Luisa Velasco Cirriculum Vitae

CONTACT INFORMATION

PMA 12.146
2515 Speedway
Austin, TX 78751

lmvelasco@utexas.edu

EDUCATION

Department of Mathematics, The University of Texas at Austin
Ph.D. Student, 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

Mathematical physics, analysis, probability

PUBLICATIONS

Submitted for Publication:

On the Diophantine equations of the form $\lambda_1 U_{n_1} + \lambda_2 U_{n_2} + \ldots + \lambda_k U_{n_k} = w p_1^{z_1} p_2^{z_2} \cdots p_s^{z_s}$. (with E. Goedhart, B. Ha, and L. McBeath) Submitted for publication 2023, arXiv:2212.11945

Refereed Articles:

cFAT-GAN: Conditional Simulation of Electron–Proton Scattering Events with Variate 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

Brownian Motion and the Heat Equation   November 2023
   Junior Analysis Seminar, UT Austin - Austin, TX

Convergence of Single-Layer Neural Network   April 2023
    Junior Analysis Seminar, UT Austin - Austin, TX

Deriving the Boltzmann Equation in the Case of Hard Spheres   March 2023
    Texas Women in Math Symposium, UT Austin - Austin, TX

Introduction to the Euler Equations for Fluid Dynamics   November 2022
    Junior Analysis Seminar, UT Austin - Austin, TX

Calculus of Variations   October 2022
    Sophex Seminar, UT Austin - Austin, TX

Writing a Product of Prime Powers as a Sum of Recurrence Terms   October 2021
    Gulf Coast Undergraduate Research Symposium, Rice University - Virtual

Writing a Product of Prime Powers as a Sum of Recurrence Terms   August 2021
    Young Mathematicians Conference, Ohio State University - Virtual

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

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

CONFERENCES ATTENDED

Summer School of Wave Turbulence
Summer school on Wave Turbulence sponsored by the Simons collaboration (Participant)
July 24 - July 28, 2023

Stability and Dynamics in Fluid Mechanics and Kinetic Theory
Summer School at Imperial College, London (Participant)
July 10 - July 14, 2023

AWARDS AND HONORS

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

RESEARCH EXPERIENCE

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	Fall 2023
	Teaching Assistant, University of Dallas	
	PHYS 2311: General Physics I (Calculus)	Spring 2020
	PHYS 2312: General Physics II (Calculus)	Spring 2019

OUTREACH	**Organizer** Distinguished Women in Math Colloquium	April 2023
	Conference Organizer Texas Women in Math Symposium	March 2023
	Mentor in Directed Reading Program, UT Austin <u>Mentee</u>: Asim Suhail – Analytic Number Theory	Fall 2022
	Officer of Math Club, University of Dallas	2021-2022
	Mathematics Tutor at University of Dallas	Fall 2021 - Spring 2022