

Maria Esteban Casadevall

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EDUCATION

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- **PhD student in Geometric Deep Learning**, University of Amsterdam, Netherlands 2025-2029
ELLIS PhD Student under the supervision of Prof. Erik Bekkers starting in September 2025.
 - **Msc in Mathematical Sciences (OMMS)**, University of Oxford, UK 2024-2025
Grade: Distinction
Master thesis: Distinction
 - **Bsc(Hons) in Mathematics with Year in Industry and Year Abroad**, Heriot-Watt University, Edinburgh, UK 2019-2024
Final Year average: 96.4% (Top cohort)
Final year dissertation: 100%
 - **Industrial Placement - Technology Consultant in Financial Services**, Ernst&Young, London, UK (4th Year of my Undergraduate degree) 2022-2023
 - **Mathematics Undergraduate Exchange Student**, University of Waterloo, Canada 2021-2022
(3rd Year of my Undergraduate degree)
Year average: 91%

PUBLICATIONS AND PREPRINTS

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- **(preprint)** Maria Esteban. (2024) Reverse isoperimetric properties of thick λ -concave bodies in the Hyperbolic plane. *arXiv preprint arXiv:2411.09087, 2024.* 2024
 - Maria Esteban. (2024) Non-convergence of the Ollivier Ricci Flow. *Mathematics Today*. Vol 60. No 6. pp 182-184. 2024

TALKS

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- **Spectral Geometry in the clouds seminar**, Canadian Centre de Recherche Mathématique, Online 2025
Title: Reverse isoperimetric properties of thick λ -sausages in the hyperbolic plane and Blaschke's rolling theorem
[\(https://nms.kcl.ac.uk/jean.lagace/SpectralClouds/\)](https://nms.kcl.ac.uk/jean.lagace/SpectralClouds/)
 - **The Best Maths Project 2024 celebration**, Institute of Mathematics and Its Applications (IMA), London, UK 2024
Title: Discrete notions of curvature on graphs: Ollivier Ricci Curvature and non-convergence of the Ollivier Ricci Flow
[Recording](#)
 - **IMA National Celebration of the Best Final Year Maths Project 2024**, Institute of Mathematics and Its Applications (IMA), London, UK 2024
Title: Discrete notions of curvature on graphs: Ollivier Ricci Curvature and non-convergence of the Ollivier Ricci Flow
Obtained the 2nd Prize for best final year dissertation of 2024

- **IMA Early Career Mathematicians Seminar**, Institute of Mathematics and Its Applications (IMA), London, UK 2024
Title: Geometric methods for community detection: Discrete notions of curvature in graphs and clustering in the Hyperbolic Space
[Recording](#)
- **Tomorrow's Mathematicians Today (TMT) Conference**, Institute of Mathematics and Its Applications (IMA), London, UK 2024
Title: Discrete notions of curvature in graphs and its applications to network analysis
- **Tomorrow's Mathematicians Today (TMT) Conference**, Institute of Mathematics and Its Applications (IMA), London, UK 2023
Title: An Introduction to Machine Learning in the Hyperbolic Space
Obtained the 1st Prize for Best Presentation awarded by IMA
- **Enlightening talk at Women in Data Science (WiDS) Conference**, University of Edinburgh and Heriot-Watt University, Edinburgh, UK 2023
Title: A Non-Euclidean Approach to Machine Learning

RESEARCH EXPERIENCE

- **Construction of Einstein metrics by High Dimensional Dehn Filling**, University of Oxford 2024-2025
Supervisor: Prof. Jason Lotay
This project is my Master thesis.
- **Ollivier Ricci Curvature and (non-)convergence of the Ollivier Ricci Flow**, Edinburgh 2023-2024
Supervisor: Prof. Alessandro Sisto
This project was my undergraduate dissertation. Obtained a grade of 100% and the Prize to UK second best undergraduate maths project 2024 awarded by IMA.
- **Reverse isoperimetric properties in the Hyperbolic plane and Blaschke's Rolling Theorem**, Barcelona 2024
Supervisor: Prof. Kostiantyn Drach
Project part of Barcelona Introduction to Mathematical research 2024.
- **Graph Convolutional Neural Networks for Images and 3D meshes denoising**, Edinburgh 2024
Supervisor: Prof. Audrey Repetti
Research project funded by the Athena Swan bursary scheme.
- **Implementation of K-Means clustering in the Hyperbolic Space on hierarchical datasets** 2022
1st Prize of Best Presentation at TMT 2023 conference.

AWARDS AND SCHOLARSHIPS

- **Watt Club Medal** recognises the highest achievement possible in undergraduate studies and is awarded annually to the student that achieved the greatest distinction, Heriot-Watt University. 2024
- **Roderick MacLeod Shearer Memorial Prize** awarded for excellence in Mathematics, Heriot-Watt. 2024
- **2nd Prize at the IMA National Celebration of Best Maths Projects 2024** awarded by Institute of Mathematics and its Applications, IMA. 2024
- **1st Prize for the Best Presentation at TMT Conference 2023 (Tomorrow's Mathematician Today)** awarded by Institute of Mathematics and its Applications, IMA. 2023

- Funding to attend the **London Mathematical Society Summer School**. 2023
- **Turing Scheme** awarded for financial support while being at the University of Waterloo. Only one student among my program of studies is selected for this exchange every year. 2021
- **University Prize 2020, 2021 and 2022** awarded for achieving outstanding academic results in my First, Second and Third Year of undergraduate among my program of study. 2019-2022
- **Distinction for excellence** in college entry exams awarded by the Catalan government (~ 1% of students awarded). 2019

WORK EXPERIENCE

- **Industrial Placement - Technology Consultant in Financial Services**, Ernst&Young, London,UK 2022-2023
One-year full-time internship (4th year of my degree). I worked 5 months on the Data&Analytics Team and 5 months on the Credit Risk Team. Involved in projects related to regulatory data collection, graph databases and stress testing modelling and automation. During my placement, I lead conversations with large groups of senior clients' stakeholders and worked in a high pressure and demanding environment.

SUMMER SCHOOLS AND WORKSHOPS ATTENDED

- **Interplays between algebra, combinatorics and proof formalization**, CRM , Barcelona 2024
- **Barcelona Introduction to Mathematical Research (BIMR)**, CRM, Barcelona 2024
Courses: Exotic topology in complex dynamics, Roots of random polynomials and random analytic functions, What is classification good for?, From particle systems to collisional kinetic equations.
- **LMS Undergraduate Summer School**, London Mathematical Society, Sheffield, UK 2023
Courses: Information Theory, Algebraic Geometry, Advanced Number Theory, Randomness in Probability and Topology Applications in Mathematical Physics.

LANGUAGES

- **Catalan**, Native -
- **Spanish**, Native -
- **English**, Proficiency -
- **French**, DELF B2 2017

VOLUNTEERING

- **Kings College London Women in Business Mentee**, Online 2023
Mentored one undergraduate student interested in applying for internships opportunities in the banking industry. This initiative aims to increase the number of women in finance.
- **Head Rep of SolidariTee**, Heriot-Watt University, Edinburgh 2020-2021
I was the leader of a team of 10 volunteers that raised awareness and fundraise to provide legal aid support to the refugees in Europe.