Sam A. Scivier

British & Canadian Citizen

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sscivier | Google Scholar | Oxford Profile

PROFESSIONAL SUMMARY

I am a PhD student in the Department of Earth Sciences at the University of Oxford, developing probabilistic methods for uncertainty quantification in geophysics. I hold a Master's in Physics from the University of Birmingham and have gained industry experience through internships in quantum computing at D-Wave Systems (Canada) and Riverlane (UK). My research focuses on Gaussian process-based approaches for probabilistic fusion of geospatial datasets, with applications to earthquake ground motion prediction and seismic hazard assessment. I am interested in applying physics-based computational, data science, and machine learning methods to tackle challenges across geoscience, aerospace, sustainability, and emerging technologies, with a particular focus on research opportunities that combine rigorous scientific methodology with practical applications having tangible societal impact.

EDUCATION

***Ph.D.*, Geophysics** 10/2022 – Present
University of Oxford, *Oxford, UK* Expected 2026
Funding: Oxford-NERC DTP in Environmental Research (Full studentship ∼ £120k)
Advisor(s): Paula Koelemeijer, Tarje Nissen-Meyer, Atılım Güneş Baydin
Gaussian processes for the probabilistic fusion of geophysical datasets – with application to seismic hazard assessment.

***M.Sci.*, Physics (First Class Honours)** 10/2018 – 07/2022
University of Birmingham, *Birmingham, UK*
Advisor(s): Alberto Vecchio
Specialized coursework in theoretical and quantum physics, radar and imaging techniques.
Final project: Machine learning algorithms for early identification of massive black hole binary mergers for LISA mission (ESA; launch 2035).
Third year project: Bayesian inference for parameter estimation of binary black hole mergers in LIGO experiment.

***High School Diploma*, British Columbia** 09/2013 – 06/2018
Prince of Wales Secondary School, *Vancouver, Canada*
Graduated as highest GPA students. Top scholar for Grades 10, 11, and 12.

RESEARCH EXPERIENCE

PhD Researcher October 2022 – present
Department of Earth Sciences, University of Oxford

Probabilistic methods for uncertainty quantification in physics-based seismic hazard assessment. Gaussian process approaches for geospatial data fusion. Open-source software development.

Quantum Science Intern June – August 2021
Riverlane, Cambridge, UK

Resource efficiency in quantum computation. Python software development for quantum computers.

Quantum Research Intern June – August 2019
D-Wave Systems Inc., Burnaby, Canada

Theoretical research in quantum technology. MATLAB simulations of nonstoquastic quantum processing. Co-authored Physical Review A paper (2021).

Student Science Mentorship March – April 2016
DPoint Technologies Inc., Vancouver

Membrane sample preparation and testing for energy recovery applications.

PUBLICATIONS

1. **S.A. Scivier**, T. Nissen-Meyer, P. Koelemeijer, and A.G. Baydin, "Gaussian Processes for Probabilistic Estimates of Earthquake Ground Shaking: A 1-D Proof-of-Concept," *arXiv:2412.03299* (2024).
2. N.S. Blunt, J. Camps, O. Crawford, R. Izsák, S. Leontica, A. Mirani, A.E. Moylett, **S.A. Scivier**, et al., "Perspective on quantum computing for drug discovery," *J. Chem. Theory Comput.* **18**, 7001-7023 (2022).
3. E.M. Lykiardopoulou, A. Zucca, **S.A. Scivier**, and M.H. Amin, "Improving nonstoquastic quantum annealing with spin-reversal transformations," *Phys. Rev. A* **104**, 012619 (2021).

TEACHING & OUTREACH

Workshop Leader November 2024
Oxford Intelligent Earth CDT

Gaussian Processes for Probabilistic Earthquake Ground Motion Prediction. Created open-source materials.

PROFESSIONAL EXPERIENCE

Assistant Programme Coordinator June – August 2020
Squash British Columbia, Vancouver

COVID-19 pandemic response design. Communications management and virtual event organization.

Assistant Squash Professional June 2016 – September 2018
Jericho Tennis Club, Vancouver

Junior and adult coaching. Positive sports environment development.

AWARDS & RECOGNITION

IAGA/IASPEI Travel Grant (2025) • British Seismology Best Student Poster (2024) • SWJ Smith Prize - Highest M.Sci. Physics Graduate (2022) • Physics Sports Scholarship (2019-2022) • Governor General's Academic Medal (2018) • BC Academic Achievement Scholarship (2018)

TECHNICAL SKILLS

Programming: Python (7+ years), MATLAB, Bash, HTML
ML & Data Science: TensorFlow, PyTorch, Gaussian Processes, Bayesian inference
Geophysics: Finite difference methods, seismic wave propagation, geospatial data
Tools: GitHub/GitLab, LaTeX, VSCode
Methods: Probabilistic methods, numerical methods, open-source development

SELECTED CONFERENCES & PRESENTATIONS

Invited Talk November 2024
University of Exeter Gaussian process methods for ground motion prediction

Oral Presentation September 2025
IAGA/IASPEI Assembly, Lisbon Probabilistic fusion of seismic velocity models

Poster December 2024
NeurIPS ML4PS Workshop, Vancouver Gaussian Process workflow for earthquake ground motion

Poster (*Best Student Prize*) March 2024
British Seismology Meeting, Reading Neural process methods for seismic velocity merging

Workshop March 2023
SPIN ITN, Pitlochry, Scotland Earth imaging and inverse problems in geophysics

LANGUAGES

English (Native) • French (Professional) • Romanian (Basic)

EXTRACURRICULAR ACTIVITIES

Competitive Squash: Silver medal (2019 Canada Winter Games), Gold medal (2022 BUCS Championships), University of Birmingham President (2019-2020)
Other Interests: Skiing, hiking, cycling, climbing, photography

PROFESSIONAL MEMBERSHIPS

Fellow of the Royal Astronomical Society (2025) • Institute of Physics Member (2018–present)