Eric J. Pabón-Cancel

Curriculum Vitae

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Education

University of Puerto Rico, Mayagüez Campus **Mayagüez, PR**
Bachelor of Science in Pure Mathematics May 2023
Curricular Sequence in Applied Mathematics
General GPA: 3.55 // 4.00 // Major GPA: 3.55 // 4.00

Courses

Foundations of Mathematics, Intro. to Algebraic Structures, Theory of Numbers, Differential Equations, Partial Differential Equations, Computer Programming I (C++), Intro. to Complex Variables, Mathematical Statistics I, Fundamentals of Mathematical Logic, Advanced Calculus I & II, Numerical Analysis I, Linear Algebra (Graduate)

Skills

Software: MATLAB Programming, SAGEMath Programming, LaTeX Proficiency
Languages: Spanish (Native) and English (Fluent)

Research Experience

Summer@ICERM 2022: Computational Combinatorics **Providence, RI**
Invariant Parking Sequences and $\vec{u}$-Parking Functions June 2022 - August 2022
Advisor: Pamela E. Harris // Participants:Douglas Chen, Gabriel Sargent, Eric J. Pabón

- Computational Combinatorics project, focused on the study of Permutation Invariant Parking Sequences and $\vec{u}$-Parking Functions. In particular, we study the sufficient conditions for a preference sequence $\vec{x}$ to be a parking sequence for a vector $\vec{y}$ that represents arbitrary car sizes.

Undergraduate Research in Pure Mathematics at UPRM **Mayagüez, PR**
The Study of $\tau_{(n)}$-primes August 2021 - May 2022
Advisor: Reyes M. Ortiz-Albino // Participants: Eric J. Pabón

- Continuation of the study of $\tau_{(n)}$-prime elements, in particular the investigation of properties for other values of n. Developed a theorem related to Euler's totient function and other lemmas related to prime distribution.

The Study of $\tau_{(n)}$-atoms August 2019 - May 2020
Advisor: Reyes M. Ortiz-Albino // Participants: Eric J. Pabón

- Project based on Number Theory and Algebra with the purpose to characterize the properties and distribution of the $\tau_{(n)}$-atoms and $\tau_{(n)}$-primes. We characterized the distribution of $\tau_{(2)}$-primes and $\tau_{(3)}$-primes.

NSF-REU in Probability, Combinatorics and Coding Theory **Johnson City, TN**
Improving Bounds of Hermitian-Lifted Codes June 2021 - August 2021
Advisor: Fernando Piñero // Participants: Lesley Polanco, Eric J. Pabón

- Algebraic Geometry Coding Theory project focused on the development of locally recoverable codes from elements that arise from regions of the normal basis of the Hermitian Curve. We used the Automorphism Group to characterize the monomials that reduce nice to improve the bound of the codes.

Improving the distance bound of Trace Goppa Codes June 2021 - August 2021
Advisor: Fernando Piñero // Participants: I. Byrne, N. Dodson, R. Lynch, E.J. Pabón

- Finite Fields Coding Theory project focused on the development of codes using Goppa Matrices and Goppa Polynomials. We focused on the development of codes using the trace and norm over a finite field and their field extensions, mainly quadratic extensions and cubic extensions. We improved the distance bound of trace Goppa Polynomials, and permuted trace Goppa Polynomials.

Papers and Articles

1. Pabón, Eric, et. al. "Improving Bounds of Hermitian Lifted-Codes with their Automorphism Group". (In progress)
2. Pabón, Eric, Oriz-Albino, Reyes. "The Study of $\tau_{(n)}$-primes". (Independent research article in progress).
3. Byrne, Isabel, et al. "Improving the Minimum Distance Bound of Trace Goppa Codes." *ArXiv.org*, ArXiv.org, 11 Jan. 2022, https://arxiv.org/abs/2201.03741. (Submitted for review for publication).

