Marçal Herraiz Bayó

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[Personal website](#) ⧉

Barcelona, Spain

Education

Present Sept. 2025	**Université Paris Sciences et Lettres** Master of Science in Applied Mathematics • All expenses covered by the PGSM Master Scholarship 2025.	Paris, France
June 2025 Sept. 2020	**University of Barcelona** Bachelor of Science in Mathematics • Excellent with honors in 12 subjects. • Thesis: "The Riemann–Hilbert Correspondence for Flat Connections on Principal Bundles."	Barcelona, Spain GPA: 9.02/10 Grade: 10/10
June 2025 Sept. 2020	**University of Barcelona** Bachelor of Science in Physics • Excellent with honors in 10 subjects. • Thesis: "Improving Classical Shadows with Grouping Strategies." Grade: 9.7/10	Barcelona, Spain GPA: 8.79/10
June 2020 Sept. 2018	**Mireia Center of Studies** Technological Baccalaureate • 1st-ranked student of the class.	Barcelona, Spain GPA: 10/10

Work Experience

Present July 2025	**Westinghouse Nuclear** *Simulation Modeling Engineer* • Developing software for advanced nuclear simulations. • Enhancing thermal-hydraulics models for improved accuracy and performance.	Madrid, Spain

Research Experience

June 2025 Nov. 2024	**Barcelona Supercomputing Center – BSC** *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: Dr. Bruno Julià, Berta Casas, Sergi Masot.	Barcelona, Spain
Feb. 2025 July 2024	**Institute for Research in Biomedicine – IRB** *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.	Barcelona, Spain
Aug. 2023 June 2023	**Center for Mathematical Research – CRM** *Research Intern* • Studied transcendental dynamics within the complex exponential family. • Supervisors: Prof. Dr. Núria Fagella, Prof. Dr. Xavier Jarque.	Barcelona, Spain

Honors and Awards

March 2025	**PGSM Master Scholarship**	28,000 €
	• Awarded by the Fondation Sciences Mathématiques de Paris to fully fund my Master's studies at PSL.	
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 Awardee**	1,200 €
	• Awarded one of the five grants from IRB Barcelona's Maths4Life Programme to conduct research at the intersection of mathematics and biomedicine.	
June 2025 Sept. 2021	**Excellent Performance**	1,900 €
	• Recipient of the University of Barcelona's honor for exceptional academic performance throughout my university studies.	
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	Advanced C1 Level

Coding Skills

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

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 ⧉