

Alec S. Zabel-Mena

Master's Student in Pure Mathematics

Carolina, Puerto Rico

alec.zabel@upr.edu | [azabelmena.github.io](https://github.com/azabelmena) | github.com/azabelmena

Education

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| 2022 - Present | University of Puerto Rico , Rio Piedras, Puerto Rico
<i>Master's Degree in Pure Mathematics</i> |
| 2016 - 2022 | University of Puerto Rico , Rio Piedras, Puerto Rico
<i>Bachelor's Degree in Pure Mathematics, with a Minor in Cybersecurity</i> |

Honors

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| 2016 - 2021 | Dean's List , University of Puerto Rico |
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Publications

1. Heerlal, J., Zabel-Mena, A.S., & Agrinoni, C.A. (2025). *Absolute Irreducibility of Generalized Trinomials Defined by APN Functions of The Form $g(x) = x^{2^{ie}} + h(x)$ over \mathbb{F}_2^s* . Springer Proceedings in Mathematics & Statistics, (To be Submitted)

Talks and Colloquiums

1. Zabel-Mena, Alec, S., Heeralal Janwa, Agrinoni, Carlos, A. (2025). *Absolute Irreducibility of Generalized Trinomials Defined by APN Functions of The Form $g(x) = x^{2^{ie}} + h(x)$ over \mathbb{F}_2^s* (Contributed Talk). 39th Seminario Interuniversitario de Investigación en Ciencias Matemáticas (SIDIM), Ponce, P.R.
2. Zabel-Mena, Alec, S., Heeralal Janwa, Agrinoni, Carlos, A. (2024). *An Efficient Implementation and Analysis Of Zeta Functions Of APN Curves and Their Protograph LDPC Codes* (Contributed Talk). 39th Seminario Interuniversitario de Investigación en Ciencias Matemáticas (SIDIM), Humacao, P.R.
3. Zabel-Mena, Alec, S., Heeralal Janwa, Agrinoni, Carlos, A. (2023). *An Efficient Implementation and Analysis Of Zeta Functions Of APN Curves and Their Protograph LDPC Codes* (Poster Session). 2023 Forward Research Innovation Summit, San Juan, P.R.
4. Zabel-Mena, Alec, S., Heeralal Janwa, Agrinoni, Carlos, A. (2024). *An Efficient Implementation of Computing The Rational Points and Zeta-functions of Curves Associated with APN Monomials and Applications to Cyclic codes* (Contributed Talk). 55th ACS Junior Technical Meeting, Humacao, P.R.

Grants & Awards

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| 08-2024 - 05-2025 | PR Space Grant Fellowship and Scholarship Program , NASA
Grant No. 80NSSC20M0052 |
| 01-2024 - 05-2024 | PR Research Assistantship , NASA
Grant No. 80NSSC20M0052 |
| 01-2023 - 05-2023 | PR Research Assistantship , NASA
Grant No. 80NSSC20M0052 |
| 08-2022 - 05-2023 | PR Space Grant Fellowship and Scholarship Program , NASA
Grant No. 80NSSC20M0052 |

08-2021 - 05-2022 | **Puerto Rico Louis Stokes Alliance for Minority Participation**, Univeristy of Puerto Rico

Teaching

2020 - 2021 | **Proyecto Tutorias DECEP**, University of Puerto Rico
 Conducted assessments to identify the educational needs of my students and developed individualized learning plans.

 Tasked with providing tutoring services to seven high school students for 10 hours a week in the subjects of Algebra and Pre-Calculus.

2020 - 2021 | **Tutor**, Self-Employed
 Evaluated students learning styles and provided appropriate techniques for maximizing understanding and minimizing frustration.

 Simplified math concepts while coaching students to think critically when problem solving; eventually introducing them to axiomatic systems within mathematics.

 Provided tutoring one-on-one to five highschool students in the subjects of Algebra, Pre-Calculus, and Geometry for two times a week, at two hours for each session.

Memberships & Affiliations

08-2024 - 05-2025 | **Consejo General de Estudiantes**, Univeristy of Puerto Rico, Rio Piedras
Representante ante el Consejo de Estudios Graduados e Investigacion

08-2024 - 05-2025 | **Consejo de Estudiantes de Ciencias Naturales**, Univeristy of Puerto Rico, Rio Piedras
Representante ante el Decanato de Estudios Graduados e Investigacion
 Resigned from Post

08-2025 - 05-2026 | **Asociacion Estudiantil de Matematicas (AeMAT)**, Univeristy of Puerto Rico, Rio Piedras
Treasurer
 Post yet to be assumed.

08-2022 - 05-2024 | *Treasurer*

08-2025 - 05-2026 | **Asociacion de Estudiantes de Ciencias de Computos (AECC)**, Univeristy of Puerto Rico, Rio Piedras

2017 - 2018 | **Lembranca Negra Capoeira**, Puerto Rico
Corda Cura-Verde

2019 - Present | **Senzala Capoeira**, Puerto Rico
Corda Crua-Laranja
 Took hiautus between the end of 2019 and the start of 2023.

Language Skills

1. English
2. Spanish
3. Portuguese

Software Skills

1. LaTeX
2. Knowledge of UNIX-like systems and the command line to streamline workflow and automate repetative tasks.
3. Privacy and Security Oriented
4. C Programing
5. SAGE mathematics software
6. Nix declarative system language