# Eric J. Pabón-Cancel

### Curriculum Vitae

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ejpaboncancel.github.io



**EDUCATION** 

**B.S. in Pure Mathematics, Minor in Applied Math**, (Magna Cum Laude)

June 2023

University of Puerto Rico, Mayagüez Campus (UPRM), Mayagüez, Puerto Rico

GPA: 3.71 // Major GPA: 3.73

**Skills** 

Software: C++, MATLAB, SAGEMath, LaTeX // Languages: Spanish (Native), English (Native/Fluent)

RESEARCH EXPERIENCE

# **Research in Machine Learning and Artificial Intelligence**

June 2023-August 2023

MIT Lincoln Laboratory | Massachusetts Institute of Technology

Supervised by: Dr. Mabel Ramírez, MIT Lincoln Laboratory

Title: TBA

• Will work on Machine Learning and Artificial Intelligence mathematical research, focused on the development of algorithms.

## **Research in Number Theory**, PR-LSAMP

August 2019-May 2023

University of Puerto Rico, Mayagüez Campus | Department of Mathematical Sciences Supervised by: Prof. Reyes M. Ortiz Albino, University of Puerto Rico at Mayagüez Title:  $Properties\ of\ \tau_{(n)}$ -primes

• Research project based on the theory of generalized factorizations. Generalized the notion of complete residue systems for  $\tau_{(2)}$ -primes,  $\tau_{(3)}$ -primes and  $\tau_{(6)}$ -primes. Developed an extension of Euler's totient function.

#### Research in Combinatorics. Summer@ICERM2022 REU

June 2022–August 2022

Institute for Computational and Experimental Research in Math I Brown University

Supervised by: Prof. Pamela E. Harris, University of Wisconsin-Milwaukee

Title: Permutation Invariant Parking Assortments

• Research project focused on the study of Permutation Invariant Parking Sequences. Characterized when the car length vector  $\vec{y}$  is minimally invariant (when  $(1^n)$  is the only invariant parking sequence), and characterized the form of the 2-tuple and 3-tuple parking sequences.

### Research in Algebraic Coding Theory, NSF ETSU/UPRP REU

June 2021–August 2021

East Tennessee State University | University of Puerto Rico-Ponce

Supervised by: Prof. Fernando Piñero González, University of Puerto Rico at Ponce

Title: Improving Bounds of Hermitian-Lifted Codes

• Algebraic Geometry project focused on locally recoverable codes from elements that arise from regions of the normal basis of the Hermitian Curve. Developed a formula that improved the counting of good recoverable functions. Improved the bound rate of the code from 0.7% to 10%.

Title: Improving the Minimum Distance Bound of Trace Goppa Codes

• Finite Fields project focused on the development of codes using Goppa matrices by using quadratic extensions and cubic extensions over finite fields. Improved the minimum distance bound of trace Goppa Polynomials.

FELLOWSHIPS
AND GRANTS

SCHOLARSHIPS, GEM Fellowship (Employer Sponsorship, MIT Lincoln Laboratory, Selected)

**Emerging Researchers National Conference in STEM Travel Grant** 

Field of Dreams Math Alliance Conference Travel Scholarship

Evertec Inc. Scholarship, \$1,000.00 PR-LSAMP Scholarship, \$4,000.00

UPRM Musical Talent Scholarship, \$800.00

December 2022

October 2022

October 2022

October 2022 August 2019–December 2022

February 2020

AWARDS	AND
MERITS	

**GEM Fellowship Pre-Selected Scholar Hispanic Scholarship Fund Scholar National Math Alliance Predoctoral Scholar UPRM Faculty of Arts and Sciences Honor Roll** National Trig-Star Math Competition, 16th Overall Finalist

Eagle Scout Rank, with 2 Silver Palms

*The Study of*  $\tau_{(n)}$ *-atoms Presentation* 

*The Study of*  $\tau_{(n)}$ *-atoms Poster* 

11. 35th Interdisciplinary Seminar of Research in Math

December 2022 June 2022–present November 2021-present August 2018-present June 2017

May 2017

April 2021

Cayey, PR March 2020

# PAPERS, ARTICLES AND **CONTRIBUTIONS**

- [1] E.J. Pabon-Cancel and R.M. Ortiz-Albino. Properties of  $\tau_{(n)}$ -primes. (In progress).
- [2] A. Allen, E.J. Pabon-Cancel, L. Polanco and F. Piñero-Gonzalez. Improving Bounds of Hermitian-Lifted Codes. (Editing for submission).
- [3] D. Chen, P.E. Harris, J. Carlos Martinez Mori, E.J. Pabon-Cancel and G. Sargent. Permutation
- V

