

Thara Caba

MSc. Astrophysics & Space Science

 [tcaba2](#) |  [TharaCaba](#) |  [tcaba2.github.io](#) |  tcaba60@uasd.edu.do |

SUMMARY

Astrophysicist specializing in multi-messenger astrophysics, with research experience at IceCube, MAGIC, CTAO, SWIFT and others. Skilled in data analysis, machine learning, and tools for high-energy astrophysics, with strong outreach and leadership experience.

EDUCATION

Master's Degree

Sep 2023 - Sep 2025

(110/100) [Erasmus Mundus Joint Master Program in Astrophysics & Space Science](#), University of Rome Tor Vergata & University of Belgrade.

Thesis: Constraining the High-energy Emission of NGC 1068. Supervised by Dr. Francesco Tombesi, Dr. Dragana Ilic, Dr. Alessandra Lamastra & Dr. Francesco Saturni.

Bachelor's Degree

Sep 2017 - Apr 2023

(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.

RESEARCH EXPERIENCE

Gamma-ray observation simulations

University of Rome Tor Vergata

Feb 2025 – Sep 2025

Simulated observations with the Cherenkov Telescope Array Observatory to evaluate its ability to detect gamma-ray emission from NGC 1068. Assessed the potential to localize the origin of the emission within the galaxy under different physical scenarios. *Supervised by Dr. Francesco Tombesi, Dr. Dragana Ilic, Dr. Alessandra Lamastra & Dr. Francesco Saturni.*

Neutrino-blazar Association Modeling

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, $p\gamma$). Contributed to a publication on the impact of spectral modeling on neutrino-source association. *Supervised by Dr. Francesca Capel, Astrophysical Messengers Group Leader.*

Gamma-ray Follow-ups of IceCube Events

University of Padova / MAGIC Collaboration

Feb 2022 – Feb 2023

Worked on Bachelor's thesis analyzing MAGIC telescope data from IceCube neutrino alerts. Derived VHE gamma-ray flux upper limits and created test statistic and flux upper limit sky maps using SkyPrism. Contributed to a joint publication with MAGIC, VERITAS, H.E.S.S., and FACT. *Supervised by Dr. Elisa Bernardini & Dr. Konstancja Satalecka.*

Galaxy Morphology and Environmental Dependence

University of Louisville

Aug 2022 – Nov 2022

Participated in the [CENCA Bridge in Astrophysics](#) research program. Conducted a study on spiral

galaxies and how their environment affects the number of arms, using data from Zooniverse and Python.
Supervised by Dr. Benne Holwerda.

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.

OTHER EXPERIENCE

Student Coordinator

National Radio Astronomy Observatory Aug 2025 – Present

Coordinate logistics for the remote internship program by the CENCA Bridge in Astrophysics program, including participant selection, event scheduling, communication management, workshop planning, and support for travel and visa arrangements.

Research Administration and Event Coordination

Autonomous University of Santo Domingo (UASD) Sep 2019 – Present

Support administrative and research activities for the Institute of Physics. Assist in collaborative research projects, report writing, and the organization of academic events.

Astronomy for Mental Health Program Development

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 promoting mental health through astronomy.

HONORS, AWARDS & GRANTS

Erasmus Mundus Joint Master Scholarship 2023 - 2025

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

Poster: Comparison of SDSS and Gaia QSO data: Searching for anomalies in QSO spectra, Jun 2025
15th SCSLSA, Serbia.

Workshop: Use of Programming for Teaching Astronomy, *Astronomy Workshop for Teachers at the Dominican Republic*, Online. Dec 2024

Talk: Month of Astronomy in the Dominican Republic, *6th Shaw-IAU Workshop on Astronomy for Education*, Online. Nov 2024

Panel: Astronomy for a Better World, *American Astronomical Society Winter Meeting*, Jan 2024
United States.

Poster: The Multi-messenger Astrophysics Approach and the MAGIC Telescopes, *Giambiagi Winter School on Cosmology*, Argentina. Jul 2023

Poster: Study of Spiral Galaxies and Their Environment, *PLANCKS*, Italy. May 2023

VOLUNTEER & OUTREACH WORK

Social Media Manager

2023 - Present

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

jIAPS Editor-in-Chief

2024 - 2025

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.

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

1st MAGIC Open Data-Analysis School, Astrophysics Centre for Multi-messenger studies in Europe .	2025
Code/Astro , Northwestern University .	2025
Establishing Multimessenger Astronomy Inclusive Training Summer School, Vanderbilt University .	2025
2nd VHEgam Meeting, University of Bari	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
Introduction to Quantum Computing , The Coding School	2024
Giambiagi Winter School on Cosmology , International Center for Theoretical Physics and University of Buenos Aires	2023
Designing Effective Science Communication , University of Colorado Boulder	2023
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	2022
C for Everyone: Structured Programming , University of California	2021

SKILLS

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