

Alexander Sarango

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EDUCATION

Escuela Superior Politécnica de Chimborazo

B.S. Physics

Riobamba, Ecuador

Oct 2020 - Feb 2025

- Advisor: Julio Andrade, MSc
- Thesis: Gravastar model with vanishing complexity

EMPLOYMENTS

Research Associate

Sep 2025 - Dec 2025

Grupo de Energías Alternativas y Ambiente, ESPOCH

- IDIPI 306 Research Project "Predicting climate behavior patterns using machine learning techniques in the province of Chimborazo".

RESEARCH EXPERIENCE

Bachelor thesis

Riobamba, Ecuador

Escuela Superior Politécnica de Chimborazo

Apr 2024 - Feb 2025

- Developed a new gravastar interior solution under the vanishing complexity condition providing a viable alternative in the study of these kind of compact objects.
- Utilized the extended minimal geometric deformation approach within the gravitational decoupling framework of General Relativity.

Research Assistant

Riobamba, Ecuador

Grupo de Energías Alternativas y Ambiente, ESPOCH

Oct 2024 - Jan 2025

Supervisor: Biophys. Isabel Balvoa

- Implemented a dynamic clustering algorithm in Python based on K-Means algorithm to analyze and predict climate behavior patterns, leveraging large datasets to identify trends and improve forecast accuracy.
- Developed an extensive framework of data analysis and unsupervised machine learning algorithms focused on clustering techniques for forecast prediction.

CONFERENCES & ADDITIONAL TRAINING

III Symposium on Theoretical and Computational Physics

Urcuquí, Ecuador

Yachay Tech University

Jan 2026

XI Ecuadorian School of Astronomy and Astrophysics

Online

Escuela Politécnica Nacional

Jul - Aug 2025

II São Paulo School on Gravitational Physics

Online

Brazil

Jul 2025

II Symposium on Theoretical and Computational Physics

Urcuquí, Ecuador

Yachay Tech University

Jan 2025

V International Conference of Physics 2024

Riobamba, Ecuador

Escuela Superior Politécnica de Chimborazo

Oct 2024

IV International Conference of Physics 2023

Riobamba, Ecuador

Escuela Superior Politécnica de Chimborazo

Oct 2023

AWARDS

Best Poster Award, Gravastar model with vanishing complexity

2026

OUTREACH & EXTRACURRICULAR ACTIVITIES

Outreach activities

GitHub for Team Collaboration workshop, CFEN	2025
Meteorology and Climatology workshops volunteer, GEAA	2024 - 2025
Hands-On Astronomy volunteer, OEAA	2023
Project coordinator of the Introduction to General Relativity mini course, PWF-ICTP, CFEN, ESPOCH	2023
Introduction to LaTeX course, CFEN	2023

Responsibilities

Undergrad Student Representative, ESPOCH	2023 - 2025
Head of Programming Committee, CFEN	2023 - 2025
Head of External Relationships Committee, CFEN	2022 - 2024

ACADEMIC EVENTS

Contributed posters marked with *

TALKS

III Symposium on Theoretical and Computational Physics: * *Gravastars model with vanishing complexity*, Urcuquí, Ecuador (Jan 2026)

Scientific Coffee: *Gravastars, the missing piece of the cosmic puzzle?*, Riobamba, Ecuador (Nov 2024)

WORKSHOPS

Qiskit Fall Fest 2025 ESPOCH: *Quantum Machine Learning with Qiskit*, Riobamba, Ecuador (Nov 2025)

COMPUTATIONAL SKILLS

Programming languages: Python, Mathematica, Git.

Libraries: scikit-learn, numpy, matplotlib, xarray, pandas, etc.

Tools: GitHub, LATEX.

LANGUAGES

Spanish (native), **English** (fluent), **Chinese** (beginner).

REFERENCES

References available upon request.