Eric J. Pabón Cancel *Curriculum Vitae*

Contact Information

Mathematical Sciences Building, Office 609
Department of Mathematics, Purdue University

✉ epabonca@purdue.edu
🔗 ejpaboncancel.github.io

Research Interests

Dynamical Systems (e.g. Mathematical Physics, Modeling in Material Science), Machine Learning (e.g. Physics-Informed Neural Networks), Computational & Applied Mathematics (e.g. Numerical Methods, Data Assimilation).

Education & Background

Doctor of Philosophy in Mathematics May 2029
Purdue University, West Lafayette, Indiana

Master of Science in Mathematics May 2026
Purdue University, West Lafayette, Indiana

Bachelor of Science in Pure Mathematics (*Magna Cum Laude*) December 2022
Curricular Sequence in Applied Mathematics for Science and Engineering
University of Puerto Rico, Mayagüez Campus (UPRM), Mayagüez, Puerto Rico

Skills and Other Information

Programming & Computation: Python, Julia, C++, SageMath, MATLAB | **Formatting & Tools:** HTML, LaTeX, Git
Math & AI/ML: NumPy, SciPy, PyTorch, TensorFlow, JAX, Flux, CUDA | **Spoken Languages:** English and Spanish

Research Experience

Research Intern in Dynamical Systems and Machine Learning May 2025–August 2025
URA-Sandia Graduate Student Summer Fellowship Livermore, California
Computational & Information Sciences Foundation, Sandia National Laboratories
Supervised by: Dr. Moe Khalil & Dr. Rileigh Bandy, Sandia National Laboratories

Research Intern in Machine Learning May 2023–August 2023
MIT Lincoln Laboratory Summer Research Program (GEM Fellowship Employer Sponsor) Lexington, Massachusetts
Group 39, Division 3, MIT Lincoln Laboratory, Massachusetts Institute of Technology
Supervised by: Dr. Sam Polk & Dr. Mabel Ramírez, MIT Lincoln Laboratory

Research Assistant in Number Theory August 2019–December 2022
Puerto Rico Louis Stokes Alliance for Minority Participation Mayagüez, Puerto Rico
Department of Mathematical Sciences, University of Puerto Rico, Mayagüez Campus
Supervised by: Prof. Reyes M. Ortiz Albino, University of Puerto Rico at Mayagüez

Research Assistant in Combinatorics June 2022–August 2022
Summer@ICERM 2022: Computational Combinatorics Providence, Rhode Island
Institute for Computational and Experimental Research in Mathematics, Brown University
Supervised by: Prof. Pamela E. Harris, University of Wisconsin-Milwaukee

Research Assistant in Algebraic Coding Theory June 2021–August 2021
NSF REU in Combinatorics, Probability and Algebraic Coding Theory Johnson City, Tennessee
East Tennessee State University & University of Puerto Rico at Ponce
Supervised by: Prof. Fernando Piñero González, University of Puerto Rico at Ponce

Projects

Project in Numerical Partial Differential Equations January 2026–May 2026
Purdue University, West Lafayette
MA61500: Numerical Methods for Partial Differential Equations | Instructor: Prof. Di Qi
TBA

Project in Numerical Differential Equations August 2025–December 2025
Purdue University, West Lafayette
MA57300: Numerical Solutions of Ordinary Differential Equations | Instructor: Prof. Di Qi
Data Assimilation for the Lorenz 96 Model

Projects in Optimal Transport and Neural Networks January 2025–May 2025
Purdue University, West Lafayette
MA59500OT: Computational Optimal Transport and Deep Generative Models | Instructor: Prof. Rongjie Lai
Normalizing Flows Optimal Transport implementation on MNIST Dataset
WGAN and Monge Map implementation on MNIST Dataset

Project in Neural Networks and Dynamical Systems November 2024–December 2024
Purdue University, West Lafayette
MA59500MM: Introduction to Mathematical Modeling | Instructor: Prof. Alexandria Volkening
Physics-Informed Neural Networks (PINNs) for Hurricane Trajectory Prediction

