PAULA CORDERO ENCINAR

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Keywords: generative models, diffusion models, machine learning theory, sampling, optimisation, SDEs, AI4Science, uncertainty quantification, statistical theory for LLMs.

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 & PREPRINTS

- **Cordero Encinar, P.** and Duncan, A. (2025) "Certified Self-Consistency: Statistical Guarantees and Test-Time Training for Reliable Reasoning in LLMs". *arXiv preprint: 2510.17472.*

- **Cordero Encinar, P.**, Duncan, A., Reich, S. and Akyildiz, D. (2025) "Sampling by averaging: A multi-scale approach to score estimation". *The Thirty-ninth Annual Conference on Neural Information Processing Systems (NeurIPS).*

- **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, Best Student Paper Award.**

- **Cordero Encinar, P.**, Akyildiz, D., and Duncan, A. (2025) "Non-asymptotic Analysis of Diffusion Annealed Langevin Monte Carlo for Generative Modelling". *arXiv preprint: 2502.09306.*

- **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*, 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, 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

- PhD QRT Prize (Winner) 2025, Imperial College London.
- Best student paper award, Conference on Uncertainty in Artificial Intelligence 2025.
- Finalist for the Mathematics category at STEM for BRITAIN 2025, House of Parliament.
- Best research poster at the department's PhD symposium 2024, 2025, Imperial College London.

INVITED TALKS

- Statistics Seminar at the University of Glasgow, UK (May 2025).
- 2nd RSS Workshop on Gradient Flows for Sampling, Inference, and Learning at the Alan Turing Institute, London UK (March 2025).
- Statistics Seminar at the University of Warwick, UK (February 2025).
- Statistics Internal Seminar at Imperial College London, UK (November 2024).
- Natural Science Showcase Imperial College London, UK (the Mathematics department selected two PhD students) (September 2024).
- Mary Lister McCammon Summer Undergrad Research Fellows, Imperial College London, UK (August 2024, July 2025).

OUTREACH

- Girls in Maths Open Day, Imperial College London (March and July 2025).
- Imperial College London Maths School (May 2024).