KATE E. FUTROWSKY: CURRICULUM VITAE

Georgia Institute of Technology School of Physics
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EDUCATION

Ph.D. in Physics Expected August 2027
Georgia Institute of Technology, Atlanta, GA
Advisor: Dr. Tamara Bogdanović
Dissertation: *Prospects for Multi-messenger Observations of Massive Black Hole Binaries with LISA and Electromagnetic Observatories*

Master of Science in Physics December 2024
Georgia Institute of Technology, Atlanta, GA

Bachelor of Science May 2022
University of Maryland, College Park, MD
Dual degrees in Physics and Astronomy (High Honors)
Global Fellows Policy and Leadership Program *(May 2021 – May 2022)*
College Park Scholars Program *(August 2018 – May 2020)*

RESEARCH EXPERIENCE

School of Physics, Georgia Institute of Technology August 2022 - Present
Graduate Research Assistant, Center for Relativistic Astrophysics

- Utilizing the Illustris-TNG cosmological simulation to create a census of the numbers and properties of galaxies in the future Laser Interferometer Space Antenna error volume with Dr. Tamara Bogdanović

Dept. of Astronomy, University of Maryland May 2020 – May 2022
Undergraduate Research Assistant

- Analyzed assumptions and relevant calculations regarding binary black hole mergers in gas disks around active galactic nuclei with Dr. M. Coleman Miller
- Modeled emission and transmission spectra of sub-Neptune exoplanet atmospheres utilizing Python and analyzed degeneracies between pairs of model spectra with Dr. Eliza Kempton

Dept. of Physics and Astronomy, Stony Brook University June 2021 – August 2021
Undergraduate Research Assistant

- Visualized particle collision data using neural networks and the rapidity mass matrix with Dr. Dmitri Tsybychev

PUBLICATIONS

- **Kate E. Futrowsky**, Tamara Bogdanović, …, and Weixiang Yu, "Preliminary census of galaxies in the LISA localization volume: II. Properties of candidate massive black hole binary hosts using the Illustris-TNG100 cosmological simulation" *in prep.*
- Carolyn L. Drake, …, **Kate E. Futrowsky**, and Weixiang Yu, "Preliminary census of galaxies in the LISA localization volume: I. Searching for LISA candidate massive black hole binary merger hosts using Sloan Digital Sky Survey photometry" *Submitted to MNRAS* (2025).
- Weixiang Yu, …, **Kate E. Futrowsky**, and Steinn Sigurdsson, "Contaminating Electromagnetic Transients in LISA Gravitational Wave Localization Volumes. I: The Intrinsic Rates" *ApJ, 981* 141 (2025) doi: 10.3847/1538-4357/adb283.
- Zoltán Haiman, …, **Kate E. Futrowsky**, …, and Jonathan Zrake, "Massive Black Hole Binaries as LISA Precursors in the High Latitude Time Domain Survey" [Roman Core Community Survey White Paper] arXiv:2306.14990 (2023).
- Eliza M.-R. Kempton, …, **Kate E. Futrowsky**, …, and Carlos E. Munoz-Romero, "Where are the Water Worlds?: Self-Consistent Models of Water-Rich Exoplanet Atmospheres" *ApJ, 953* 57 (2023) doi: 10.3847/1538-4357/ace10d.

PRESENTATIONS AND TALKS

- Prospects for Multimessenger Observations of Supermassive Black Hole Binaries with PTAs and Electromagnetic Observatories; poster (2025). The Era of Supermassive Black Holes: Coordination of Nanohertz-Frequency Gravitational Wave Follow-up conference; Aspen Center for Physics, Aspen, CO.
- Prospects for Multimessenger Observations of Massive Black Hole Binaries with LISA and Electromagnetic Observatories; poster (2024). The 2024 Joint Space-Science Institute (JSI) Workshop: The Formation and Early Evolution of Supermassive Black Holes; Baltimore, MD.
- Prospects for Multimessenger Observations of LISA Massive Black Hole Binaries; talk (2024). The 2024 LISA Astrophysics Working Group Meeting; Max Planck Institute for Astrophysics (MPA), Garching, Germany.
- Preparing for Multimessenger Observations of Massive Black Hole Binaries with LISA; talk (2024). Clemson University; Clemson, SC.
- Prospects for Multimessenger Observations of Massive Black Hole Binaries with LISA and Electromagnetic Observatories; poster (2024). The 243rd Annual Meeting of the American Astronomical Society; New Orleans, LA.
- Multimessenger Observations of Merging Massive Black Holes with Roman and LISA; poster, (2023). The Space Telescope Science Institute; Baltimore, MD; The 2023 Georgia Regional Astronomy Meeting; Decatur, GA.
- The Concerning Status of Climate Change Legislation and Policies in the United States; talk (2022). The American Physical Society; College Park, MD.

