

Research Interests

Theoretical Physics and Phenomenology, with a focus on Dark Matter, the Early Universe, Cosmological Gravitational Particle Production, General Relativity, and Quantum Field Theory.

Education

PhD in Physics and Nanosciences (High Energy and Astroparticle Physics) **Modena, Italy**
2025–Present
University of Modena and Reggio Emilia
Research topic: Gravitationally produced Dark Matter in the Early Universe
Supervisor: Prof. Enrico Bertuzzo

Double Master's Degree **Italy / The Netherlands**
2025
University of Modena and Reggio Emilia / Radboud University
Master's degrees in Theoretical and Computational Physics / Particle and Astrophysics
Master's thesis: "Dust collapse in Quadratic Gravity"
Supervisors: Prof. Frank Saueressig, Dr. Luca Buoninfante, Prof. Diego Trancanelli

Bachelor's Degree in Physics **Modena, Italy**
2023
University of Modena and Reggio Emilia
Bachelor's thesis: "Cromodinamica Quantistica: La teoria dell'interazione forte"
Supervisor: Prof. Diego Trancanelli

Teaching Experience

Teaching Tutor in Electromagnetic Waves and Optics **Modena, Italy**
2025–2026
University of Modena and Reggio Emilia
Tutoring and academic support in Electromagnetic Waves and Optics for undergraduate students in Physics

Teaching Tutor in Electromagnetism **Modena, Italy**
2025–2026
University of Modena and Reggio Emilia
Remote tutoring and academic support in Electromagnetism for undergraduate students in Mechatronics and Management Engineering

Teaching Tutor in Electromagnetism **Modena, Italy**
2024–2025
University of Modena and Reggio Emilia
Remote tutoring and academic support in Electromagnetism for undergraduate students in Mechatronics and Management Engineering

Conferences and Schools

Campagna School of Basic Science 2026 **Campagna, Italy**
September 2026
Scientiae Fabri Civitatis Campaniae, Institute for Basic Science and collaborating institutions
Gong show and Poster: "Gravitationally produced Dark Matter in the Early Universe"

4th Training School of COST Action COSMIC WISPerS (CA21106) **Corfù, Greece**
June 2026
COST Action
Talk: "Gravitationally produced Dark Matter in the Early Universe"

TAsP Meeting 2026 **Bologna, Italy**
January 2026
INFN "Iniziativa Specifica" TAsP, Theoretical Astroparticle Physics

PhD Coursework

2025–2026:

- The Standard Model of Particle Physics
- Introduction to on-shell scattering amplitudes
- An introduction to Python: from fundamentals to data and HPC

Outreach & Public Engagement

Research Shots — Public Outreach Talk

University of Modena and Reggio Emilia

Public outreach presentation on Gravity, from Newton to General Relativity and Quadratic Gravity

Reggio Emilia, Italy

2026

Technical Skills

Programming: Python, Wolfram Mathematica

Languages: Italian (native), English (fluent), French (basic)