YUZHUO TAO

Dept. of Mathematics & Statistics, Auburn University, Auburn, AL
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EDUCATION

Ph.D. Candidate in Applied Mathematics *2024–2029 (expected)*
Auburn University, Auburn, AL
Advisors: Dr. Yanzhao Cao

B.S. in Pure and Applied Mathematics *2020–2024*
Yanbian University, Jilin, China

RESEARCH INTERESTS

Stochastic Differential Equations and Stochastic Analysis: numerical analysis of SDEs.
Machine Learning Theory: SDE models for deep learning.
Nonlocal Diffusion Problems: Nonlocal KDV-Burgers equation, Local limit of nonlocal operators, Neumann-type nonlocal condition.

RESEARCH EXPERIENCE

Stochastic Differential Equations
Advisors: Dr. Yanzhao Cao Aug 2025–present
Learning Itô calculus in infinite dimensions, Martingale problems, convergence of solutions.

Internal Feedback Control of the Dimensional-Reduction Model of KDV-Burgers Equation Based on POD
Advisor: Dr. Guangri Piao Sep 2022–Jan 2024
Studied an internal feedback control strategy for a POD-based reduced-order model of the KdV–Burgers equation, aiming to efficiently capture and control its nonlinear dispersive–dissipative dynamics. The reduced model enabled low-dimensional, computationally efficient control while preserving the essential behavior of the original system.

Purely Positioning Passive Location Method for Unmanned Aerial Vehicles performing formation flight
Advisor: Dr. Guangri Piao Dec 2021–Dec 2022
Explored the nonlinear optimal estimation of the UAVs' conducting formation problem based on azimuth-only passive positioning method based on the flocking heuristic algorithm.

TEACHING EXPERIENCE

Grader *2024–present*
Department of Mathematics & Statistics, Auburn University
Duties: Graded homework and exams; prepared solution outlines; communicated grading issues and common errors to the instructor.
Courses: Linear Algebra; Numerical Analysis; Differential Equations.

School of Mathematical Sciences, Yanbian University *2021–2024*
Duties: Graded assignments and exams; recorded scores in the gradebook; provided concise feedback.
Courses: Numerical solutions of PDEs; Numerical Analysis.

Tutor *2024–2025*
Department of Mathematics & Statistics, Auburn University
Duties: Offered one-on-one and small-group tutoring for undergraduate math courses; guided students through problem solving and exam preparation.

FELLOWSHIPS & AWARDS

CUMCM(Contemporary Undergraduate Mathematical Contest in Modeling) *2022*
First prizes (National Level)
Yanbian University