PAULA CORDERO ENCINAR

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Keywords: generative models, machine learning theory, sampling, optimisation, SDEs, AI4Science, uncertainty quantification.

EDUCATION

Imperial College London and University of Oxford UK
PhD in Statistical Machine Learning *Oct. 2023 – July 2027*

- Fully funded within the EPSRC Center for Doctoral Training in Statistics and Machine Learning (StatML CDT).
- Supervisors: Andrew Duncan and O. Deniz Akyildiz.
- Teaching Assistant: Computational Statistics, Statistical Modelling, Probability, Calculus.

Imperial College London London
MSc in Statistics *Sep. 2022 – Oct. 2023*

- Top 1%, Winton prize for the best student in the MSc.
- La "Caixa" Fellowship (Competitive scholarship awarded to only 100 scholars across all disciplines from all over Spain and Portugal to fully fund their studies).
- MSc student representative.

Universidad Politécnica de Madrid Madrid
MSc in Artificial Intelligence *Sep. 2021 – July 2022*

- José Cuena Award (Top student of the year 9.74/10).
- Scholarship for collaboration in university departments (Spanish Ministry of Education).

Universidad Complutense de Madrid Madrid
Bachelor in Mathematics and Physics (Double Degree) *Sep. 2016 – July 2021*

- Average grade: 9.16/10 (6 subjects with the "With honours" distinction).
- Top 5% of the cohort. "Comunidad de Madrid" Excellence Prize.

PUBLICATIONS

- **Cordero Encinar, P.**, Duncan, A., Reich, S. and Akyildiz, D. (2025) "Sampling by averaging: A multi-scale approach to score estimation". *Under review.*
- **Cordero Encinar, P.**, Crucinio, F. and Akyildiz, D. (2025) "Proximal Interacting Particle Langevin Algorithms". *Conference on Uncertainty in Artificial Intelligence (UAI)*. **Accepted for Oral presentation**.
- **Cordero Encinar, P.**, Akyildiz, D., and Duncan, A. (2025) "Non-asymptotic Analysis of Diffusion Annealed Langevin Monte Carlo for Generative Modelling". *arXiv preprint.*
- **Cordero Encinar, P.**, Schröder, T., Yatsyshin, P and Duncan, A. (2025) "Deep Optimal Sensor Placement for Black Box Stochastic Simulations". *The 28th International Conference on Artificial Intelligence and Statistics (AISTATS)*.
- **Cordero Encinar, P.**, Schröder, T. and Duncan, A. (2024) "Optimal experimental design for Bayesian inverse problems using energy-based couplings". *Workshop on AI4DifferentialEquations in Science*, ICLR 2024.
- **Cordero Encinar, P.**, Agustí, A. and Sabín, C. (2021) "Digital quantum simulation of beam splitters and squeezing with IBM quantum computers". *Phys. Rev. A*, 104, 052609.

PROGRAMMING SKILLS

Python, JAX, PyTorch, R, Matlab.

EXPERIENCE

AI Research Intern Jun. 2023 – Sep. 2023
Evotrack *London, UK*

- Support the R&D team to create a real-time cloud-based application of their existing machine learning models. Participate in research activities on electric vehicle charging infrastructure usage forecasting services. Run simulations to identify better fleet management strategies.

Machine Learning Research Intern Jan. 2022 – July 2022
Titanium Industrial Cybersecurity *Madrid, Spain*

- Development of a complex machine learning model to detect different types of cyber attacks, with a particular focus on the network lateral movement attack, which is a very difficult cyber attack to detect due to its sophisticated nature.

Research Intern Jun. 2021 – Sep. 2021
Institute of Photonic Sciences, ICFO *Barcelona, Spain*

- ICFO Summer Fellowship. Data analysis for the development and optimization of a portable real-time monitoring platform for the assessment of Covid-19 in the Medical Optics research group.

Quantum Computing Research Intern Sep. 2020 – Jun. 2021
Institute of Fundamental Physics, IFF CSIC *Madrid, Spain*

- JAE - INTRO 2020 Fellowship. Project on quantum computation and quantum information. Study of state-of-the-art techniques in quantum computation and information, execution of high quality simulations on IBM quantum computers using the Qiskit package in Python, application of quantum methods to optimisation problems and study of quantum machine learning concepts.

PRIZES

- Finalist for the Mathematics category at STEM for BRITAIN 2025, House of Commons.
- Best research poster at the department's PhD symposium 2024, 2025, Imperial College London.

INVITED TALKS

- Mary Lister McCammon Summer Undergrad Research Fellows, Imperial College. London UK (August 2024, July 2025). **(Invited)**
- Statistics Seminar, University of Glasgow. Glasgow UK (May 2025) **(Invited)**
- Workshop in Kernel Methods in Uncertainty Quantification and Experimental Design. Institute of Mathematical and Stastistical Innovation, Chicago USA (April 2025)
- 2nd RSS Workshop on Gradient Flows for Sampling, Inference, and Learning. Alan Turing Institute, London UK (March 2025) **(Invited)**
- Warwick Statistics Seminar. Warwick UK (February 2025) **(Invited)**
- Statistics Internal Seminar at Imperial College. London UK (November 2024).
- Natural Science Showcase Imperial College London (the Mathematics department selected two PhDs) (September 2024). **(Invited)**
- Workshop on Functional Inference and Machine Intelligence. Bristol UK (March 2024).

OUTREACH

- Girls in Maths Open Day, Imperial College London (March and July 2025).
- Oxford Maths Festival (May 2024).
- Imperial College London Maths School (May 2024).
- Organiser of the weekly Junior Stats Seminar at Imperial College London (2023-2024).