Alix Leroy

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A passionate scientist and feminist, PhD student in applied mathematics with experience in sampling and numerical methods for Langevin dynamics.

Education

2021 - (November 2025)	**PhD in Applied Computational Mathematics**, *University of Edinburgh, Scotland, UK*, Supervised by Dr. Jonas Latz, Prof. Des Higham and Prof. Ben Leimkuhler Thesis title: Adaptive stepsize algorithms for Langevin dynamics and application to graph based classification methods for image classification.
2020 - 2021	**Master of Science in Applied Computational Mathematics**, *University of Edinburgh* Graduated with distinction.
2017 - 2018	**Master of Science in Environment and Development**, *LSE, London, UK* Graduated with High Merit.
2014 - 2017	**Bachelor in engineering and physics**, *Université Libre de Bruxelles, Belgium* Graduated with Cum Laude
2012 - 2015	**Bachelor in business engineering**, *Université Libre de Bruxelles, Belgium* Graduated with Cum Laude

Research and Work Experience

May 2019 - August 2020	**Quantitative researcher**, *What works for Children Social Care* Research involved in the design, implementation and analysis of impact evaluations for improving children social care. Main lead on the re-analysis of 63 educational RCTs, it involves cleaning processes for the data, inclusion of covariates from large national database, with implementation of missing data strategies, appropriate model selections. Works includes as well reporting and presenting the analysis of findings to DfE representatives.
August 2018- April 2019	**Research coordinator**, *Abdul Latif Jameel Poverty Action Lab*, Supervised by Prof. John Weigel Field coordinator of a Randomized Control Trial (RCT) with the aim of assessing the socio-economic impact of property taxation in rural DR Congo. Work includes managing data collection, cleaning and pre-analysis (with STATA), managing a team of 20 enumerators, navigating local bureaucracy and working closely with the Taxation Ministry to ensure that the study protocols are followed. Main lead on a survey project that seeks to understand how households make their decisions on taxes by randomizing motivational messages and analysing beliefs.
August 2016	**Research assistant**, *Biomedical research department, Université Libre de Bruxelles* Test mechanical systems for stomach surgery, involves testing tensile properties of soft plastics, designing and printing moulds for samples with 3D design software (solidworks).

Conferences

May 2023	**Poster presentation**, *Mathematical Foundations of Data-driven Engineering*, International Center for Mathematical Sciences, Edinburgh, UK
June 2023	**Workshop participant**, *Mathematical Foundations of Data-driven Engineering*, Isaac Newton Institute, Cambridge, UK
June 2023	**Poster presentation**, *Foundations of Computational Mathematics 2023*, Paris, France
July 2023	**Mini-symposium organiser**, *29th Biennial Numerical Analysis Conference*, Glasgow, UK
Sept 2023	**Invited talk**, *Mathematical Optimization for Machine Learning*, Zuse Institut, Berlin, Germany
Feb 2024	**Invited talk**, *SIAM Conference on Uncertainty Quantification*, Trieste, Italy
Feb 2024	**Poster presentation**, *New Directions for Stochastic Differential Equations and Machine Learning*, International Center for Mathematical Sciences, Scotland

Publications

2024 **Alix Leroy**, Benedict Leimkuhler, Jonas Latz and Desmond J. Higham, Adaptive stepsize algorithms for Langevin dynamics, *SIAM Journal on Scientific Computing (SISC)*, in-press `https://arxiv.org/abs/2403.11993`

Awards & Grants

June 2022 **MAC MIGS PhD programme grant**, *EPSRC-funded PhD programme in Mathematical Modelling, Analysis and Computation*, Edinburgh, UK
- Funding for an intensive 4-year training and research programme

May 2022 **AFR PhD grants**, *Luxembourg National Research Fund* , Luxembourg, Luxembourg
- PhD and travel funding for 4 years or until completion of the PhD degree.

Teaching

Sept 2022 - Present **Tutor**, *University of Edinburgh,*
Courses tutored: Numerical Partial Differential Equations(MATH11207), Research Skills for Computational Mathematics (MATH11197)), Introduction to Linear Algebra (MATH08057) and Computer Lab for Optimisation.
- Additional responsibilities involved grading of students' work, and providing written and verbal feedback.

Leadership and Volunteering

2021- 2024 **Member**, *Piscopia Initiative*, University of Edinburgh, UK
- Member of the Piscopia initiative which aims at encouraging underrepresented genders to pursue a PhD in Mathematics, help organise regular network events and provide support and presentation for PhD applicants.

2021- 2023 **Elected student representative**, *MAC-MIGS programme*, University of Edinburgh, UK
- Elected student representative for the MAC-MIGS cohort. Coordination of student meetings, gather feedback and regular meeting with MAC MIGS management board.

2017 **co-Founder**, *Show me how feminist you are (Balance ton Feminisme)*, ULB, Bruxelles, Belgium
- Promote awareness about gender issues on campus. Involved interviewing students on campus and deconstructing sexist stereotypes, followed by an exhibition on various theme around gender, aiming to create a space to discuss everyday sexism.

2016 **Founder and manager**, *The Polytech Game*, Engineering Faculty, ULB, Bruxelles, Belgium
- A one-day engineering challenge that gathers 70 high school students and 17 engineering students. Create and manage the project from scratch (marketing, promotion, budget and fund raising, logistic, coordination). Result in a 10% raise in the number of student enrolled in the faculty and the latest edition happened on the 16/03/2024.

2016- 2018 **Elected student administrator**, *Student union of the Université Libre de Bruxelles*, Belgium
- Elected student administrator for the engineering faculty (1000 students) for 2 years for the the main representative body of the 28 000 students in university boards (where student's voice accounts for 20%).
- Coordination of the association, tasked with managing the delegates - helping and encouraging delegates-, preparation and mediation of meetings and delegation of tasks. Responsible for issues around gender, involves survey campaign and interview, meeting with student's associations to foster safety on-campus, meeting with university board, lobby to implement guidelines and internal rules to prevent sexism from academics.

Skills

Computer Extensive experience working with computer cluster in Python, C++ and experience with Matlab, Stata and R

Languages Fluent in French and English.

Sports Rugby, Hiking, Surfing