

WILLIAM FORD

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RESEARCH PROFILE

Mathematics PhD candidate jointly at CMAP, École Polytechnique and LMO, Université Paris-Saclay, working on stability in optimal transport. Sole-author preprint during the first year of the PhD; MSc ranked **1st of 25**, M2 average **18.1/20**, and BSc ranked **7th of 129**. Strengths in rigorous analysis, optimisation, probability, and independent problem-solving.

SELECTED RESEARCH

***Quantitative Uniqueness of Kantorovich Potentials* – preprint** 2026

Sole-authored qualitative and quantitative uniqueness results for Kantorovich potentials, including lower-dimensional marginals; proved quantitative bounds on the diameter of solution set.

***Quantitative Stability in Discrete Optimal Transport* – M2 research thesis** 2025

Studied stability of optimal plans and dual potentials under perturbations, with results for fully discrete transport and dual uniqueness.

EDUCATION

CMAP, École Polytechnique / LMO, Université Paris-Saclay – PhD Mathematics 2025–2028

Research on stability in optimal transport. Supervisors: *Dr Michael Goldman and Dr Cyril Letrouit*.

Institut Polytechnique de Paris PhD Track / Paris-Saclay M2 Optimisation 2024–2025

Mention Très Bien, 18.1/20. Coursework in stochastic optimisation, convex and nonsmooth analysis, calculus of variations, PDEs, optimal control, optimal transport, and game theory.

Durham University – MSc Mathematics 2023–2024

First Class, 88/100; ranked 1st of 25. Advanced analysis and probability, including stochastic analysis, ergodic theory and percolation. Dissertation (86/100): *Partial Regularity for Optimal Transport Maps Between Uniform Measures*.

Durham University – BSc Mathematics 2020–2023

First Class, 82/100; ranked 7th of 129. Analysis, algebra, probability and statistics. Dissertation (79/100): *Normal Families in Complex Analysis*.

QUANTITATIVE AND TECHNICAL SKILLS

Mathematics	Probability, stochastic analysis, optimisation, functional analysis, PDEs, optimal transport.
Programming	Python, LaTeX.
Languages	English (native), French (C1), German (A2).
Interests	Cycling and bikepacking, hiking and expeditions, trumpet and jazz/classical music, close-up magic.

AWARDS AND SCHOLARSHIPS

2024	Sophie Germain M2 Excellence Scholarship (€11,000), Fondation Mathématique Jacques Hadamard.
2024	Full M2 and PhD Track scholarship, Institut Polytechnique de Paris.
2024	Winton MSc Memorial Prize (£500), highest-scoring Mathematics MSc student, Durham University.
2021	Norton Prize, performance in science, St Cuthbert's Society, Durham University.

TEACHING AND COMMUNICATION

Teaching Assistant – École Polytechnique 2025–2026

Led *How to Write Mathematics I* for 21 students and *Numerical Linear Algebra* for 20 students.

Teaching Assistant – Durham University 2023–2024

Led two weekly problem-solving tutorials and marked assignments across Calculus I and Linear Algebra I.

Mathematics Tutor – MyTutor.co.uk 2021–2023

Taught GCSE and A-level mathematics in one-to-one and small-group settings, emphasising problem-solving and intuition.