Tianyu Kong

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EDUCATION

University of Minnesota Twin Cities — Minneapolis, MN
Ph.D, Mathematics — Expected 2026

University of Chicago — Chicago, IL
B.S, Applied Mathematics with Honors & B.A, Physics — June 2021
GPA: 3.73/4.00

RESEARCH EXPERIENCE

Graduate Research Assistant, Advisor: Mitchell Luskin
University of Minnesota Twin Cities — July 2021 – present

- Researched on mathematical modelling and numerical analysis for incommensurate 2D materials
- Studied energy band with tight binding models and density functional theory, and used momentum space method for approximating geometry and physical quantities of 2D materials
- Collaborated with a physics research group on computing and predicting physical properties of bilayer graphene

Undergraduate Researcher in Applied Mathematics, Advisor: Mary Silber
University of Chicago — Apr. 2020 – May. 2021

- Studied and summarized different types of Minimum Action Methods to determine the transition of states in a dynamical system subject to random perturbation
- Implemented MATLAB code and used steepest descent and quasi-Newton methods to calculate the Minimum Action Path in Lorenz systems
- Poster presented at SIAM Conference on Applications of Dynamical Systems DS21

Mathematics Research Experience for Undergraduates
University of Chicago — Jun. 2019 – Aug. 2019

- Participated in discussions on advanced mathematics topics including random walk, PDE and algebraic geometry
- Researched dynamical systems and ergodic theory, and held weekly discussion with mentor
- Wrote an expository paper titled *Ergodic Theory, Entropy and Application to Statistical Mechanics*

RELATED EXPERIENCE

Teaching Assistant: Calculus
University of Minnesota Twin Cities — Sep. 2021 – Present

- Organized discussion on important concepts and encouraged independent problem-solving
- Responded to questions in an engaging manner and graded homework and exams.

China Citic Bank, Research Intern
Hangzhou, China — Aug. 2019 – Sep. 2019

- Developed a Natural Language Processing (NLP) model to analyze the category of text messages, and created user profiles to determine potential interest in financial services
- Operated, maintained and optimized MySQL database with over one billion data entries

Course Reader: Honors Calculus, Math Methods in Physical Sciences
University of Chicago — Oct. 2018 – Jun. 2020

- Collected, graded and promptly returned all written homework assignments; recorded and submitted grades.

SKILLS

Programming: Python, MATLAB, C, R, MySQL
Software: Microsoft Office, LaTeX
Languages: Chinese (Native), English (Professional)