Fernando Muñoz Puente

Born in 2002
ferxinii.github.io
fernandomuñozpuente
ferxinii

Education

2018–2020 **High school**, *Escola Andorrana de Batxillerat*, Andorra, *9.672 / 10*.

2020–2024 **Bachelor's in Engineering Physics**, *Universitat Politècnica de Catalunya*, Barcelona, *7.81 / 10*.
Class delegate.

2024–2025 **MSc in Advanced Mathematics and Mathematical Engineering**, *Universitat Politècnica de Catalunya*, Barcelona, *9.5 / 10*.
Applied mathematics branch. Numerical methods, PDEs, dynamical systems, Bayesian analysis.

July 2025 **Summer school**, *JISD 2025, Dynamical systems and PDEs*, Barcelona.

July 2025 **Summer school**, *Stochastic analysis and quantitative finance*, Barcelona.

Experience

Summer 2022 **Summer fellowship**, *IFAE Institute of High Energy Physics*, Barcelona.
I worked with the gamma ray group on the analysis of real astronomical data and participated in the assembly of telescope camera.

Summer 2023 **Summer fellowship**, *IGTP Institute Germans Trias i Pujol*, Barcelona.
I implemented a computational model for the study of tuberculosis in a virtual lung.

April - May 2024 **Visiting student**, *NDORMS, University of Oxford*, Oxford.
I worked under the guidance of my supervisor on my bachelor's thesis.

November 2024 **Oral presentation in the XVIII International Conference of Tuberculosis**, Barcelona.
I presented some results about my bachelor's thesis.

February 2024 - June 2025 **Visiting student** , *BSC Barcelona Supercomputing Center*, Physical and numerical modelling group.
I used computational fluid and particle dynamics and high performance computing to study the transport of tuberculosis aerosols in a human lung.

June 2025 **Poster presentation in FisEs25**, *Statistical physics congress*, Santiago de Compostela.
I presented some results about my master's thesis. Received the third award for the best contribution in poster format.

Conferences

November 2024 **XVIII International Conference of Tuberculosis**, Oral presentation "*Computational modelling of the dynamics of TB lesions: from animal models to humans*", Barcelona.
I presented some results about my bachelor's thesis.

June 2025 **FisEs25, Statistical physics congress**, Poster presentation "*Infectious tuberculosis aerosol dynamics in a bronchial tree*", Santiago de Compostela.
I presented some results about my master's thesis.

Awards and honours

- Recipient of the *National Award to Study*, given annually by the government of Andorra to the student with the best academic record.
- Honours in Bachelor's thesis.
- Honours in the course *Computer Programming and its Applications*.
- Award of the Catalan Physics Society for bachelor theses.
- Third award for the best contribution in poster format in FisEs25.

Projects and fields of knowledge

- Bachelor's Thesis: "*Computational modelling of the dynamics of tuberculosis lesions: from animal models to humans*". 30 ECTS.
- Master's Thesis: "*Geometry and Aerosol Dynamics in a Human Virtual Lung for the Study of Tuberculosis*". 15 ECTS.
- Finite element method in fluid mechanics. Study of TB aerosol transport in a model of the human bronchial tree using numerical simulations on MareNostrum 4 and 5.
- Computational geometry. Development of a C code to generate 3D Voronoi diagrams and cells within an arbitrary polygon. This code has been used to construct secondary pulmonary lobes within the geometry of a human lung.
- Exact symplectomorphisms and convex billiards. Project for the course Hamiltonian Systems and Quantitative and Qualitative Methods for Dynamical Systems.

Skills

I am a communicative person with excellent interpersonal skills. I consider myself diligent, efficient, and resourceful, and I enjoy tackling all kinds of problems, especially in multidisciplinary environments. I'm adept at programming. I learn quickly.

Languages

Spanish	Native	Catalan	Native	English	CAE, C2 level
French	DELF B2	Chinese	HSK 1, A1 level		

Programming languages and other tools

C	■■■■■	Unix/Linux CLI	■■■■■	Matlab	■■■■■
Python	■■■■□	Fortran	■■□□□	R	■■□□□
git	■■■■□	LaTeX	■■■■□	vim	■■■■□

Interests

Mathematical modelling, especially applied to biology, physics, and social sciences such as economy and finances. High performance computing and computational models.
At the personal level, I like music, piano, hiking, mountains, art and travelling.