

**CONTACT
INFORMATION**

PMA 12.146
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Austin, TX 78751

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EDUCATION

Department of Mathematics, The University of Texas at Austin
Ph.D. Candidate, Mathematics August 2022 - Present
Advised by Nataša Pavlović

Departments of Mathematics and Physics, University of Dallas
B.S. in Mathematics and Physics August 2018 - May 2022
Thesis: *Developing a Machine Learning-enabled Monte Carlo Event Generator*.
Advised by Richard Olenick

**RESEARCH
INTERESTS**

Kinetic and dispersive equations, mathematical physics, analysis, probability

PUBLICATIONS

Preprints

Complex-valued modified Zakharov Kuznetsov
with C. Kenig, G. Staffilani, and N. Pavlović,

Refereed Articles:

Six-wave kinetic equation in exponentially weighted L^∞ spaces.
with N. Pavlović and M. Tasković,
SIAM Journal of Mathematical Analysis, 58(1):598-635 (2026).

On the Diophantine equations of the form $\lambda_1 U_{n_1} + \lambda_2 U_{n_2} + \dots + \lambda_k U_{n_k} = w p_1^{z_1} p_2^{z_2} \dots p_s^{z_s}$.
with E. Goedhart, B. Ha, L. McBeath
Bol. Soc. Mat. Mex. 30, 105 (2024). <https://doi.org/10.1007/s40590-024-00669-6>

cFAT-GAN: Conditional Simulation of Electron-Proton Scattering Events with Variable Beam Energies by a Feature Augmented and Transformed Generative Adversarial Network. In: Wani M.A., Raj B., Luo F., Dou D. (eds) *Deep Learning Applications, Volume 3* (2022). *Advances in Intelligent Systems and Computing*, vol 1395. Springer, Singapore.

Simulation of Electron-Proton Scattering Events by a Feature-Augmented and Transformed Generative Adversarial Network (FAT-GAN) Thirtieth International Joint Conference on Artificial Intelligence, IJCAI-21, edited by Zhi-Hua Zhou (International Joint Conferences on Artificial Intelligence Organization, 2021) pp. 2126 - 2132

cFAT-GAN: Conditional Simulation of Electron-Proton Scattering Events with Variate Beam Energies by a Feature Augmented and Transformed Generative Adversarial Network 2020 19th IEEE International Conference on Machine Learning and Applications (ICMLA), 2020, pp. 372-375.

RESEARCH TALKS

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|---|---------------|
| <i>The inhomogeneous six-wave kinetic equation</i>
AIMS Conference – Athens, Greece | July 2026 |
| <i>Derivation of 4-WKE from a nonlinear Kac model</i>
ICM Satellite Meeting: New Challenges in the Derivation and Dynamics of Many Body Systems, MIT – Cambridge, MA | May 2026 |
| <i>Connecting uniqueness of solutions for a SDE and the Fokker-Planck equation</i>
Junior Analysis Seminar, UT Austin – Austin, TX | January 2026 |
| <i>An introduction to the Wave Kinetic Equation</i>
Graduate student seminar at SL Math – Berkeley, CA | October 2025 |
| <i>Six-wave kinetic equation in exponentially weighted L^∞ spaces</i>
BIRS Women in Analysis Workshop – Banff, Canada | May 2025 |
| <i>Six-wave kinetic equation in exponentially weighted L^∞ spaces</i>
Eastern Sectional AMS Meeting – Hartford, CT | April 2025 |
| <i>Six-wave kinetic equation in exponentially weighted L^∞ spaces</i>
Joint Math Meetings – Seattle, WA | January 2025 |
| <i>The Six-Wave Kinetic Equation</i>
Junior Analysis Seminar, UT Austin - Austin, TX | October 2024 |
| <i>An Introduction to Wave Turbulence and the Wave Kinetic Equation</i>
Junior Analysis Seminar, UT Austin - Austin, TX | April 2024 |
| <i>Brownian Motion and the Heat Equation</i>
Junior Analysis Seminar, UT Austin - Austin, TX | November 2023 |
| <i>Convergence of Single-Layer Neural Network</i>
Junior Analysis Seminar, UT Austin - Austin, TX | April 2023 |
| <i>Deriving the Boltzmann Equation in the Case of Hard Spheres</i>
Texas Women in Math Symposium, UT Austin - Austin, TX | March 2023 |
| <i>Introduction to the Euler Equations for Fluid Dynamics</i>
Junior Analysis Seminar, UT Austin - Austin, TX | November 2022 |
| <i>Calculus of Variations</i>
Sophex Seminar, UT Austin - Austin, TX | October 2022 |
| <i>Writing a Product of Prime Powers as a Sum of Recurrence Terms</i>
Gulf Coast Undergraduate Research Symposium, Rice University - Virtual | October 2021 |
| <i>Writing a Product of Prime Powers as a Sum of Recurrence Terms</i>
Young Mathematicians Conference, Ohio State University - Virtual | August 2021 |

cFAT-GAN: Conditional Simulation of Electron-Proton Scattering Events with Variate Beam Energies by a Feature Augmented and Transformed Generative Adversarial Network December 2020
International Conference for Machine Learning Applications - Virtual

Improving the Particle Multiplicity Generator for the Empirically Trained Hadronic Event Regenerator October 2019
Division of Nuclear Physics Conference - CEU Undergraduate Poster Session

CONFERENCES ATTENDED **AIMS Conference** (invited speaker)
Athens, Greece / July 6 - 10, 2026