Project in Biotechnology June 2023–July 2023
MIT Lincoln Laboratory Summer Research Program
2023 MIT Lincoln Laboratory Intern Innovative Idea Challenge (I^3C) (3rd Place Project Winner)
Supervised by: Ryan Burrow and Ashok Kumar, MIT Lincoln Laboratory
SKINS: Skin-growth boosting and Intra-absorptive Solution bandages

Awards
Fellowships, Scholarships and Prizes
2025 Universities Research Association-Sandia National Labs Graduate Summer Fellowship May 2025–August 2025
2023 National GEM Consortium PhD Science Fellowship August 2023–May 2024
  • Purdue University Department of Mathematics Sponsorship August 2023–May 2024
  • MIT Lincoln Laboratory Employer Sponsorship (Internship) May 2023–August 2023
2023 MIT Lincoln Laboratory I^3C 3rd Place Research Proposal Prize July 2023
2022 Evertec Inc. STEM Scholarship October 2022
Puerto Rico-Louis Stokes Alliance for Minority Participation Research Scholarship August 2019–December 2022

Merits and Honors
2023 Ford Foundation Predoctoral Fellowship Honorable Mention March 2023
2022 Hispanic Scholarship Fund Scholar June 2022
National Math Alliance Predoctoral Scholar November 2021
UPRM Faculty of Arts and Sciences Honor Roll August 2018–May 2023
National Trig-Star Math Competition, 16th Overall Finalist June 2017
Eagle Scout Rank, with 2 Silver Palms May 2017

Papers and Articles (The asterisk symbol (*) denotes alphabetical order authorship.)
Research Articles and Preprints:
[1] S. Polk, E.J. Pabon-Cancel, R. Paleja, K. Chestnut-Chang, R. Jensen and M. Ramirez.
 Unsupervised Behavior Inference from Human Action Sequences (UNBIAS).
 2024 IEEE Conference on Games (CoG), Milan, Italy, 2024, pp. 1-8.
 DOI: https://doi.org/10.1109/CoG60054.2024.10645587
[2] *A. Allen, E.J. Pabon-Cancel, F. Piñero-Gonzalez and L. Polanco.
 Improving the Dimension Bound of Hermitian-Lifted Codes.
 arXiv: https://arxiv.org/abs/2302.01557
[3] *D. Chen, P.E. Harris, J. Carlos Martinez Mori, E.J. Pabon-Cancel and G. Sargent.
 Permutation Invariant Parking Assortments.
 Enumerative Combinatorics and Applications, **4:1**, 1-25 (2024). #S2R4.
 DOI: https://doi.org/10.54550/ECA2024V4S1R4
[4] *I. Byrne, N. Dodson, R. Lynch, E.J. Pabon-Cancel and F. Piñero-Gonzalez.
 Improving the minimum distance bound of Trace Goppa codes.
 Designs, Codes and Cryptography. **91**, 2649–2663 (2023).
 DOI: https://doi.org/10.1007/s10623-023-01216-6

Contributions to the profession:
[1] *P.E. Harris, Z. Markman, L. Martinez, A. Mock, E.J. Pabón-Cancel, A. Verga, and S. Wang.
 A Model for a One-Hour Workshop on Mentoring.
 MAA Focus, **43**(1), 18-21 (2023).

Teaching and Grading Experience

- MA 59500MB: Mathematical Biology (Grading) January 2026–May 2026
- MA 32500: History of Mathematics (Grading) January 2026–May 2026
- MA 26100 REC: Multivariate Calculus Recitation (Teaching) August 2025–December 2025
  January 2025–May 2025
  August 2024–December 2024
- MA 13900: Mathematics for Elementary Teachers III (Grading) June 2024–August 2024

Poster Sessions, Presentations and Conferences

- Purdue University Prospective Student Visit Weekend Graduate Student Research Expo. 20 February 2026
  Mathematical Sciences Building, Purdue University West Lafayette, Indiana
  Poster: Data-Driven Closure Models (DDCMs)

- Purdue University Student Computational and Applied Mathematics Seminar 13 February 2026
  Helen B. Schleman Hall, Purdue University West Lafayette, Indiana
  Presentation: Data-Driven Closure Models (DDCMs)

