

# Lizette Gonzalez Rodriguez

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## EDUCATION

**University of Texas at San Antonio – B.S. in Physics, Minor in Astronomy/Astrophysics** **Aug 2022 - Present**

- BOLD Scholars Program Scholar
- Graduate Student Mentorship Initiative (GSMI) Scholar, 2025
- San Antonio Education Partnership Scholar
- FUTURE of Physics Participant, 2025

## RESEARCH EXPERIENCE

**Applying Clustering Algorithms to X-ray Emission from Planetary Nebulae** **Summer 2024**

*Harvard and Smithsonian Center for Astrophysics (CfA)* *CREATE Intern*

- Developed and tested clustering algorithms (e.g., DBSCAN) to analyze X-ray emission morphologies in planetary nebulae and advance classification methods.

**Microwave and Millimeter-Wave Systems: Propagation Studies at 5G Wireless Bands** **Summer 2023**

*University of Puerto Rico at Mayagüez* *RADIAL Intern*

- Conducted behavioral analysis of 5G wireless bands using signal generators, spectrum analyzers, and HyperLog® antennas.
- Investigated wave propagation characteristics at millimeter-wave frequencies under varying environmental conditions.

## ACADEMIC PROJECTS

**Open Cluster Project** **Jun 2025 - Present**

*University Of Texas at San Antonio* *Lab Assistant*

- The Open Cluster Project, also called the OC project, is an academic effort that uses HDBSCAN to determine star membership in 25 open clusters from NASA's Gaia mission.

**Understanding Clustering Algorithm Applied to Planetary Nebulae** **Jan - May 2025**

*University Of Texas at San Antonio* *Student*

- A developed and tested parameter study of clustering algorithms (e.g., DBSCAN) to analyze X-ray emission morphologies in planetary nebulae and to best classify X-ray observations.

**MEEPsat (Methane Emissions from Permafrost Satellite Tracker)** **Sept 2024 - Present**

*University Of Texas at San Antonio* *Communications Project Lead*

- Co-authored MEEPsat, a CubeSat mission proposal submitted to NASA, in collaboration with three UTSA student organizations; designed to monitor methane emissions over the North Pole and raise public awareness of climate change.

## PRESENTATIONS AND PUBLIC ENGAGEMENT

[1] Rodriguez, L.G. "Showcasing Inspirational Student Work Amplified by Generative AI". Adobe Digital Literacy Café Webinar Series. Oral presentation delivered via Zoom, San Antonio, TX, April 2025.

[2] Rodriguez, L.G. "Applying Clustering Algorithms to X-ray Emission from Planetary Nebulae". American Astronomical Society Meeting Abstracts, 245. Poster presented at the AAS Winter Meeting, Washington, D.C., January 2025.

[3] Rodriguez, L.G. "Skills Gained Through Astrophysics Research: A Reflective Overview". Oral presentation at the UTSA Roadrunner Research Showcase, San Antonio, TX, November 2024.

[4] Rodriguez, L.G. "Microwave and Millimeter-Wave Systems: Propagation Studies at 5G Wireless Bands". American Astronomical Society Meeting Abstracts, 243. Poster presented at the AAS Winter Meeting, New Orleans, LA, January 2024.

# WORKSHOPS

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| <b>Chandra X-ray Data Analysis Workshop</b>   | <b>May 2025</b>    |
| <i>University Of Massachusetts Lowell</i>   | <i>Participant</i> |
| <ul style="list-style-type: none"><li>Received hands-on training in X-ray data reduction, imaging, and spectral analysis using CIAO and Sherpa tools.</li></ul> |                    |

# SKILLS AND TOOLS

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| <ul style="list-style-type: none"><li><b>Programming:</b> Python (Astropy, Matplotlib, Scikit-learn), C++</li><li><b>Scientific Software:</b> CIAO, Sherpa, Jupyter</li><li><b>Data Analysis:</b> Machine learning (DBSCAN, HDBSCAN), Signal Processing, Principal Component Analysis (PCA)</li><li><b>Instrumentation:</b> Spectrum Analyzers, Horn Antennas, HyperLog® Antennas</li><li><b>Tools:</b> GitHub, Overleaf</li><li><b>Languages:</b> English (Business Professional), Spanish (Conversational)</li></ul> |
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# AWARDS, HONORS, AND OUTREACH

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| <ul style="list-style-type: none"><li>Chambliss Finalist, American Astronomical Society (2024 and 2025)</li><li>President's List, UTSA (2024)</li><li>Certification: Responsible Conduct of Research for Engineers (CITI Program)</li><li>Science Outreach: Haunted Observatory, Science Semana, UTSA Day, Dia en La Sombrilla, Bestfest, UTSA Solar Eclipse, Girl Scouts of Southwest Texas</li><li>Leadership: Involvement Fair (SPS), Girl Scouts Adventure Day, Public tabling and events</li></ul> |
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# EXTRA-CURRICULAR ACTIVITIES AND LEADERSHIP ROLES

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| <b>Society of Physics Students Astronomy Club</b>  | <b>Mar 2024 - Present</b> |
| <i>University Of Texas at San Antonio</i>  | <i>Co-Lead</i>            |
| <ul style="list-style-type: none"><li>Co-Lead of UTSA's Astronomy Club, a sub-organization of SPS focused on community outreach and astronomy education through public stargazing events, guest speakers, and hands-on engagement.</li></ul> |                           |

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| <b>Society of Physics Students</b>  | <b>Aug 2022 - Mar 2024, Mar 2024 - Present</b> |
| <i>University Of Texas at San Antonio</i>   | <i>Secretary and Outreach Officer</i>          |
| <ul style="list-style-type: none"><li>Coordinated outreach events, field trips, and guest speaker sessions for the Society of Physics Students to promote engagement and scientific community-building.</li><li>Organized and supported community outreach events, including the Girl Scouts of Southwest Texas Adventure Day, to expand STEM engagement and public science literacy.</li></ul> |  |

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| <b>Mariachi los Pisanos</b>  | <b>Aug 2022 - Dec 2023</b>          |
| <i>University Of Texas at San Antonio</i>  | <i>Instrumentalist and Vocalist</i> |
| <ul style="list-style-type: none"><li>Performed with UTSA's Mariachi Los Paisanos, promoting cultural heritage through music and community engagement.</li></ul> |                                     |

# EXPERIENCE

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|---|--|
| <b>Allen Sharp LLC</b>  | <b>Summer 2021, Summer 2022</b>            |
| <i>Lackland Airforce Base - San Antonio, TX</i>   | <i>Food Service Cashier and Specialist</i> |
| <ul style="list-style-type: none"><li>Handled transactions, inventory, and basic accounting during high-volume periods.</li><li>Assisted in facility upkeep and day-to-day operational support under supervisor guidance.</li></ul> |  |