



Margherita Castellano

Email: margherita.castellano@polytechnique.edu

PhD candidate in Applied Mathematics at École Polytechnique (Paris), working on numerical modeling and simulation of complex systems (PDEs). Interested in applying quantitative and analytical skills to real-world problems.

Languages

Italian: native speaker

French: near native / fluent (C2 level)

English: fluent (92/120 TOEFL iBT)

Programming

languages

- Python: advanced (scientific computing, numerical simulations)
- R: advanced (statistical analysis)
- FreeFem++: intermediate (PDE simulations)

Projects

National finalist of the contest MT180 (Ma thèse en 180 secondes)

France | March 2026 - May 2026

Three-minutes presentation of my PhD to a general audience.

Organizer of PhD seminars at CMAP

Palaiseau, France | October 2023 - July 2026

Volunteering

Brussels, Belgium | September 2015 - June 2016

Participation at scientific conferences

- June 2026: CANUM26 numerical analysis congress - *presentation*
- June 2025: PDEs' day - *poster*
- June 2025: SMAI25 congress of industrial and applied mathematics - *presentation*
- October 2024: CJC en mathématiques appliquées - *presentation*
- June 2024: NAPDE conference (New trends in Numerical Analysis of PDEs) - *poster*
- May 2024: CANUM numerical analysis national congress - *presentation*
- January 2024: Fluid mechanics conference at Institut Henri Poincaré
- November 2023: FVCA conference (Finite Volumes for Complex Applications)
- October 2023: Journées scientifiques 2023 GdR MaNu
- June 2021: Frontiers in Molecular Biology SIBBM - *poster*

Education

Master's degree in Applied Mathematics (mathematical modeling)

Sorbonne University, France | September 2021 - September 2023

Second year specialization: Partial Differential Equations and Numerical Analysis.

First year of master's degree in Mathematics for Life and Social Sciences

University of Trento, Italy | November 2020 - July 2021

Track Modeling and Analysis of Biosystems. Final grade: 30 / 30.

Third-year exchange program

University of Berkeley, California | September 2019 - June 2020

One-year exchange program for the third year of bachelor's degree. Final grade: 16.405 / 20.

Bachelor's degree in Applied Mathematics and Computer Science

University of Bordeaux, France | September 2017 - July 2020

IT and Mathematics applied to Social and Human Science - track of Economics. Final grade: 15.875 / 20. Rank: 4/97.

European Baccalaureate

European School of Brussels, Belgium | July 2017

IT and Mathematics

- Final grade: 81.69 / 100.

Experience

PhD candidate - CMAP, École Polytechnique

Palaiseau, France | October 2023 - October 2026

- Mathematical modeling of multiphysics systems (Cahn-Hilliard-Navier-Stokes).
- Development of numerical methods and simulations (finite volume methods).
- Analysis of simulation results and model behavior

Teaching assistant - École Polytechnique

Palaiseau, France | October 2023 - January 2026

Teaching assistant for undergraduate and master's students.

SEMES - Mathematics for industry week

La Rochelle, France | November 2025

- One-week analysis of an industry-driven problem.
- Modeling of the ocean propagation of CO2 particles.

Internship - CMAP, École Polytechnique

Palaiseau, France | April 2023 - September 2023

- Finite volume discretization of the Cahn-Hilliard equation
- Python simulations and numerical analysis

Internship - INRIA Paris

Paris, France | June 2022 - July 2022

- PDE modeling of electrostatic effects in Micro-Electrode Arrays
- Numerical simulations and result analysis

ECIU Challenge

Twente, Netherlands | February 2021 - June 2021

- Worked on a project on predictive analysis in healthcare
- Explored how data-driven approaches can reduce costs and improve care quality
- Collaborated with an academic and industry team

Academic Tutoring

University of Bordeaux | September 2018 - May 2019

Revision classes for first-year Bachelor students.