Marçal Herraiz Bayó

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[Personal website](#) ⇗

Paris, France

EDUCATION

Université Paris Sciences et Lettres Paris, France
MSc in Mathematics
- Joint master's between École Normale Supérieure and Université Paris Dauphine.
- All expenses covered by the FSMP Master Scholarship 2025.

Present
Sept. 2025

University of Barcelona Barcelona, Spain
BSc in Mathematics GPA: 9.02/10
- Excellent with honors in 12 subjects.
- Thesis on flat connections and principal bundles. Grade: 10/10

June 2025
Sept. 2020

University of Barcelona Barcelona, Spain
BSc in Physics GPA: 8.79/10
- Excellent with honors in 10 subjects.
- Thesis on classical shadows in quantum information. ⇗ Grade: 9.7/10

June 2025
Sept. 2020

WORK EXPERIENCE

Westinghouse Nuclear Madrid, Spain
Simulation Modeling Engineer
- Developing software for nuclear power plant simulations.
- Improving thermal–hydraulics models for accuracy and performance.
- Contributing to validation and documentation workflows.

Present
July 2025

RESEARCH EXPERIENCE

Barcelona Supercomputing Center – BSC Barcelona, Spain
Visiting Student
- Developed a unified strategy to improve quantum measurement efficiency.
- Demonstrated significant performance gains in many-body quantum systems.
- Achieved high precision with fewer measurements than standard methods.
- Supervisors: Prof. Dr. Bruno Julià, Berta Casas, Sergi Masot.

June 2025
Nov. 2024

Institute for Research in Biomedicine – IRB Barcelona, Spain
Research Intern
- Modeled DNA flexibility using a coarse-grained approach.
- Optimized the model to account for DNA damage.
- Devised and implemented new methods to calculate DNA geometric properties.
- Supervisor: Prof. Dr. Modesto Orozco.

Feb. 2025
July 2024

Center for Mathematical Research – CRM Barcelona, Spain
Research Intern
- Studied transcendental dynamics within the complex exponential family.
- Supervisors: Prof. Dr. Núria Fagella, Prof. Dr. Xavier Jarque.

Aug. 2023
June 2023

Honors and Awards

March 2025	**FSMP Master Scholarship**	28,000 €
	• Awarded by the Fondation Sciences Mathématiques de Paris to fully fund my Master's studies at PSL.	
Feb. 2025 Sept. 2021	**Excellent Performance**	1,900 €
	• I was awarded "Excellent with Honors" in 16 subjects across the two Bachelor's degrees at UB.	
Nov. 2024	**Collaboration Scholarship**	2,000 €
	• Issued by the Spanish Ministry of Education, this scholarship is aimed at university students to conduct research in university departments.	
Oct. 2024	**CRM Internship Programme Award** (declined)	500 €
	• Awarded to bachelor students who want to do their Bachelor's thesis advised by a researcher affiliated with the CRM.	
July 2024	**Maths4Life Award**	1,200 €
	• Awarded one of the five grants from IRB Barcelona's Maths4Life programme to conduct research at the intersection of mathematics and biomedicine.	
Sept. 2020	**Honors in Baccalaureate**	1,700 €
	• Awarded to students with an excellent academic record during their baccalaureate. Full coverage of tuition fees for the first year of university.	
Oct. 2019 Jan. 2019	**Mad for Science Programme**	
	• Catalunya La Pedrera Foundation developed the Mad for Science Programme to open the doors of the leading research institutes to exceptional High School students. I participated in the Physics course.	

Invited Talks

June 2025	**Research Seminar at BSC**
	• Presented the outcomes of my research stay at BSC.
Sept. 2024	**Extraordinary BioMed Seminar – Maths4Life 2024**
	• In this seminar organized by IRB, I presented my research work undertaken as a summer intern.
July 2023	**Barcelona Introduction to Mathematical Research – BIMR 2023**
	• Presented the results of my summer internship at CRM to an expert audience.

Languages

Spanish	Native Speaker
Catalan	Native Speaker
English	C1 Level
French	A2 Level

Coding Skills

Languages: Python, C, Fortran, R, Bash, Mathematica.
Libraries: Pandas, SciPy, NumPy, Scikit-learn, Seaborn.
Other: Experience with Unix/Linux, computational modeling, and version control.

Additional Courses

- **Python for Data Science and Machine Learning** – Udemy ⧉
- **Machine Learning with Python** – Coursera ⧉
- **100 Days of Code: The Complete Phyton Pro Bootcamp** – Udemy ⧉