- URA-Sandia Graduate Summer Fellowship Lightning Talk 6 August 2025
  Presentation: Data-Driven Closure Models (DDCMs) Virtual Seminar

- Sandia National Laboratories CA SIP Intern Symposium 5 August 2025
  Auditorium, Sandia National Laboratories-Livermore Livermore, California
  Poster: Data-Driven Closure Models (DDCMs)

- Combinatorics and Coding Theory in the Tropics (UPR-Ponce) 18 July 2025
  Invited REU Seminar: My Story & Permutation-Invariant Parking Assortments Virtual Seminar

- Purdue University Student Commutative Algebra Seminar 18 November 2024
  Helen B. Schleman Hall, Purdue University West Lafayette, Indiana
  Presentation: Results in $\tau_{(n)}$-factorizations and $\tau_{(n)}$-primes.

- Purdue University Student Math History Seminar 9 September 2024
  Lawson Computer Science Building, Purdue University West Lafayette, Indiana
  Presentation: Testimonios: Stories of Latinos and Hispanics in Mathematics

- Underrepresented Students in Topology and Algebra Research Symposium 2024 20-21 April 2024
  University of Iowa Iowa City, Iowa

- 2023 MIT Lincoln Lab Intern Innovative Idea Challenge 14, 21 July 2023
  MIT Lincoln Laboratory Auditorium Lexington, Massachusetts
  Poster: Skin-Absorptive and Skin-Growth Boosting Bandages
  Presentation: SKINS: Skin-growth boosting and Intra-absorptive Solution Bandages

- Combinatorics and Coding Theory in the Tropics (UPR-Ponce) 7 July 2023
  Invited REU Seminar Talk: Graduate School: Application tips and advice Virtual Seminar

- 2023 ACS Junior Technical Meeting-Puerto Rico Interdisciplinary Scientific Meeting 29 April 2023
  University of Puerto Rico at Bayamón, Sponsored by PR-LSAMP Bayamón, Puerto Rico
  Presentation: Properties of $\tau_{(n)}$-primes

- 38th Interuniversity Mathematical Sciences Research Seminar 24-25 February 2023
  University of Puerto Rico, Mayagüez Campus Mayagüez, Puerto Rico
  Presentation: Permutation Invariant Parking Assortments

- 2023 AAAS Emerging Researchers National Conference in STEM 9-11 February 2023
  Omni Shoreham Hotel Washington, District of Columbia
  Poster: Permutation Invariant Parking Functions with cars of assorted lengths

- Joint Mathematics Meetings 2023   4-7 January 2023
  John B. Hynes Veterans Memorial Convention Center   Boston, Massachusetts
  Poster: Permutation Invariant Parking Functions with cars of assorted lengths
  Presentation: Permutation Invariant Parking Functions with Cars of Arbitrary Lengths
- Field of Dreams Conference 2022   4-6 November 2022
  The Graduate Hotel, University of Minnesota-Twin Cities   Minneapolis, Minnesota
- 2022 SACNAS National Diversity in STEM Conference   27-29 October 2022
  Pedro Roselló Convention Center   San Juan, Puerto Rico
  Poster: The Study of $\tau_{(n)}$-primes
- 2022 Gulf Coast Undergraduate Research Symposium   8-9 October 2022
  William Marsh Rice University   Houston, Texas
  Presentation: Properties of $\tau_{(n)}$-primes
- Summer@ICERM 2022: Computational Combinatorics   3 August 2022
  Institute for Computational and Experimental Research in Mathematics   Providence, Rhode Island
  Presentation: On Permutation-Invariant Parking Sequences
- 2022 ACS Junior Technical Meeting-Puerto Rico Interdisciplinary Scientific Meeting   9 April 2022
  University of Puerto Rico at Humacao   Humacao, Puerto Rico
  Presentation: The Study of $\tau_{(n)}$-primes
- Joint Mathematics Meetings 2022   6-9 April 2022
  Poster: Improving Bounds of Hermitian-Lifted Codes   Virtual Conference
- 37th Interuniversity Mathematical Sciences Research Seminar   25-26 February 2022
  Poster: The Study of $\tau_{(n)}$-primes   Virtual Conference
  Presentation: Improving Bounds of Hermitian-Lifted Codes
- 2021 Math REU Conference@Clemson University   19 July 2021
  Presentation: Improved Hermitian-Lifted Codes   Virtual Conference
- 2021 ACS Junior Technical Meeting-Puerto Rico Interdisciplinary Scientific Meeting   23-24 April 2021
  Presentation: The Study of $\tau_{(n)}$-atoms   Virtual Conference
- 35th Interuniversity Mathematical Sciences Research Seminar   6-7 March 2020
  University of Puerto Rico at Cayey   Cayey, Puerto Rico
  Poster: The Study of $\tau_{(n)}$-atoms

