JEFFREY UTLEY

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EDUCATION

PhD Purdue University, Mathematics   In Progress
GPA: 4.00
Concentration in Computational Science

BS University of Tennessee, Mathematics Honors   May 2022
GPA: 3.98
Minor in Computer Science

RESEARCH EXPERIENCE

Graduate Research Assistant, Purdue University   January 2023 - Current
Advisors: Professors Gregery Buzzard & Charles Bouman
- Statistical modeling and simulation techniques for aero-optics
- Collaboration with Dr. Matthew Kemnetz at the U.S. Air Force Research Laboratory

AFRL Scholars Program, Kirtland AFB   May 2024 – August 2024
Mentor: Dr. Matthew Kemnetz
- Synthetic wavefront generation for aero-optics

Midwest REG, University of Michigan   August 2023
Mentor: Professor Keisha Cook
- Stochastic modeling of beetle infestations

Topology and Geometry REU, University of Virginia   June 2021 – July 2021
Mentors: Professors Sara Maloni & Filippo Mazzoli
- Geometric & algebraic topology

Undergraduate Research Assistant, University of Tennessee   May 2020 – May 2022
Advisor: Professor Joan Lind
- Complex generalization of the Loewner Differential Equation
- Resulted in a journal article in *Involve: A Journal of Mathematics*.

PUBLICATIONS

Journal Articles

Lind, J. & Utley, J. (2022). Phase Transition for a Family of Complex-driven Loewner Hulls. *Involve, a Journal of Mathematics*, 15(3), 447-474. https://doi.org/10.2140/involve.2022.15.447.

Conference Papers

Utley, J., Buzzard, G., Bouman, C., & Kemnetz, R. (2024). Data-driven synthetic wavefront generation for boundary layer data. In J. Dolne, S. Bose-Pillai, & M. Kalensky (Eds.), *Unconventional Imaging, Sensing, and Adaptive Optics 2024* (p. 131490A). SPIE. https://doi.org/10.1117/12.3027740.

Pre-Prints

Betts, K., Larsen, T., Utley, J., & Vanis, A. (2021). The Tri-Pants Graph of the Twice-Punctured Torus. ArXiV. https://doi.org/10.48550/arXiv.2111.07136.

PRESENTATIONS

Conference Presentations

"Synthetic wavefront generation for aero-induced turbulence using boundary layer data," *Electronic Imaging 2025*, Burlingame, CA, February 2-6, 2025.

"Data driven synthetic wavefront generation for boundary layer data," *SPIE Optics + Photonics 2024*, San Diego, CA, August 18-22, 2024.

"Synthetic Wavefront Generation for Aero-Optics Correction," *Annual Directed Energy Science and Technology Symposium*, Colorado Springs, CO, May 20-24, 2024.

"The Tri-Pants Graph," *Virginia Topology Conference*, Charlottesville, VA, November 5-7, 2021.

Seminar Presentations

"Phase Transition for a Family of Complex-Drive Loewner Hulls," *University of Tennessee Analysis Seminar*, Knoxville, TN, September 15, 2021.

TEACHING EXPERIENCE

Math Instructor, University of Michigan   Sept 2022 – Mar 2023
Wolverine Pathways Program, Dr. Lara Du

Graduate Teaching Assistant, Purdue University   Aug – Dec 2022
Course Coordinator: Professor Andrey Glubokov

Undergraduate Teaching Assistant, University of Tennessee   Jan 2020 - May 2022

HONORS AND AWARDS

SPIE Student Conference Support Award 2024
Travel funding from SPIE

College of Science Graduate Student Travel Award 2024
Travel funding from Purdue University

John H. Barrett Prize 2022
Awarded at University of Tennessee's Honors Day

Summer Undergraduate Research Internship Program Funding 2021
Research funding award, University of Tennessee

PROFESSIONAL AFFILIATIONS

Officer Positions

Officer of SIAM Student Chapter, Purdue University 2024 – Present

Memberships

Phi Beta Kappa National Honor Society 2021 – Present

Pi Mu Epsilon Honors Mathematics Society 2020 – Present

Phi Eta Sigma National Honor Society 2018 – Present