Marçal Herraiz Bayó

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EDUCATION

I am enrolled in the dual degree programme in Mathematics and Physics, which admits 20 students annually and allows them to pursue both bachelor's degrees concurrently.

(Expected) June 2025 Sept. 2020

University of Barcelona

Bachelor of Science in Mathematics

GPA: 9.0/10

- Bachelor's thesis (in progress): Yang-Mills Equations and Gauge Theories.
- Supervisor: Prof. Ignasi Mundet.

(Expected)
June 2025

Sept. 2020

University of Barcelona

Bachelor of Science in Physics

GPA: 8.51/10

- Bachelor's thesis (in progress): How Classical Shadows Improve Quantum Learning.
- Supervisors: Prof. Bruno Julià, Dr. Artur Garcia.

June 2020 Sept. 2018

Mireia Centre of Studies

Technological Baccalaureate

• 1st-ranked student of the class.

GPA: 10/10

EXPERIENCE

Barcelona Supercomputing Centre - BSC

Visiting Student

Present Sept. 2024

- Pursuing my Physics Bachelor's thesis on quantum computing, focusing on classical shadows.
- Working in the Quantic group.
- Supervisors: Prof. Bruno Julià, Dr. Artur Garcia.

Institute for Research in Biomedicine – IRB

Research Intern

Present July 2024

- Examined DNA flexibility under damage using a coarse-grained model.
- Optimised the model to account for DNA sequential damage.
- Devised and implemented new methods to calculate DNA geometric properties.
- Supervisor: Prof. Modesto Orozco.

Centre for Mathematical Research - CRM

Research Intern

Aug. 2023 June 2023

- Studied transcendental dynamics within the complex exponential family.
- Interpreted the results of Robert Devaney and Michal Krych for a specific parameter value, providing a full description of the dynamics in this set.
- Supervisors: Prof. Núria Fagella, Prof. Xavier Jarque.

Honours and Awards

June 2025 Collaboration Scholarship

ollaboration Scholarship 2,000 €

• Issued by the Spanish Ministry of Education, this scholarship is aimed at university students to conduct research in university departments.

June 2025 Oct. 2024

Nov. 2024

CRM Internship Programme (declined)

500 €

• Awarded to bachelor students who want to do their Bachelor's thesis advised by a researcher affiliated with the CRM.

Sept. 2024 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.
Present Sept. 2021	 Excellent Performance 1,500 € Recipient of the University of Barcelona's honour for exceptional academic performance throughout my university studies.
Sept. 2021 Sept. 2020	 Honours in Baccalaureate 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

Aug. 2023

Extraordinary BioMed Seminar – Maths4Life 2024

• In this seminar organised by IRB, I presented my research work undertaken as a summer intern.

Barcelona Introduction to Mathematical Research – BIMR 2024
• Presented the results of my summer internship at CRM to an expert audience.

• Presented the results of my summer internship at

LANGUAGES
CODING SKILLS

Spanish Native Speaker
Catalan Native Speaker
English Advanced Level C1
CODING SKILLS

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

Additional Courses

- Python for Data Science and Machine Learning Udemy ☐
- Machine Learning with Python Coursera \Box
- 100 Days of Code: The Complete Phyton Pro Bootcamp Udemy

Additional Information

- I am part of **Science Fellows**, an initiative of the Catalunya la Pedrera Foundation to develop STEM outreach activities such as museum exhibitions and talks in high schools.
- **Private tutor** for students in high school and university (Mathematics, Physics, Chemistry, Computer Science, Statistics, Engineering).