Academics and Coursework

Purdue University

Qualifying Exams:
MA 55300: Introduction to Abstract Algebra – Passed August 2024
MA 54400: Real Analysis and Measure Theory – Passed January 2026

Coursework (Graduate):

MA 61500: Numerical Methods for Partial Differential Equations	January 2026–May 2026
MA 53200: Elements of Stochastic Processes	January 2026–May 2026
MA 59800ZAT: Hamiltonian Dynamics	January 2026–May 2026
MA 55400: Linear Algebra	August 2025–December 2025
MA 51900: Introduction to Probability	August 2025–December 2025
MA 57300: Numerical Solutions of Ordinary Differential Equations	August 2025–December 2025
MA 59500OT: Computational Optimal Transport and Deep Generative Models	January 2025–May 2025
MA 59800ZY: Topics in Dynamical Systems (Bifurcation Theory)	January 2025–May 2025
MA 54600: Introduction to Functional Analysis	January 2025–May 2025
MA 59500AFF: Analytic Theory of Function Fields	August 2024–December 2024
MA 59500MM: Introduction to Mathematical Modeling	August 2024–December 2024
MA 54300: Introduction to Ordinary Differential Equations and Dynamical Systems	January 2024–May 2024
MA 54400: Real Analysis and Measure Theory	January 2024–May 2024

MA 55300: Introduction to Abstract Algebra	August 2023–December 2023
MA 53000: Functions of a Complex Variable I	August 2023–December 2023

University of Puerto Rico, Mayagüez Campus

Coursework (Graduate):

MATE 6101: Number Theory I	August 2022–December 2022
MATE 5150: Linear Algebra	January 2021–May 2021

Coursework (Undergraduate):

MATE 4000: Elements of Topology	August 2022–December 2022
MATE 4052: Advanced Calculus II	January 2022–May 2022
MATE 4051: Advanced Calculus I	August 2021–December 2021
MATE 4061: Numerical Analysis I	August 2021–December 2021
MATE 4021: Introduction to Mathematical Logic	August 2021–December 2021
MATE 4010: Introduction to Complex Variables	January 2021–May 2021
ESMA 4001: Mathematical Statistics I	January 2021–May 2021
MATE 4020: Partial Differential Equations and Fourier Series	August 2020–December 2020
MATE 4008: Introduction to Algebraic Structures	August 2020–December 2020
MATE 3040: Theory of Numbers	August 2020–December 2020
MATE 4009: Ordinary Differential Equations	June 2020–July 2020
MATE 4031: Introduction to Linear Algebra	January 2020–May 2020
COMP 3010: Introduction to Computer Programming I	January 2020–May 2020
MATE 3063: Calculus III	January 2020–May 2020
MATE 3032: Calculus II	August 2019–December 2019
MATE 3020: Introduction to Mathematical Foundations	August 2019–December 2019
MATE 3031: Calculus I	June 2019–July 2019
MATE 3172: Precalculus II	January 2019–May 2019
MATE 3171: Precalculus I	August 2018–December 2018

Academic Service & Student Associations

PythagoRUM	August 2022–December 2022
University of Puerto Rico, Mayagüez Campus	Mayagüez, Puerto Rico
Co-founder & Vice-President	

Society of Physics Students, UPRM Chapter	August 2018–December 2022
University of Puerto Rico, Mayagüez Campus	Mayagüez, Puerto Rico
Committee Assistant	