

Mónica Natalia Isla Llave

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About Me

I am a PhD candidate in Astrophysics at the University of Bologna, with a special interest in the formation and evolution of galaxies from the earliest epochs of the Universe, the co-evolution of supermassive black holes (SMBHs) and their host galaxies through feedback processes, and the formation of large-scale structures (protoclusters and galaxy clusters).

Education

Alma Mater Studiorum University of Bologna & INAF-OAS 11/2024 – present
PhD in Astrophysics

Alma Mater Studiorum University of Bologna 09/2022 – 10/2024
Master's in Astrophysics

Master's thesis: *Physical properties of AGN and their host galaxies in $z \sim 4$ protoclusters*. Graduated with a grade of 110/110L.

University of Cantabria 09/2018 – 06/2022
Bachelor's in Physics

Bachelor's thesis: *Halo mass measurements with the kinetic Sunyaev-Zeldovich effect*.

University of La Laguna 09/2021 – 06/2022
Bachelor's degree in Physics

I participated in the SICUE mobility program during the final year of my degree at the University of La Laguna to take more astrophysics-related courses.

Scholarships

Santa Catalina Scholarship from the Reale Collegio di Spagna in Bologna 01/2025 - 06/2027

- Housing program awarded by the Fundación Albornociana to Spanish/Portuguese PhD students carrying out their PhD studies in Bologna.

Scholarship from the University of Bologna for international students 11/2022

- Awarded by the University of Bologna to three international students enrolled in the first year of the Master's in Astrophysics (*Bando per l'attribuzione di 3 (tre) Borse di Studio destinate a studenti internazionali che si immatricolano al primo anno di corso della LM in ASTROPHYSICS AND COSMOLOGY - Alma Mater Studiorum Università di Bologna nell'a.a. 2022-2023*).

Conferences & Workshops

- *Highly Accreting Supermassive Black Holes Across all Cosmic Times: from the Local Universe to Cosmic Dawn* (Chile, 12/2025) **Flash talk**
- *Peering through an opaque ISM* (Ferrara, 09/2025) **Contributed talk**
- EREBUS COSMOS-3D Collaboration meeting (Bologna, 06/2025) **Contributed talk**
- Sixth Workshop on Millimetre Astronomy in Italy (Bologna, 06/2025) **Contributed talk**
- QUASAR2025 meeting (Bologna, 06/2025) **Contributed talk**
- *From Fake News to Real Clusters: The controversial fate of high-z protoclusters* workshop (Tenerife, 05/2025) **Invited talk**

Schools

- ORP Proposal Writing School (Online, 03/2025)
- Spetses Advanced Galaxy Evolution School (07/2025)

Research Skills

Specialized software for astronomical data analysis

- Spectral Energy Distribution (SED) fitting with X-CIGALE (Yang et al. 2020),
- Management and analysis of galaxy catalogs using TOPCAT and Aladin,
- Calibration, reduction, and analysis of radio interferometric data with CASA,
- Photometric and spectroscopic analysis with astropy and SAOImageDS9.

Programming Languages and Techniques

- Python, Bash, C, Fortran,
- OpenMPI, GADGET3 (hydrodynamic simulation code)

Soft skills

- Scientific communication in English, both in oral presentations and in writing reports and proposals,
- Synthesis and critical reading of scientific publications.

Languages

- English (C2 Cambridge Proficiency), Italian (B2 level), French (A2 level), Greek (A1 level).

Extracurricular Activities

- Completed both Elementary and Professional Music Education in clarinet at the Jesús de Monasterio Conservatory (2010–2020),
- Member of the Santander Youth Choir (2019–2021) and the Novae Choir in Tenerife (2021–2022).