JEREMY WORSFOLD

EDUCATION

PhD on "Stochastic Active Flows" **2020-2023**

University of Bath | *Mathematical Sciences, SAMBa Centre for Doctoral Training*

- Developed a general model of random interacting particles and found analytic results for the finite sized effects of various examples
- Discovered a novel form of synchronisation from purely random forcing between oscillators. Used cutting-edge theory to study steady states and low dimensional dynamics.
- From a stochastic model of vehicle traffic, showed how randomly changing lanes causes a slow-down in traffic flow.

MRes in Statistical Applied Mathematics **2019-2020**

University of Bath | *Mathematical Sciences, SAMBa Centre for Doctoral Training*

- Masters dissertation topic: "Stochastic Active Flows"
- Worked on various group projects including: Statistical inference of MRSA transmission networks between hospitals; Reinforcement learning for plane navigation of ash clouds with Rolls Royce.
- Achieved first class degree, modules included: Applied SDEs, Advanced dynamical systems, and Scientific computing

MPhys in Theoretical Physics **2015-2019**

University of Manchester | *UK*

- Special Commendation for achieving over 80% average.
- Masters dissertation topic: "Analysing Spatial Control in Football" in collaboration with Manchester City Football Club

3 A*s and 1 A at A-level **2013-2015**

EXPERIENCE

INNOVATION RESEARCH ASSISTANT **2023-present**

University of Warwick

- Worked across different long-term and occasional short-term projects with diverse partnerships
- Implemented new modelling techniques for interdisciplinary projects

UNDERGRADUATE TUTOR **2019-2023**

University of Bath

- Tutored 1st year modules introducing programming in MATLAB (2019-2020)
- Tutored 2nd year modules on *ODEs and Control* and *Modelling and dynamical systems* (2020-2023)

PUBLICATIONS

J. Worsfold and T. Rogers (2023). "Binary synchronisation of noise-coupled oscillators". In: URL: https://arxiv.org/abs/2303.14224.

J. Worsfold and Tim Rogers (2023). "Stay in your lane: Density fluctuations in multi-lane traffic". In: URL: https://arxiv.org/abs/2308.07065.

J. Worsfold, Tim Rogers, and Paul Milewski (2023). "Density Fluctuations in Stochastic Kinematic Flows". In: *SIAM Journal on Applied Mathematics* 83.3, pp. 1000–1024. DOI: 10.1137/22M1494166.

CONFERENCES & TALKS

TALK: BINARY SYNCHRONIZATION OF RANDOMLY FORCED OSCILLATORS — 2023
SIAM Dynamical Systems, Portland, OR, USA

INVITED TALK: QUANTIFYING FLUCTUATIONS IN PARTICLE MODELS FOR COLLECTIVE BEHAVIOUR — 2023
University of St Andrews, UK

POSTER: QUANTIFYING FLUCTUATIONS IN PARTICLE MODELS FOR COLLECTIVE BEHAVIOUR — 2022
ESMTB, Heidelberg, Germany

TALK: STOCHASTIC SYNCHRONISATION IN NON-LOCALLY COUPLED, NOISY OSCILLATORS — 2022
BAMC, Loughborough, UK

- Won **best student talk**

ADDITIONAL SKILLS

●●● Julia, Python, LaTeX, Git

●●○ C, C++

Leadership
- Restructured and ran the introductory programming training for incoming PhD students in the department
- Co-President for Just Love Manchester 2018-2019, managing a comittee and organising volunteering, fundraising and awareness events for social justice causes
- Captain for the Postgrad Maths football team 2021-2023

Communication
- Given various seminars in the department on topics such as deep reinforcement learning and multilevel Monte Carlo methods

Administration
- Treasurer for Bath SIAM student chapter 2022-2023, budgeting and organising socials and networking events
- Co-organised the weekly postgraduate students seminars 2020-2021