Eric J. Pabón-Cancel

Curriculum Vitae

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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 | 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.

Scholarships, Fellowships and Grants

GEM Fellowship (Employer Sponsorship, MIT Lincoln Laboratory, Selected)	December 2022
Emerging Researchers National Conference in STEM Travel Grant	October 2022
Field of Dreams Math Alliance Conference Travel Scholarship	October 2022
Evertec Inc. Scholarship, $1,000.00	October 2022
PR-LSAMP Scholarship, $4,800.00	August 2019–December 2022
UPRM Musical Talent Scholarship, $800.00	February 2020

Awards and Merits

GEM Fellowship Pre-Selected Scholar	December 2022
Hispanic Scholarship Fund Scholar	June 2022-present
National Math Alliance Predoctoral Scholar	November 2021-May 2023
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, 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 Invariant Parking Assortments. (Submitted).
arxiv: https://arxiv.org/abs/2211.01063.

[4] P.E. Harris, Z. Markman, L. Martinez, A. Mock, E.J. Pabón-Cancel, A. Verga, and S. Wang.
A how to guide to a one-hour workshop on mentoring. (Submitted).

[5] I. Byrne, N. Dodson, R. Lynch, E.J. Pabon-Cancel, F. Piñero-Gonzalez.
Improving the Minimum Distance Bound of Trace Goppa Codes. (Submitted).
arxiv: https://arxiv.org/abs/2201.03741.

Presentations

1. **AAAS Emerging Researchers National Conference in STEM** — **Washington, DC**
   Permutation Invariant Parking Functions with cars of assorted lengths Poster — February 2023

2. **Joint Mathematics Meetings 2023** — **Boston, MA**
   Permutation Invariant Parking Functions with cars of assorted lengths Poster — January 2023
   Permutation Invariant Parking Functions with Cars of Arbitrary Lengths Presentation

3. **SACNAS National Diversity in STEM Conference** — **San Juan, PR**
   The Study of $\tau_{(n)}$-primes Poster — October 2022

4. **Gulf Coast Undergraduate Research Symposium** — **Houston, TX**
   Properties of $\tau_{(n)}$-primes Presentation — October 2022

5. **Summer@ICERM 2022: Computational Combinatorics** — **Providence, RI**
   On Permutation-Invariant Parking Sequences Presentation — August 2022

6. **2022 JTM-PRISM** — **Humacao, PR**
   The Study of $\tau_{(n)}$-primes Presentation — April 2022

7. **Joint Mathematics Meetings 2022** — **Virtual Presentation**
   Improving Bounds of Hermitian-Lifted Codes Poster — April 2022

8. **37th Interuniversity Mathematical Sciences Research Seminar** — **Virtual Presentation**
   Improving Bounds of Hermitian-Lifted Codes Presentation — February 2022
   The Study of $\tau_{(n)}$-primes Poster

9. **2021 Math REU Conference@Clemson University** — **Virtual Presentation**
   Improved Hermitian-Lifted Codes Presentation — July 2021

10. **2021 JTM-PRISM** — **Virtual Presentation**
    The Study of $\tau_{(n)}$-atoms Presentation — April 2021

11. **35th Interuniversity Mathematical Sciences Research Seminar** — **Cayey, PR**
    The Study of $\tau_{(n)}$-atoms Poster — March 2020

Conferences

1. 38th Interuniversity Mathematical Sciences Research Seminar — 24-25 February, 2023
   University of Puerto Rico, Mayagüez Campus, Mayagüez, Puerto Rico
2. AAAS Emerging Researchers National Conference in STEM — 9-11 February, 2023
   Omni Shoreham Hotel, Washington, District of Columbia
3. Joint Mathematics Meetings 2023 — 4-7 January, 2023
   John B. Hynes Veterans Memorial Convention Center, Boston, Massachusetts
4. 2022 Field of Dreams Conference of The National Math Alliance — 4-6 November, 2022
   The University of Minnesota-Twin Cities, Minneapolis, Minnesota
5. SACNAS National Diversity in STEM Conference — 27-29 October, 2022
   Pedro Roselló Convention Center, San Juan, Puerto Rico
6. Gulf Coast Undergraduate Research Symposium — 8-9 October, 2022
   Rice University, Houston, Texas
7. 2022 Junior Technical Meeting-PR Interdisciplinary Scientific Meeting — 9 April, 2022
   University of Puerto Rico at Humacao, Humacao, Puerto Rico
8. Joint Mathematics Meetings 2022 — 6-9 April, 2022
   Zoom Conference
9. 37th Interuniversity Mathematical Sciences Research Seminar — 25-26 February, 2022
   Zoom Conference, sponsored by University of Puerto Rico, Mayagüez Campus
10. 2021 Math REU Conference@Clemson University — 19 July, 2021
    Zoom Conference. Participating Institutions:
    Clemson University, East Tennessee State University, North Carolina A&T, Elon University
11. 2021 Junior Technical Meeting-PR Interdisciplinary Scientific Meeting — 23-24 April, 2021
    Virtual Conference, sponsored by Puerto Rico Louis Stokes Alliance for Minority Participation
12. 35th Interuniversity Mathematical Sciences Research Seminar — 6-7 March, 2020
    University of Puerto Rico at Cayey, Cayey, Puerto Rico

Workshops and Mini-Courses

Preliminary Arizona Winter School 2022: Heights and Model Theory — **Virtual Course**
Topics: Heights in Diophantine geometry — October 2022–November 2022
Organizers: Southwest Center for Arithmetic Geometry, University of Arizona

MSRI Modern Math Workshop 2022 — **San Juan, PR**
Topics: Mathematical Modeling and Data Science — October 2022
Organizers: Hélene Barcelo (MSRI), Christian Ratsch (IPAM), Ulrica Wilson (ICERM)

Thematic Program in p-adic L-functions and Eigenvarieties — **Notre Dame, IN**
Topics: Modular Forms and Elliptic Curves (Undergraduate Summer School) — May 2022 - June 2022
Organizers: A. Jorza, C. Raicu, E. O'Dorney (Center for Mathematics, University of Notre Dame)

2022 NSF/STEM: Fellowships Application Workshop — **Rio Piedras, PR**
Topics: Grants and Fellowships Workshop — May 2022
Organizers: Mike Westrate (Villanova University)

Algebraic Coding Theory Workshop — **Johnson City, TN**
Topics: Finite Fields and Projective Geometry — June 2021
Organizer: Fernando Piñero González (University of Puerto Rico at Ponce)

Student Associations

PythagoRUM **Mayagüez, PR**

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.