Luisa Velasco

Cirriculum Vitae

CONTACT INFORMATION

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EDUCATION

Department of Mathematics, The University of Texas at Austin
Ph.D. Student, Mathematics — August 2022 - Present

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.*
Advisor: Dr. Richard Olenick

RESEARCH INTERESTS

Mathematical physics, analysis, partial differential equations

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

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 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

AWARDS AND HONORS

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 Dallas

PHYS 2311: General Physics I (Calculus)	January 2020 - May 2020
PHYS 2312: General Physics II (Calculus)	January 2019 - May 2019

OUTREACH

Conference Organizer Texas Women in Math Symposium March 2023

Mentor in Directed Reading Program, UT Austin Fall 2022
Mentee: Asim Suhail – Analytic Number Theory

Officer of Math Club, University of Dallas 2021-2022

Mathematics Tutor at University of Dallas Fall 2021 - Spring 2022