Thara Caba

MSc. Student, Astrophysics & Space Science

 tcaba2 | in TharaCaba | 🌐 tcaba2.github.io | ✉ tcaba60@uasd.edu.do |

SUMMARY

I am an astrophysics master's student with a strong background in multi-messenger astrophysics, statistics, and computational techniques. I have hands-on experience analyzing data from major astrophysical experiments such as MAGIC and IceCube, with a focus on source detection.

RESEARCH EXPERIENCE

Research Assistant - Autonomous University of Santo Domingo (UASD)   Sep 2019 - Present

Support administrative and research activities for the Institute of Physics. I assist in collaborative research, report writing, and organizing academic events. *Supervised by Dr. Nelphy de la Cruz, Statistical and Computational Physics Research Group Leader.*

Research Assistant - Max Planck Institute for Physics   Jul 2024 - Sep 2024

Conducted analysis using Bayesian-based software to calculate the association probability between neutrino events and astrophysical sources. Worked with IceCube neutrino data, focusing on the TXS 0506+056 and IC170922A association under different spectral models (Power Law, $p\gamma$). *Supervised by Dr. Francesca Capel, Astrophysical Messengers Group Leader.*

Remote Fellow - Office of Astronomy for Development   Jun 2023 - Oct 2023

Contributed to the Astronomy for Mental Health flagship project. Developed student engagement strategies and organized workshops to promote mental health through astronomy. *Supervised by MSW. Dominic Vertue.*

Research Assistant - University of Padova   Feb 2022 - Feb 2023

Worked on bachelor's thesis in multi-messenger astrophysics, analyzing MAGIC telescope data. Derived very high-energy gamma-ray flux upper limits and created sky maps using SkyPrism software. *Supervised by Dr. Elisa Bernardini & Dr. Konstancja Satalecka.*

Research Assistant - University of Louisville   Aug 2022 - Nov 2022

Participated in the Central American - Caribbean (CENCA) Bridge in Astrophysics research program. Conducted a study on spiral galaxies and how their environment affects the number of arms. *Supervised by Dr. Benne Holwerda.*

EDUCATION

Sep 2023 - Present	**Master's Degree**, Erasmus Mundus Joint Master Program in Astrophysics & Space Science University of Rome Tor Vergata & University of Belgrade
Sep 2017 - Apr 2023	**Bachelor's Degree** (cum laude), Physics Autonomous University of Santo Domingo *Thesis: Deriving very high energy gamma-ray flux upper limits on sky maps using the SkyPrism software. Supervised by Dr. Elisa Bernardini & Dr. Konstancja Satalecka.*

Honors, Awards & Grants

Erasmus Mundus Joint Master Scholarship 2023 - Present
Awarded by Erasmus+ to support my master's degree in Astrophysics and Space Science.

Women and Girls in Astronomy Mini-Grant 2023 - 2025
Granted by the North American Regional Office of Astronomy for Development (NA-ROAD) to organize the Month of Astronomy in the Dominican Republic.

Hanrieder Fellowship 2024
Granted by the Max Planck Institute for Physics and the Hanrieder Foundation to support my internship at the Max Planck Institute for Physics.

Italian Ministry of Foreign Affairs and International Cooperation Scholarship 2023 - 2024
Awarded by the Italian Ministry of Foreign Affairs to support my master's degree in Astrophysics and Space Science.

International Astronomy and Astrophysics Competition National Award 2023
Awarded for achieving the highest nationwide score in the final round of the International Astronomy and Astrophysics Competition 2023. Verify-ID: FN-2023-F3E6271733C.

Idelisa Bonnelly Scholarship for Women in STEM 2021 - 2023
Awarded by the Ministry of Youth of the Dominican Republic to support the completion of my bachelor's in physics.

National Scholarship 2018 - 2021
Granted by the Ministry of Higher Education, Science, and Technology of the Dominican Republic to support my bachelor's in physics.

