

Iain Souttar – Curriculum Vitae

PhD Student
Heriot-Watt University and University of Edinburgh
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I am a PhD student enrolled in a centre for doctoral training at the Maxwell Institute Graduate School. I have predominantly worked on projects involving mathematical modelling, stochastic analysis and probability with a focus on multiscale methods and interacting particle systems. My interests lie in this as well as the interface of mathematical modelling and decision making.

EDUCATION

PhD, Mathematics

Modelling, Analysis and Computation in the Maxwell Institute Graduate School Centre for Doctoral Training at Heriot-Watt University and University of Edinburgh, UK 2019-
THESIS - Pending.

Supervisor(s): Dr Michela Ottobre and Dr Ben Goddard.

Master of Math (integrated), Mathematics

University of Warwick, UK 2015-2019
THESIS - Utilising Bayesian methods for Triage data (4th year project.)

Grade: First

Supervisor(s): Dr Sebastian Vollmer (4th year project.)

RESEARCH PROJECTS

- *Piecewise Deterministic Markov Processes for modelling collective navigation*. Supervised by Dr Michela Ottobre and Dr Kevin Painter. 2022-
- *Uniform in time bounds on the method of averaging*. See first publication. 2020-
- *Deep Learning in Imaging Inverse Problems and Application to Medicine*. Group research project. Supervised by Dr Audrey Repetti and Dr Yves Wiaux. 2020
- *Dispersion in periodic and random fields - Homogenization*. Group research project. Supervised by Dr Kostas Zygalakis and Prof Jacques Vanneste. 2019-2020

PUBLICATIONS

- Dan Crisan, Paul Dobson, Ben Goddard, Michela Ottobre, and Iain Souttar. “Poisson Equations with locally-Lipschitz coefficients and Uniform in Time Averaging for Stochastic Differential Equations via Strong Exponential Stability.” arXiv preprint arXiv:2204.02679 (2022). Submitted to *Annals of Probability*, 68 pages.
- Ben Goddard, Michela Ottobre, Kevin Painter, Iain Souttar. “On Averaging, when the fast process has multiple invariant measures.” (close to submission.)

- Ben Goddard, Michela Ottobre, Kevin Painter, Iain Souttar. “Piecewise deterministic models for collective navigation.” (work in progress.)

INVITED SEMINARS

- SIAM Conference on Computational science and engineering. Feb 2023.
- LMS-Birmingham Workshop on Stochastics/Partial Differential Equations. June 2022.
- Heriot-Watt probability seminar. April 2022.
- Warwick junior Analysis and Probability seminar. Jan 2023.
- Lancaster University Postgraduate colloquium. 2020.
- Flash talk at MATH+ CECAM Discussion Meeting on Generalized Langevin Equations. Sep 2021.
- Durham symposium. Aug 2022. Poster presentation.
- Reading group (2hr each session). Presentations on Second order PDEs in Hilbert Spaces (Da Prato and Zabczyk). 2020-21.

CONFERENCE ATTENDANCE

- Heilbronn FRG meeting on Nonreversible Markov chains, 2 - 5 Aug 2022
- Connections between interacting particle dynamics and data science, 22 - 27 May 2022
- Frontiers in the Interplay Between Probability and Kinetic Theory, 04 - 08 Apr 2022
- Online conference on stochastic analysis, 30 Aug - 01 Sep 2021
- Workshop on entrepreneurship, May 2021.

TEACHING EXPERIENCE

Tutorial assistant 2019-
Heriot-Watt University and University of Edinburgh

- Preparing of exercises for Masters level courses on Measure Theory and Probability theory.
- Lab assistant for undergraduate Python course.
- Marking of programming assignments for undergraduate Python course.

Fourth year supervisor 2018-2019
University of Warwick

- Preparing tutorials for a group of 15 first year joint honours students.
- Marking of all assignments due for their mathematics modules.
- Providing a pastoral first point of contact between university and student.

FURTHER ACADEMIC EXPERIENCE

Co-organiser of MAC-MIGS Welcome Colloquium 2020.

- Invited speakers for fully online event.

Organiser of MIGS Ethics of mathematics research event 2020.

- Organised novel research event.
- Chaired panel discussion afterwards.
- Co-interviewed series of academics discussing the ethical issues surrounding mathematical and statistical modelling.

MAC-MIGS social event 2021.

- Organised first in person cross-cohort social event for the MAC-MIGS CDT in order to foster collaboration and cohesion within the training centre.

MAC-MIGS cohort representative 2021-

- Attend MAC-MIGS management meetings, representing my cohort of 15 PhD students.
- Organise weekly 5-a-side football within a pool of around 70 MIGS staff and students.

GRADUATE LEVEL COURSES

- 2022: *Advanced methods of stochastic sampling*. Taught by Prof Ben Leimkuhler, Dr Daniel Paulin and Dr Marcelo Perreyra.
- 2021: *Modelling in the life sciences*. Taught by Prof Jonathan Sherratt.
- 2020: *Variational methods for PDEs and nonlocal problems*. Taught by Dr Heiko Gimperlein. *Responsible Research and innovation*. Taught by Michael Barany. *Modelling camp, tackling industrial problems*.
- 2019 (selected): *Stochastic Analysis, Structures of Complex systems, Programming for Data Science, Convergence of Probability measures. Population Dynamics*.