Joint Alabama-Florida Conference on Differential Equations, Dynamical Systems and Applications
Miami, FL / May 18-19, 2026

Focused Research Group Meeting 2026, ICM Satellite New Challenges in the Derivation and Dynamics of Many Body Systems
(invited speaker)
Cambridge, MA / May 9 - 10, 2026

Prairie Analysis Seminar 2025
Manhattan, KS / November 7-8, 2025

Focused Research Group Meeting 2025
New Challenges in the Derivation and Dynamics of Quantum Systems
(invited participant)
Amherst, MA / June 16-20, 2025

BCAM-UPV/EHU Summer School on Harmonic Analysis and PDEs
Probabilistic Approaches to Dispersive PDEs (invited participant)
Bilbao, Spain / June 16-20, 2025

BIRS Workshop
Women in Analysis (invited participant and speaker)
Banff, Canada / May 11-16, 2025

AIM Workshop
Integro-differential equations in many-particle interacting systems (invited participant)
Pasadena CA / April 14-18, 2025

AMS Eastern Sectional Meeting
Special session: Recent developments in nonlinear evolution equations (invited speaker)
Hartford, CT / April 5-6, 2025

Workshop on Kinetic Theory and Fluids
(invited participant)
Madison, WI / March 28-30, 2025

Joint-Math Meeting 2025
Special session: Advances in Nonlinear Dispersive and Kinetic Equations (invited speaker)
Seattle, WA / January 10, 2025

Summer school on effective approximation and dynamics of many-body quantum systems

Summer school on many-body quantum systems at Lorraine University, UFR Mathematics, Informatics and Mechanics / Institute Élie Cartan of Lorraine (Participant)
Metz, France / June 24 - June 27, 2024

Mathematical aspects of fluid flows

Summer school on recent mathematical (PDE) theories relevant to processes involving fluids sponsored by the European Mathematical Society (Participant)
Kácov, Czech Republic / May 12 - May 17, 2024

Focused Research Group Meeting 2024

New challenges in the derivation and dynamics of quantum systems (invited participant)
Austin, TX / April 27, 2024

Recent developments in wave turbulence theory

Mini school on wave turbulence theory at UNC sponsored by RTG: Partial Differential Equations on Manifolds (Participant)
Chapel Hill, NC / April 5-6, 2024

Summer school of wave turbulence

Summer school on Wave Turbulence sponsored by the Simons collaboration (Participant)
Cambridge, MA / July 24 - July 28, 2023

Stability and dynamics in fluid mechanics and kinetic theory

Summer School at Imperial College (Participant)
London, England / July 10 - July 14, 2023

AWARDS AND HONORS

Graduate student poster prize, Joint Alabama Florida Conference	May 2026
NSF Graduate Research Fellowship, NSF	2024
Frank Gerth III Teaching Excellence Award, University of Texas at Austin	2023
Frank Gerth III Graduate Excellence Award, University of Texas at Austin	2023
Dean's Strategic Fellowship, University of Texas at Austin	August 2022
Outstanding Math Major, University of Dallas	May 2022
First Academic Honors, University of Dallas	May 2022
Goldwater Scholar, Goldwater Foundation	May 2020
Outstanding Teaching Assistant, University of Dallas	Spring 2019
Honorable Mention, Mathematical Contest in Modeling	January 2019
Trustee Scholarship, University of Dallas	August 2018
Physics Departmental Scholarship, University of Dallas	August 2018

PROFESSIONAL EXPERIENCE **Kinetic Theory: Novel Statistical, Stochastic and Analytical Methods**

Program Associate
SL Mathematical Sciences Institute Berkeley, CA August 2025 - December 2025

NSF REU: Diophantine Equations

SMALL at Williams College, Williamstown, MA June 2021 - August 2021

Jefferson Sciences Associates (JSA) Intern: Theoretical Nuclear Physics

Jefferson National Lab - Virtual September 2019 - December 2020

	NSF REU: Theoretical Nuclear Physics Old Dominion University, Norfolk, VA	May 2019 - August 2019
TEACHING EXPERIENCE	Teaching Assistant , University of Texas at Austin M 408C: Differential and Integral Calculus Teaching Assistant , University of Dallas PHYS 2311: General Physics I (Calculus) PHYS 2312: General Physics II (Calculus)	 Fall 2023 Spring 2020 Spring 2019
SERVICE	Organizer of UT Austin graduate student analysis seminar Co-organizer of Program Associate seminar at SL Math Representative on the Math Grad Rep Committee Organizer Distinguished Women in Math Colloquium Conference Organizer Texas Women in Math Symposium	Aug 2025 - May 2026 Fall 2025 Aug 2024 - Aug 2025 April 2023-present March 2023
	Mentor in Directed Reading Program, UT Austin <u>Mentees:</u> Fall 2022: Asim Suhail – Analytic number theory Spring 2024: Samantha Ward – Functional analysis Summer 2024: Jessica Loyola – Point-set topology Fall 2024: Audrie Ibanez – Functional analysis Spring 2025: Jacob Busby and Fiona Roman – Measure theory and probability Summer 2025: Lev Rachinskiy – Martingale Theory Spring 2026: Advait Phadke, Eshaan Singh, Arun Narayanan – Measure Theory	Fall 2022-present
	Officer of Math Club, University of Dallas	2021-2022
	Mathematics Tutor at University of Dallas	Fall 2021 - Spring 2022