

Samuel Charles

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LinkedIn profile
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Education

University of Oxford

DPhil Mathematics, focussing on Partial Differential Equations

Oct 2022 – Present

Oxford, Oxfordshire, United Kingdom

University of Cambridge

MASt Pure Mathematics

Grade: Distinction

Oct 2020 – Jun 2021

Cambridge, Cambridgeshire, United Kingdom

University of Warwick

BSc Mathematics

Grade: First

Oct 2017 – Jun 2020

Coventry, Warwickshire, United Kingdom

Research Experience

DPhil Research

Mathematical Institute, University of Oxford

Oct 2022 – Present

Oxford, Oxfordshire, United Kingdom

- Currently working on a problem relating to proving global existence and nonlinear stability of solutions to the Compressible Euler-Riesz equations.
- Supervised by Professor José Carrillo and Professor Gui-Qiang Chen.

Summer Research Project

Mathematics Institute, University of Warwick

Jul 2020 – Sep 2020

Coventry, Warwickshire, United Kingdom

- Implemented a machine learning algorithm for solving Partial Differential Equations with high dimensional domains, that can't be typically solved via standard numerical methods.
- Worked on the theory and adapted the algorithm to work for Partial Differential Equations with a more general domain.

Other Experience

Seminar Organiser

Mathematical Institute, University of Oxford

Oct 2023 – Present

Oxford, Oxfordshire, United Kingdom

- I am in charge of organising and inviting speakers to talk at my research group seminar.

Mentor

Canada/USA MathCamp

Jun 2025 – Aug 2025

Portland, Oregon, United States of America

- I planned and taught classes in university mathematics in topics of my choosing to brilliant high school mathematics students from around the world from very different socioeconomic backgrounds.

Lecturer

Magdalen College and St Hilda's College, University of Oxford

Oct 2024 – Jun 2025

Oxford, Oxfordshire, United Kingdom

- I planned and taught tutorials, classes and examinations for undergraduate students.

Teaching Assistant/Tutor

Mathematical Institute, University of Oxford

Oct 2022 – Jun 2024

Oxford, Oxfordshire, United Kingdom

- Was responsible for the marking of students assignments and assisted in the teaching of mathematics courses, such as Fourier analysis and functional analysis.

Tutor

African Institute for Mathematical Sciences

Nov 2021 – Jul 2022

Cape Town, Western Cape, South Africa

- Assisted in the teaching of a masters course in mathematics by planning group and individual tutorials as needed, contributing to the assessment of student performance on an ongoing basis, preparing instructional materials and additional exercises as needed and more.

Publications

- Jose A. Carrillo, Samuel R. Charles, Gui-Qiang G. Chen, and Difan Yuan. Nonlinear stability and instability of finite-energy solutions of the compressible Euler-Riesz equations with general pressure laws, Preprint, 2025
- Jose A. Carrillo, Samuel R. Charles, Gui-Qiang G. Chen, and Difan Yuan. Global existence and nonlinear stability of finite-energy solutions of the compressible Euler-Riesz equations with large initial data of spherical symmetry, Preprint arXiv:2502.13094, 2025
- Pride Duve, Samuel Charles, Justin Munyakazi, Renke Lühken, Peter Witbooi. A mathematical model for malaria disease dynamics with vaccination and infected immigrants. *Mathematical Biosciences and Engineering*, 2024, 21(1): 1082-1109. doi: 10.3934/mbe.2024045

Awards & Honors

Sloane Robinson foundation graduate scholarship <i>Lincoln College, University of Oxford</i>	2022–2026
Awarded a titular scholarship for academic achievement <i>Clare Hall College, University of Cambridge</i>	2021
Departmental prize for ‘outstanding academic achievement’ <i>Mathematics Institute, University of Warwick</i>	2020

Specialized Skills

Programming Languages: Python (intermediate), TensorFlow (intermediate), MATLAB (intermediate), C# (intermediate), R (beginner), Java (beginner).