

## Ian Tan

### CURRICULUM VITAE

**E-mail:** yzt0060@auburn.edu

#### Education:

- PhD candidate, Auburn University, Spring 2021-Present  
Advisor: Dr. Luke Oeding  
Thesis topic: Orbit classification in quantum information
- Bachelor of Science in Mathematics, Lee University, 2018

#### Research interests:

- Applications of Algebraic Geometry and Representation Theory, especially in Quantum Information Theory

#### Publications/Preprints:

- L. Oeding, I. Tan, *Four-qubit critical states* (submitted for publication), arXiv:2410.08317
- L. Oeding, I. Tan, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, SIAM Journal on Applied Algebra and Geometry **9** (2025), no. 1, arXiv:2402.12542.
- H. Alpert, L. Barham, B. Freidin, I. Tan, A. Weiner, *Generalized van der Waerden Game on an Infinite Board* (submitted for publication), arXiv:2309.11367
- I. Tan, *Counting rotational subsets of the circle under the angle-multiplying map*, Rose-Hulman Undergraduate Mathematics Journal **25** (2024), no. 2, arXiv:2207.03594

#### Talks:

- Georgia Institute of Technology, Algebra Seminar, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, Jan 2025.
- University of California San Diego, Optimization and Data Science Seminar, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, Nov 2024.
- University of Alabama at Birmingham, SIAM Student Chapter Seminar, *Entanglement and the Mermin-Peres magic square game*, Nov 2024.
- University of Idaho, Algebra Seminar, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, Oct 2024.
- Auburn University, Algebra Seminar, *Four-qubit critical states*, Oct 2024.

- University of Georgia, Algebra Seminar, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, Sept 2024.
- Auburn University, Invariant @60 Conference, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, May 2024.
- Auburn University, Algebra Seminar, *Tensor factorizations and orbit classification*, Mar 2024.
- Louisiana State University, Fourth Biennial LSU Music Colloquium, *Linear Algebraic Applications to Twelve-Tone Tonality*, May 2017

### Teaching Experience:

- Teaching Assistant, Auburn University Spring 2021-Present  
Calculus I and Calculus III
- Teacher, Greater Alabama Black Belt Region Louis Stokes Alliance for Minority Participation Summers 2021-2024  
tion
- Teacher, EL Pathway Learning Centre, Malaysia 2019-2020  
Mathematics and physics; various grade levels
- Teacher, Thomas MacLaren School, Colorado Springs, CO 2018-2019  
10<sup>th</sup> grade Precalculus and 11<sup>th</sup> grade Calculus

### Awards:

- Spring 2025 Don and Sandy Logan Endowed Fellowship
- 2023 Dr. J. Earl Perry Endowed Summer Graduate Award
- 2022 Dr. J. Earl Perry Endowed Summer Graduate Award
- 2020 Calder Endowed Graduate Award

### Outreach:

- Topological Data Analysis Seminar Fall 2024  
Co-organizer with Mauricio Montes
- Mentor, Directed Reading Program Spring 2024
- Mentor, Directed Reading Program Spring 2023
- Volunteer, Alabama Science State Olympiad Spring 2023
- Volunteer, Alabama Science State Olympiad Spring 2022