

## EDUCATION

### University of Texas Rio Grande Valley

Edinburg, Texas

*M.S. Mathematics, Thesis Track*

2025 - 2027 (*expected*)

- GPA: 4.00/4.00
- Advisor: Prof. Alexey Glazyrin
- Research area: Combinatorics in Extremal Set Problems
- Coursework: Algebra I, Advanced Analysis I, Partial Differential Equations, Probability and Statistics

### University of Texas Rio Grande Valley

Edinburg, Texas

*B.S. Mathematics, Concentration in Pure Mathematics, Minor in Physics*

2023 - 2025

- GPA: 4.00/4.00
- Coursework: Number Theory, Real Analysis I & II, Complex Variables, Modern Algebra I, Galois Theory

### University of Texas Rio Grande Valley

McAllen, Texas

*A.S. in Mathematics*

2020 - 2023

- GPA: 4.00/4.00
- Coursework: Calculus III, Differential Equations, Linear Algebra

## PUBLICATIONS

1. Arora, Palak & Bruda, Glenn & Fang, Bruce & **Marquez, Raul** & Miller, Steven & Prapashtica, Beni & Sharan, Vismay & Son, Daeyoung & Tang, Xueyiming & Waheed, Saad. (2025). Upper Bounds for the Lowest First Zero in Families of Cuspidal Newforms. *Journal of Number Theory*. 277. 10.1016/j.jnt.2025.02.012.
2. Bruda, Glenn & Cooper, Joseph & Jaber, Kareem & **Marquez, Raul** & Miller, Steven. (2024). Variants of Conway Checkers and k-nacci Jumping. 10.48550/arXiv.2408.08856.
3. Bruda, Glenn & Fang, Bruce & Gilman, Pico & **Marquez, Raul** & Miller, Steven & Prapashtica, Beni & Son, Daeyoung & Waheed, Saad & Wang, Janine. (2024). Stability of Matrix Recurrence Relations. 10.48550/arXiv.2408.12660.
4. Bruda, Glenn & Fang, Bruce & **Marquez, Raul** & Miller, Steven & Prapashtica, Beni & Sharan, Vismay & Son, Daeyoung & Waheed, Saad & Wang, Janine. (2025). The Limiting Spectral Distribution of Various Matrix Ensembles Under the Anticommutator Operation. 10.48550/arXiv.2502.00505.
5. Cashman, Caroline & Cooper, Joseph & **Marquez, Raul** & Miller, Steven & Shuffleton, Jenna. (2024). Hyper-bishops, Hyper-rooks, and Hyper-queens: Percentage of Safe Squares on Higher Dimensional Chess Boards. 10.48550/arXiv.2409.04423.

## TALKS

1. **Marquez, Raul**. Elliptic Curves: Understanding Their Significance and the Point Addition Operation. Stephen F. Austin University. *18th Texas Undergraduate Mathematics Conference*. October 28, 2023.
2. **Marquez, Raul**. Upper Bounds for the Lowest First Zero in Families of Cuspidal Newforms. Prairie View Texas A&M. *104th Annual Meeting of the Texas Section of the Mathematical Association of America*. March 29, 2025.
3. Bruda, Glenn & **Marquez, Raul**. Upper Bounds for the Lowest First Zero in Families of Cuspidal Newforms. University of North Texas. *37th Automorphic Forms Workshop*. May 3, 2025.