# **PRESENTATIONS**

Invariant Parking Assortments. (Submitted). arxiv: https://arxiv.org/abs/2211.0	C
[4] P.E. Harris, Z. Markman, L. Martinez, A. Mock, <u>E.J. Pabón-Cancel</u> , A. Verga, to guide to a one-hour workshop on mentoring. (Submitted)	and S. Wang. A how
[5] I. Byrne, N. Dodson, R. Lynch, <u>E.J. Pabon-Cancel</u> , F. Piñero-Gonzalez. Impr Distance Bound of Trace Goppa Codes. (Submitted). arxiv: https://arxiv.org/al	•
AAAS Emerging Researchers National Conference in STEM     Permutation Invariant Parking Functions with cars of assorted lengths Poster	Washington, D.C. February 2023
2. Joint Mathematics Meetings 2023	Boston, MA
Permutation Invariant Parking Functions Poster and Presentation	January 2023
3. SACNAS NDISTEM Conference	San Juan, PR
The Study of $\tau_{(n)}$ -primes Poster	October 2022
4. Gulf Coast Undergraduate Research Symposium Properties of $\tau_{(n)}$ -primes Presentation	Houston, TX October 2022
5. Summer@ICERM 2022: Computational Combinatorics On Permutation-Invariant Parking Sequences Presentation	<b>Providence, RI</b> August 2022
6. 2022 JTM-Puerto Rico Interdisciplinary Science Meeting The Study of $\tau_{(n)}$ -primes Presentation	Humacao, PR April 2022
7. Joint Mathematics Meetings 2022  Improving Bounds of Hermitian-Lifted Codes Poster	Virtual Presentation April 2022
8. 37th Interdisciplinary Seminar of Research in Math Improving Bounds of Hermitian-Lifted Codes Presentation The Study of $\tau_{(n)}$ -primes Poster	<b>February 2022</b>
9. 2021 Math REU Conference @ Clemson University Improved Hermitian-Lifted Codes Presentation	Virtual Presentation July 2021
10. 2021 JTM-Puerto Rico Interdisciplinary Science Meeting	irtual Presentation

## Conferences

**Algebraic Coding Theory Workshop** 

Topics: Finite Fields and Projective Geometry

Organizer: Fernando Piñero (University of Puerto Rico at Ponce)

	Thematic Program in p-adic L-functions and Eigenvarieties  Topics: Modular Forms and Elliptic Curves (Undergraduate Summer School)  Organizers: A. Jorza, C. Raicu, E. O'Dorney (Center for Mathematics, Universit	Notre Dame, IN May 2022 - June 2022  by of Notre Dame)
	MSRI Modern Math Workshop 2022 Topics: Mathematical Modeling and Data Science Organizers: Hélene Barcelo (MSRI), Christian Ratsch (IPAM), Ulrica Wilson (IC	San Juan, PR October 2022 CERM)
WORKSHOPS AND MINI-COURSES		Virtual Course r 2022–November 2022
	12. 35th Interuniversity Mathematical Sciences Research Seminar University of Puerto Rico at Cayey, Cayey, Puerto Rico	6-7 March, 2020
	11. 2021 Junior Technical Meeting - PR Interdisciplinary Scientific Meeting Virtual Conference, sponsored by Puerto Rico Louis Stokes Alliance for Me	23-24 April, 2021 inority Participation
	<ol> <li>2021 Math REU Conference @ Clemson University         Zoom Conference. Participanting Institutions:         Clemson University, East Tennessee State University, North Carolina A&amp;T     </li> </ol>	19 July, 2021 Elon University
	9. 37th Interuniversity Mathematical Sciences Research Seminar Zoom Conference, sponsored by University of Puerto Rico, Mayagüez Can	25-26 February, 2022 <i>npus</i>
	8. Joint Mathematics Meetings 2022  Zoom Conference	6-9 April, 2022
	7. 2022 Junior Technical Meeting - PR Interdisciplinary Scientific Meeting University of Puerto Rico at Humacao, Humacao, Puerto Rico	9 April, 2022
	6. Gulf Coast Undergraduate Research Symposium Rice University, Houston, Texas	8-9 October, 2022
	5. SACNAS National Diversity in STEM Conference Pedro Roselló Convention Center, San Juan, Puerto Rico	27-29 October, 2022
	4. 2022 Field of Dreams Conference  The University of Minnesota-Twin Cities, Minneapolis, Minnesota	4-6 November, 2022
	3. Joint Mathematics Meetings 2023  John B. Hynes Veterans Memorial Convention Center, Boston, Massachuse	4-7 January, 2023
	2. AAAS Emerging Researchers National Conference in STEM Omni Shoreham Hotel, Washington, District of Columbia	9-11 February, 2023

25-26 February, 2023

Johnson City, TN

June 2021

1. 38th Interuniversity Mathematical Sciences Research Seminar

University of Puerto Rico, Mayagüez Campus, Mayagüez, Puerto Rico

STUDENT PythagoRUM Mayagüez, PR

ASSOCIATIONS Co-founder & Vice-President

August 2022–May 2023

• Served as co-founder and currently serving as Vice-President for the mathematics and computer science student association. This entity has the purpose to promote research in mathematics, as well as related fields of STEM, through professional development workshops and research colloquia.

# Society of Physics Students, UPRM Chapter

Mayagüez, PR

Committee Assistant

August 2018-May 2023

• Served as a Demonstration Committee assistant in 2 physics phenomena presentations. The presentations were for an audience of 20+ elementary school students to motivate them to study science. Served as a Sales Committee assistant in chapter food sales event to improve the chapter's office.

### Hermandad Colegial de Avivamiento

August 2018–December 2022

Committee Assistant

• Served as percussion musician for Hermandad Colegial de Avivamiento. Went on a mission to the municipality of Vieques, Puerto Rico in the winter of 2019, and helped distribute donated food, clothing and gifts for people in need.

Acting and Music Mayagüez, PR

Acting: Theater Presentations and Roles

March 2019–May 2023

- The Physics Movie (Nicholas Flamel, secondary character) (In Development)
- El Muerto (Sabás Honoré, secondary character) (August 2019)
- The Physics Show (Michael Faraday, secondary character) (March 2019)

Music: Alma Latina UPRM

February 2020-March 2020

• Worked as percussion musician and staff for the Latin jazz and salsa music group Alma Latina at UPRM.