Writings and Contributions

1. A how to guide to a one-hour workshop on mentoring, with Pamela E. Harris, Zoe Markman, Lucy Martinez, Ava Mock, Eric J. Pabón Cancel, Amanda Verga, and Susan Wang. (Submitted for review for publication).

Presentations

1. **SACNAS NDiSTEM Conference** (Upcoming) — **San Juan, PR**
   The Study of $\tau_{(n)}$-primes Project Poster — October 2022
2. **2022 JTM-PRISM** — **Humacao, PR**
   The Study of $\tau_{(n)}$-primes Project Presentation — April 2022
3. **Joint Mathematics Meetings 2022** — **Virtual Presentation**
   Improving Bounds of Hermitian-Lifted Codes Project Poster — April 2022
4. **37th SIDIM** — **Virtual Presentation**
   Improving Bounds of Hermitian-Lifted Codes Presentation — February 2022
   The Study of $\tau_{(n)}$-primes Project Poster
5. **2021 Math REU Conference @ Clemson University** — **Virtual Presentation**
   Improved Hermitian-Lifted Codes Presentation — July 2021
6. **2021 JTM-PRISM** — **Virtual Presentation**
   The Study of $\tau_{(n)}$-atoms Presentation — April 2021
7. **35th SIDIM** — **Cayey, PR**
   The Study of $\tau_{(n)}$-atoms Project Poster — March 2020

Conferences

1. SACNAS National Diversity in STEM Conference (Upcoming) — 27-29 October 2022
   Pedro Roselló Convention Center, San Juan, Puerto Rico
2. 2022 Junior Technical Meeting - PR Interdisciplinary Scientific Meeting — 9 April, 2022
   University of Puerto Rico at Humacao, Humacao, Puerto Rico
3. Joint Mathematics Meetings 2022 — 6-9 April, 2022
   Zoom Conference
4. 37th Interuniversity Mathematical Sciences Research Seminar — 25-26 February, 2022
   Zoom Conference, sponsored by University of Puerto Rico, Mayagüez Campus
5. 2021 Math REU Conference @ Clemson University — 19 July, 2021
   Zoom Conference. Participanting Institutions:
   Clemson University, East Tennessee State University, North Carolina A&T, Elon University

6. 2021 Junior Technical Meeting - PR Interdisciplinary Scientific Meeting 23-24 April, 2021
   Virtual Conference, sponsored by Puerto Rico Louis Stokes Alliance for Minority Participation

7. 35th Interuniversity Mathematical Sciences Research Seminar 6-7 March, 2020
   University of Puerto Rico at Cayey, Cayey, Puerto Rico

Workshops

MSRI Modern Math Workshop 2022 **San Juan, PR**
Topics: TBA (Upcoming) October 2022
Organizers: Hélene Barcelo (MSRI), Christian Ratsch (IPAM), Ulrica Wilson (ICERM)

- Mathematical workshop for networking with the math community, sponsored by the Mathematical Sciences Research Institute, Institute for Pure and Applied Mathematics (University of California, Los Angeles), and the Institute for Computational and Experimental Research in Mathematics (Brown University).

Thematic Program in p-adic L-functions and Eigenvarieties **Notre Dame, IN**
Topics: Modular Forms and Elliptic Curves Summer 2022
Organizers: Andrei Jorza, Claudiu Raicu, Evan O'Dorney (University of Notre Dame)

- Undergraduate Summer School in Modular Forms. A problem-solving introduction to modular forms and elliptic curves. During the week, we received mini-courses in Algebraic Geometry, Elliptic Geometry, and Complex Analysis, and at the end we unified these fields, developing the bridge between Number Theory and Complex Analysis. This undergraduate workshop is hosted by the Center for Mathematics at the University of Notre Dame and supported by the National Science Foundation.

