYS 126

Sp2023

Course Assistant; PHYS 125

Fa2022

Department Tutor

Fa2021

Denison University, Academic Resource Center

Tutor; PHYS 121, 122, 125, 126

Sp2021 — Sp2022

Tutor; MATH 130, 135, 145

Sp2021 — Sp2022

OUTREACH

How to Escape a Black Hole (Invited talk)

Meigs Middle Magnet School STEAM Night, Nashville

Mar 2026

Constellations, Mythology, and Black Holes (Invited talks)

Haynes Middle School Lunch & Learn Series, Nashville

Nov 2025

Red Light, Green Light: Galaxies Tell Massive Black Holes When to Merge (Poster)

Ten Years of Gravitational Waves Celebration, Vanderbilt, Nashville

Sep 2025

NASA Advocacy Congressional Visit

Vanderbilt Office of Federal Relations, Washington D.C.

July 2025

A Career in Astronomy/Astrophysics (Invited talk)

Valor College Prep High School Career Day, Nashville

May 2025

Is JWST “Breaking” Science? (Invited talk)

Astronomy on Tap, Nashville

Dec 2024

Society of Physics Students, Vanderbilt University

Graduate School Applications Panelist

Fa2024, Fa2025

Society of Physics Students, Denison University

Volunteer; Go-Baby-Go Mobility Program

Sp2023

Volunteer; Granville Elementary School Demonstrations

Fa2020 — Sp2023

Co-President

Fa2021

Secretary

Fa2020 — Sp2021

Delta Gamma Fraternity, Denison University

Director of Social Awareness

Sp2022 — Fa2022

Director of Dialogues

Sp2021 — Fa2021

Sexual Respect Chair

Sp2021 — Fa2021

AWARDS & FELLOWSHIPS

- Akunuri V. Ramayya Award, Outstanding Graduate Teaching Assistant Apr 2025
- McMinn Research Award May 2024
- **Vanderbilt Provost’s Graduate Fellow, Russell G. Hamilton Scholar (\$50,000)** Aug 2023
- Phi Beta Kappa Honor Society May 2023
- **Denison University President’s Medalist** May 2023
- Mike Mickelson Research Award May 2023
- Ron Winters Graduate School Award in Physics May 2023
- **Chambliss Astronomy Achievement Student Award** Mar 2023
- Sigma Xi Research Honor Society Mar 2023
- Society of Physics Students Leadership Scholarship May 2022
- Denison University Physics & Astronomy Senior Fellow Apr 2022
- **Anderson Scholarship for Excellence in Science (\$48,500)** Apr 2021
- Denison University Physics & Astronomy Junior Fellow Apr 2021