RESEARCH EXPERIENCE	<b>Graduate Research Assistantship / Undergraduate Researcher</b>	
	<i>UTRGV College of Mathematical and Statistical Sciences</i>	February 15, 2025 – Present
	<ul style="list-style-type: none"> <li>Analyzed problems in extremal set theory to minimize distance sets in Hamming and Johnson Spaces</li> <li>Coded on several projects to incorporate the programs and theorems to further progress within the project</li> <li>Corresponded with other participants in a variety of projects and works to analyze solutions to research problems and develop papers intended for publication</li> </ul>	
	<b>Chief of Staff / Researcher</b>	
	<i>Williams College SMALL REU Program</i>	June 10, 2024 - August 10, 2024
	<ul style="list-style-type: none"> <li>Worked with main program advisor to coordinate the official duties of important processes within the program</li> <li>Analyzed several problems within the field of mathematics concerning L-Functions, Fibonacci Sequences, Elliptic Curves, and Random Matrix Theory</li> <li>Corresponded with other participants in a variety of projects and works to analyze solutions to research problems and develop papers intended for publication</li> </ul>	
WORK EXPERIENCE	<b>Academic Tutor</b>	
	<i>UTRGV Mathematics and Science Academy</i>	September 3, 2024 – December 15, 2024
	<ul style="list-style-type: none"> <li>Educated several students on college-level proof-based mathematics on homework assignments, test preparation, and study habits</li> <li>Coordinated with tutors and faculty to ensure a cooperative learning for high school students of all backgrounds to have a fruitful learning experience</li> </ul>	
	<b>Academic Tutor</b>	
	<i>UTRGV College Assistance Migrant Program</i>	August 28, 2023 – December 18, 2023
	<ul style="list-style-type: none"> <li>Educated several students personally and devised specific solutions to learning needs and requirements for undergraduate work in mathematics, sciences, and history</li> <li>Corresponded with tutors, mentors, and managers to devise the most effective solutions for students in different areas of education and their personal issues</li> <li>Facilitated healthy learning environment crucial for first-generation and migrant students to thrive in several scenarios and take advantage of their educational opportunities</li> </ul>	
LEADERSHIP & ACTIVITIES	<b>Treasurer</b>	
	<i>UTRGV Mathematical Society</i>	August 28, 2023 - Present
	<ul style="list-style-type: none"> <li>Tutored oncoming students on problems concerning undergraduate-level work</li> <li>Organized events, meetings, fundraising to improve the club's funds and spread mathematics</li> <li>Communicated with corresponding members on fundraising events, organizing mathematics competitions, and designing the website</li> <li>Attended several mathematics-related lectures, presentations, and conferences outside of undergraduate work and class concerning a variety of topics in applied and pure mathematics</li> </ul>	
	<b>Volunteer</b>	
	<i>South Texas Astronomical Society</i>	July 20, 2023 - Present
	<ul style="list-style-type: none"> <li>Promoted astronomical activities and science awareness in the Rio Grande Valley towards the general community</li> <li>Organized public events and cooperated with members to promote the organization's goals</li> </ul>	

SEMINARS AND READING PROGRAMS	<b>Preliminary Arizona Winter School (PAWS)</b> <i>University of Arizona</i> • Projects: Root Systems w/ Professor Melissa Emory	Online Synchronous Fall 2024
	<b>Directed Reading Program</b> <i>University of Texas</i> • Projects: Algebraic Topology w/ Abhishek Shivkumar	Online Synchronous Summer 2025
	<b>Elliptic Curves Seminar</b> <i>University of Texas Rio Grande Valley</i> • Projects: Basics of Elliptic Curves w/ Debanjana Kundu	Edinburg, Texas Fall 2024
AWARDS AND HONORS	• UTRGV Math Society Outstanding Overall Undergraduate,	May 2025
	• NSF S-STEM Mathematics Graduate Scholarship,	January 2025
	• Fall 2024 UTRGV Open Mathematics Competition Winner,	May 2024
	• Leona B. Cameron Scholarship in Math,	May 2024
	• Keppel Am-Fels Scholarship,	May 2024
	• UTRGV Math Society Outstanding Undergraduate Performance,	May 2024
	• Top UTRGV Putnam Scorer,	2023,2024
	• UTRGV Presidential List,	January 2024 - Present
	• Presidential Scholarship,	May 2023
	• Engineering Design and Development People's Choice Award,	May 2023
SKILLS AND INTERESTS	<b>Skills:</b> Leadership, Communication, Teamwork, Problem-Solving, Writing, and Rhetoric.	
	<b>Interests:</b> Mathematics, Physics, Engineering, Politics, Writing, and Music	
	<b>Programming:</b> Python, C++, Java, G-Code, MATLAB.	