Selected Posters & Talks

Nov 2024	**Talk**: Month of Astronomy in the Dominican Republic, *6th Shaw-IAU Workshop on Astronomy for Education*, Online.
Jan 2024	**Panel**: Astronomy for a Better World, *American Astronomical Society Winter Meeting*, United States.
Jul 2023	**Poster**: The Multi-messenger Astrophysics Approach and the MAGIC Telescopes, *Giambiagi Winter School on Cosmology*, Argentina.
May 2023	**Poster**: Study of Spiral Galaxies and Their Environment, *PLANCKS*, Italy.
Jan 2023	**Talk**: Study of Spiral Galaxies and Their Environment, *IV International Congress of the Dominican Physical Society*, Dominican Republic.
Nov 2022	**Talk**: The Multi-messenger Astrophysics Approach and the MAGIC Telescopes, *VIII Student Congress of Physics and Mathematics*, Guatemala.
Sep 2022	**Talk**: The Multi-messenger Astrophysics Approach and the MAGIC Telescopes, *VII Student Congress of Scientific Research and Technology*, Dominican Republic.
Sep 2022	**Poster**: The Multi-messenger Astrophysics Approach and the MAGIC Telescopes, *International Conference of Physics Students*, Mexico.

Teaching Experience

Teaching Assistant 2021 - 2023
Modern Physics, 7th Semester, UASD. Assisted in lectures, graded assignments and exams, and provided academic support to students.

Teaching Assistant 2023

Basic Physics, 1st Semester, UASD. Assisted with student queries, and evaluated coursework.

Volunteer & Outreach Work

jIAPS Editor-in-Chief 2024 - Present

In charge of the 2025 issue of the journal for the International Association of Physics Students (IAPS), a non-profit organization run by physics students worldwide.

Social Media Manager 2023 - Present

Managed social media for the Dominican Physical Society, promoting events and scientific outreach.

Month of Astronomy in the Dominican Republic 2023 - 2025

Organized a month-long series of talks and activities introducing high school and university students to astronomy. Supported by NA-ROAD, Heising-Simons Foundation, and IAPS.

CENCA Bridge in Astrophysics Mentor 2023 - 2024

Mentored two students during their first research experience: **Leiany De Oleo Rodríguez** (Investigating the Circumgalactic Medium) and **Daniela Azucena Cardona Cuc** (Binarity in young star clusters).

Teaching Committee Student Representative of MASS 2023 - 2024

Represent students in the MASS Teaching Committee, contributing to decisions on academic program changes and course consistency.

Secretary 2022 - 2023

Managed administrative duties, including communications and organization of events, for IAPS.

Member of Affiliated Commission 5 2022 - 2023

Maintained relations between IAPS and the International Union of Pure and Applied Physics, with a focus on communications.

PR Manager 2021 - 2022

Led the social media and public relations efforts for IAPS, promoting events and engaging with the global physics student community.

President of the Association of Physics Students UASD 2020 - 2021

Strengthened the student association's connection to IAPS, increasing opportunities for students. Managed administrative duties and facilitated communication between students and faculty.

CERTIFICATIONS

2025	Hands-on Activity on Spectroscopic Data Reduction, **MASS Winter School 2024**
2024	Observational Astronomy and Data Processing, **MASS Summer School 2024**
2024	Python Essentials 2, **Cisco Networking Academy**
2024	From Stars to Cosmic Explosions: Bridging Scales in Astrophysical Data Analysis, **MASS Winter School 2024**
2024	Introduction to Quantum Computing, **The Coding School**
2023	Giambiagi Winter School on Cosmology, **International Center for Theoretical Physics and University of Buenos Aires**
2023	Designing Effective Science Communication, **University of Colorado Boulder**
2022	Introduction to Data Science, **Cisco Networking Academy**
2022	Python Essentials 1, **Cisco Networking Academy**
2022	Gravitational Wave Open Data Workshop, **LIGO Scientific Collaboration and VIRGO Collaboration**
2021	C for Everyone: Structured Programming, **University of California**

SKILLS

Programming	Python, C/C++, FORTRAN, SQL, Git, Bash.
Academic Tools	LaTeX, Microsoft Office.
Languages	Spanish (native), English (fluent).