Ian Tan

CURRICULUM VITAE

E-mail: yzt0060@auburn.edu

Education:

- PhD candidate, Auburn University, Spring 2021-Present

  Advisor: Dr. Luke Oeding

  Thesis title: Orbits and Invariants in Quantum Information Theory

  GPA: 4.0

- Bachelor of Science in Mathematics, Lee University, 2018

  GPA: 3.98

Research interests:

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

Publications/Preprints:

- L. Oeding, I. Tan, *Four-qubit critical states*, Journal of Physics A: Mathematical and Theoretical **58** (2025), no. 26, 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* (preprint), 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:

- University of Wisconsin-Madison, 2025 SIAM Conference on Applied Algebraic Geometry Minisymposium: Quantum Information Theory and Geometry, *Four-qubit critical states*, July 2025
- University of Tennessee Knoxville, SIAM-SEAS 2025 Minisymposium: Applied Algebra and Geometry, *Tensor decompositions with applications to LU and SLOCC equivalence of multipartite pure states*, March 2025
- 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.
- Lousiana 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
- Teacher, EL Pathway Learning Centre, Malaysia — 2019-2020
  Mathematics and physics; various grade levels
- Teacher, Thomas MacLaren School, Colorado Springs, CO — 2018-2019
  10^{th} grade Precalculus and 11^{th} 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:

- Mentor, Directed Reading Program — Spring 2025
- 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