TEACHING EXPERIENCE

School of Physics, Georgia Institute of Technology August 2022 - Present

Graduate Teaching Assistant, PHYS 2212: Introductory Physics II (Fall 2022, Fall 2024), PHYS 4347: Theoretical Astrophysics (Spring 2025)

- Lead weekly recitations and aid students in solving complex word problems
- Grade student assignments

Atlanta, GA April 2024 – Present
High School Physics Tutor, AP, IB, and Honors Physics

Summer Springboard, Georgia Institute of Technology June 2025
Instructor, Astrophysics

- Developed the curriculum for and taught a two-week introductory astrophysics course for high school students

Dept. of Astronomy, University of Maryland September 2019 – May 2022
Undergraduate Teaching Assistant, ASTR 310: Observational Astronomy (Fall 2021), ASTR 350: Black Holes (Spring 2022)

- Led weekly office hours and graded student assignments
- Guided students in operating telescopes and collecting data with them at the University of Maryland Observatory

Astronomy Tutor (September 2019 – May 2022)

- Assessed individual student needs, explained astronomy concepts, answered student questions, and assisted with assignments

WORK EXPERIENCE

Office of Congressman Bill Foster, Washington, D.C. May 2022 – August 2022
AIP Mather Public Policy Intern

- Provided support to representatives and staff as needed, attended and helped prepare for hearings and markups, wrote letters to constituents, gathered background materials related to votes, and provided general support to the office

Office of Congressman John Sarbanes, Washington, D.C. January 2022
Legislative Intern

- Drafted letters to constituents, attended committee hearings, wrote summary briefs, researched various issues for staff, and assisted with additional office duties

Ridge Global, Washington, D.C. August 2021 – October 2021
Policy Intern

- Researched and wrote briefings on a variety of topics, including cybersecurity, critical infrastructure, insurance, and aerospace, that incorporated up-to-date information from Congress, policy, news, and business worlds

University of Maryland Observatory, College Park, MD September 2019 – May 2022
Observatory Staff

- Prepared and operated telescopes during observation
- Communicated and explained scientific ideas to the public

PROFESSIONAL ACTIVITIES & SERVICE

- Graduate student member, American Astronomical Society (AAS) Committee on Astronomy and Public Policy (CAPP), 2024 – present
- Member, Graduate Association of Physicists (GAP), Georgia Institute of Technology School of Physics, 2022 – present; First Year Representative, August 2022 – June 2023
- Participant, Establishing Multimessenger astronomy Interdisciplinary Training (EMIT) Program**,** Vanderbilt University, July 2025
- Participant, AAS Congressional Visits Day, 2024
- Participant, Science Policy & Advocacy Certificate Program, University of California, Irvine, CA, July 2023 – September 2023
- Vice President, AstroTerps Astronomy Club, University of Maryland May 2021 – May 2022

HONORS AND AWARDS

- Honorable Mention, Chambliss Astronomy Achievement Award, American Astronomical Society (AAS), 2024
- Travel Award, Georgia Tech Center for Relativistic Astrophysics, 2024
- President's Fellowship, Georgia Institute of Technology School of Physics, Atlanta, GA, Fall 2022 through Summer 2026
- Dean's List, College of Computer, Mathematical, and Natural Sciences, University of Maryland, Fall 2018 through Spring 2022
- Dean's Scholarship, $4,500 per year for two years, University of Maryland, Fall 2018 through Spring 2020

SKILLS

- *Computer:* Python; MATLAB; Microsoft Office; G Suite
- *Language:* Beginner skills in French