María Martínez Barbeito

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Profile

Physicist (PhD) with strong analytical and quantitative problem-solving skills. Experience in data analysis, simulation, and modelling of complex systems, particularly in energy-related applications. Adaptable, collaborative, and motivated to grow in an industry environment.

Work Experience

Junior Integrations Analyst Aug 2025 – Present
Axis Data *Mallorca (Spain)*

- Coordinate system integrations from design to deployment in Agile teams.
- Bridge technical teams and stakeholders in a hybrid project manager/product owner role.

Substitute teacher (two short-term positions) Mar 2025 – Jun 2025
Balearic public education system *Mallorca (Spain)*

- Taught vocational and secondary-level courses, adapting quickly to new subjects and supporting diverse student learning needs.

Software and Mathematical Models Developer Nov 2024 – Feb 2025
ieco.io *Remote*

- Used Python for optimization of mathematical models for partial shading in self-consumption photovoltaic systems, reducing computational cost with measurable impact on accuracy.

Predoctoral researcher Nov 2019 – Sep 2024
Institute for Cross-Disciplinary Physics and Complex Systems (IFISC) *Mallorca (Spain)*

- Developed quantitative models and simulations for power systems with high shares of renewable generation using Python, Fortran, and Matlab.
- Built and validated a digital twin of the high-voltage power grid using operational data, reproducing real-world frequency statistics.
- Analysed energy transition scenarios including coal plant closure, inertia reduction, and battery integration, assessing impacts on grid stability.
- Performed data processing, analysis, and visualisation on real-world power system datasets.
- Contributed to multiple projects in parallel and collaborated with international teams, including the EU-funded VPP4Islands project (smart grids and storage) and a research stay in Switzerland.
- Communicated quantitative results through clear reports and presentations for both technical and non-technical audiences.

Education

PhD in Physics Nov 2019 – Sep 2024
University of the Balearic Islands *Mallorca (Spain)*

- Studied power grid dynamics and stability in scenarios with a high penetration of renewable energies (see *Work Experience* for details).

MSc in Physics of Complex Systems Sep 2018 – Oct 2019
University of the Balearic Islands *Mallorca (Spain)*

- Relevant courses: Complex Networks, Stochastic Simulation Methods, Information Theory.
- Final project: Studied systemic risk and financial stability in banking systems through an agent-based model implemented in Fortran. In particular, analyzed vulnerability and resilience to external shocks.

BSc in Physics Sep 2013 – Jul 2018

University of Santiago de Compostela *Santiago de Compostela (Spain)*

- Relevant courses: Computational Physics, Experimental Techniques, Complex Systems.
- Completed a one-year academic exchange at the University of Granada.
- Final project: Reviewed several complex network models and analyzed their effect on a social behaviour model implemented in Matlab.

Skills

- Programming languages:
  - **Python** (advanced) – 20-hour course on *Analysis and visualization of data with Python*
  - **Fortran** (advanced)
  - **Matlab** (intermediate)
- Markup Languages: **HTML** (basic), **LaTeX** (advanced)
- **Microsoft Word** (advanced), **PowerPoint** (advanced), **Excel** (intermediate)
- **GIMP** (advanced)
- **Git** (basic)

Abilities

- Strong communication skills (oral and written)
- Exceptional organizational skills
- Quick learner, team-oriented, highly adaptable

Languages

- Spanish and Galician – Native
- English – Advanced
- Catalan – Intermediate (B1 certificate)

Additional Experience

Chair *(2023 – 2024)* ***& Member*** *(2022 – 2024)*

Advisory Board – Young Researchers of the Complex Systems Society (yrCSS)

- Organized the warm-up event for the annual International Conference on Complex Systems.
- Promoted collaboration among early-stage researchers and supported community-driven initiatives.