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

- Multi-day Professional Development and Grant-Writing Workshop. Intensive training in the theory and practice of research project design, grant development, and writing successful grant and fellowship proposals. Detailed training on NSF review criteria, Intellectual Merit and Broader Impacts.

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

- Coding theory workshop, presented by Prof. Fernando Piñero at East Tennessee State University to introduce students to the fundamental notions of finite fields and projective geometry. We learned how to construct a finite field, and got an introduction to visualization of algebraic objects in the projective plane.

Awards and Merits

Hispanic Scholarship Fund Scholar — June 2022 - present
Math Alliance Predoctoral Scholar — November 2021 - present
Faculty of Arts and Sciences Honor Roll — August 2018 - present
PR-LSAMP Scholar — August 2019 - 2022
SPS Freshman of the year — August 2018 - May 2019
Eagle Scout Rank — May 2017

Scholarships and Fellowships

2021-2022 PR-LSAMP Scholarship — Amount: $1,600.00
UPRM Musical Talent Scholarship (Second Semester 2020) — Amount: $800.00
2019-2020 PR-LSAMP Scholarship — Amount: $1,600.00

Professional Memberships
SACNAS Member
National Eagle Scout Association Member

Leadership Experience and Development

Fundación Yo Puedo, Inc. **Manatí, PR**
Roles and Activities January 2016 - present

- Participated in weekly activities providing food and clothing to the poor people in Manatí, Puerto Rico. Created an initiative of knit hats for children suffering from cancer. Recruited 7 classmates for one event.

Boy Scouts of America, Troop 24 **Barceloneta, PR**
National Youth Leadership Training-2-2017 October 2018 - November 2018

- Boy Scout course for training youth to overcome themselves and become leaders in their troop and community. Gave six lectures about leadership to a patrol of 7 people, serving as the Troop Guide of the patrol.

Order of the Arrow, Yokahu Lodge 506 Summer 2018 - Summer 2019

- Served as counselor for the youth in two Order of the Arrow camps. Served as secretary for the Order of The Arrow Arasibo district, managing to recruit 5 new member candidates in the summer of 2018.

Boy Scouts of America, Troop 858 **Vega Baja, PR**
National Youth Leadership Training-1-2017 June 2017

- Served as Troop Guide for a patrol of 6 people, giving six main patrol lectures about leadership and motivation. Gave a servant leadership conference to an audience of 60+ scout youth.

Eagle Scout Service Project March 2017 - May 2017

- Earned the Eagle Scout rank, the highest honor a Scout can achieve, by developing the Eagle Scout Service Project with the purpose to benefit the community. The project was at an outdoor gym and park, and was able to build a 10ft by 10ft gazebo and painted it, built two benches and painted them, painted the park's swings and marked a gravel path for jogging at the gym. Recruited 30+ people to run the project properly.

Juan Quirindongo Morell High School **Vega Baja, PR**
Roles and Achievements August 2015 - June 2018

- Leader of the school math club, providing guidance to 5+ students interested in advanced math and mathematical competitions. Qualified for the Puerto Rico Math Olympiad in the district of Vega Alta and Region of Arecibo for three consecutive years, and qualified for the 2017 National Trig Star Competition of the National Society of Professional Surveyors. Puerto Rico resulted the 16th finalist of the total participants.

Extracurricular Activities

Acting
Theater Presentations and Roles March 2019 - present

- 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)

Student Associations
PythagoRUM August 2019 - present

- Undergraduate mathematical association with the focus to unite STEM fields through education.
- Created a database of mathematical books and resources of different topics.

Hermandad Colegial de Avivamiento August 2018 - present

- Currently serving as percussion musician for Hermandad Colegial de Avivamiento, a Christian group for emotional support at UPRM.

Society of Physics Students, UPRM Chapter August 2018 - May 2020

- Served as a Demonstration Committee assistant in 2 physics phenomena presentations.
- Served as a Sales Committee assistant in multiple chapter food sales events in order to improve the chapter's office.

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.