

## EDUCATION

- **University of Science and Technology of China** Hefei, Anhui  
*Masters in Applied Mathematics* Sep 2024 - Present  
*Courses: Algebraic Graph Theory, Commutative Algebra, Algebraic Geometry, Extremal Combinatorics.*
- **University of Science and Technology of China** Hefei, Anhui  
*Bachelor of Pure Mathematics and Computer Science* Aug 2020 - Jun 2024  
*Courses: Analysis, Algebra, Differential Geometry, Topology, Introduction to Algorithms, Introduction to Machine Learning, Brain and Cognition.*

## ACADEMIC EXPERIENCE

- **Protein Structure Analysis and Prediction** Supervisor: Tian Xue  
*University of Science and Technology of China* Sep 2020-Jun 2021
  - **Protein Structure Analysis:** Studied and summarized classical protein structure determination techniques including X-ray crystallography, nuclear magnetic resonance (NMR) spectroscopy, and cryo-electron microscopy (cryo-EM). Explored advanced methods such as fluorescence protein labeling proposed by Xiaowei Zhuang and AlphaFold, a deep learning-based model developed by DeepMind.
- **Application of Automated Reasoning in Combinatorial Problems** Supervisor: Cunjing Ge, Mingjun Xiao  
*Nanjing University, University of Science and Technology of China* Jun 2023 - Apr 2024
  - **Solving Combinatorial Problems Using SAT Solvers:** Reviewed the development of automated reasoning techniques and explored their applications in combinatorial mathematics. Modeled the 36 officers problem in conjunctive normal form (CNF) and used SAT solvers to prove the non-existence of orthogonal Latin squares for  $n = 6$ . Also presented a counterexample to Euler's conjecture for  $n = 10$  using similar techniques.
- **Lattice Theory and Its Applications in Cryptography** Supervisor: Xiande Zhang  
*University of Science and Technology of China* Sep 2023 - Jul 2024
  - **Lattice Theory and Its Applications in Cryptography:** Studied lattice theory as an intersection of number theory and geometry, based on the foundational work of Minkowski. Explored applications in number theory, tiling theory, and coding theory. Discussed contributions by 2022 Fields Medalist Maryna Viazovska on sphere packing. Implemented a basic encryption program based on the NTRU public-key cryptosystem.
- **Quantum Information and Entanglement Robustness** Supervisor: Xiande Zhang  
*University of Science and Technology of China* Sep 2024 - Present
  - **New Constructions of Multipartite Entanglement Resistant to Particle Loss:** Investigated the behavior of multipartite entangled pure states under particle loss. Studied the notion of  $m$ -resistant states—entangled states that remain entangled after losing any subset of  $m$  particles but become separable after losing more than  $m$ . Addressed a conjecture from Quinta et al. [Phys. Rev. A, 2019] by presenting two general construction methods. Proposed a class of *strong  $m$ -resistant* states that remain genuinely entangled after losing  $m$  particles and become separable after losing  $m + 1$  particles.

## TEACHING EXPERIENCE

- **Teaching Assistant – Mathematical Analysis:** Taught multivariable calculus, introductory Fourier analysis, infinite series, and other foundational topics. Assisted with grading, student queries, and recitation sessions.
- **Teaching Assistant – Complex Analysis:** Instructed students on properties of complex numbers, holomorphic functions, Cauchy's Integral Theorem, Riemann Mapping Theorem, and related concepts. Provided support during lectures and problem-solving sessions.
- **Teaching Assistant – Combinatorics and Honors Course:** Taught combinatorics, probability methods, algebraic approaches, and combinatorial design. Facilitated discussions and clarified complex topics for students in both the regular and honors courses.

## EXCHANGE EXPERIENCE

- **Nanjing University:**  
 Project: Data-Knowledge Dual-Driven Artificial Intelligence Technologies  
 Led by Professor Zhihua Zhou from Nanjing University and Professor Stephen H. Muggleton from Imperial College London, this project explores the influence of knowledge and data in artificial intelligence. The project included visits to the Nanjing Turing Research Institute and Suzhou Institute of Nano-tech and Nano-bionics.
- **Shandong University:**  
 Project: Summer School on Combinatorial Coding and Cryptography  
 Led by Professor Keqin Feng from Tsinghua University and recipient of the Hua Luogeng Prize, this project was hosted by Shandong University. Topics covered include applications of algebraic geometry and algebraic number theory in combinatorial coding, combinatorial coding problems in DNA storage, Boolean functions, and quantum information.

- **Xi'an Jiaotong University:**

Project: Chinese Excellent Traditional Culture

Organized by the School of Humanities at Xi'an Jiaotong University, this project involved exploring the rich traditional culture of Xi'an, offering participants a deeper understanding of Chinese cultural heritage.

## HONORS AND AWARDS

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- Silver Award, Excellent Student Scholarship, University of Science and Technology of China (USTC)
- Honors Class Stipend, USTC's Strong Foundation Program
- First-Class Academic Scholarship for Graduate Studies, USTC