Peter Koepernik

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⌂ Homepage   🎓 Google Scholar   in LinkedIn

EDUCATION

D.Phil. Statistics, *University of Oxford*   10/2021 – NOW
ANTICIPATED GRADUATION: 07/2025
- Working on applications of rough path theory to numerical stochastic analysis with Terry Lyons
- Two completed projects in mathematical population genetics [1,2] with Alison Etheridge

M.Sc. Mathematics, *University of Oxford*   10/2020 – 07/2021
GRADE: DISTINCTION (**Rank 1 / 52**)
- Specialisation in probability theory and stochastic analysis
- Oxford Mathematical Prize for best performance in examinations

B.Sc. Computer Science, *Karlsruhe Institute of Technology*   10/2017 – 10/2020
GRADE: 1.0 (GPA 4.0) **Top 0.5%**
- Thesis on posterior consistency of Gaussian process regression in metric spaces
- Received best thesis award and published thesis in JMLR [4]

B.Sc. Mathematics, *Karlsruhe Institute of Technology*   10/2018 – 07/2020
GRADE: 1.0 (GPA 4.0) **Top 3.3%**
- Joint maths–physics thesis on quantum Anderson localisation in disordered media
- Theoretically best possible final transcript (best grade 1.0 in every exam)

B.Sc. Physics, *Karlsruhe Institute of Technology*   10/2016 – 08/2020
GRADE: 1.0 (GPA 4.0) **Top 1.9%**

EXPERIENCE

Center for Human-Compatible AI (UC Berkeley)   03/2025 – 08/2025 (FT)
Research Intern

Working on methods to mitigate partial observability in reinforcement learning with Cameron Allen.

QED Analytics   06/2024 – 10/2024 (FT)
Mathematical Modeller (Internship)

In one project, I used probabilistic modelling, data analysis, and machine learning to develop predictive algorithms for financial regime changes. In a second project, I worked on novel applications of known methods in combinatorial optimisation and numerical linear algebra to develop bespoke solutions for large scale scheduling problems in the LNG industry.

FUNDING & AWARDS

EPSRC DTP Scholarship   2021 – NOW
University of Oxford

St. Catherine's Science Graduate Scholarship   2021 – NOW
Awarded to the top two incoming PhD students in sciences at St. Catherine's College each year
St. Catherine's College, Oxford

Oxford Mathematical Prize   2021
For best performance in examinations in the 2021 cohort of the M.Sc. in Mathematical Sciences
University of Oxford

Gisela and Erwin Sick Science Award   2020
For best 2020 thesis across all areas related to information science and technology
Karlsruhe Institute of Technology

Scholarship by Studienstiftung   2017 – 2021
Most prestigious undergraduate scholarship in Germany, awarded to less than 0.5% of students
German Academic Scholarship Foundation

CODING COMPETITIONS

Citadel–C1 Terminal AI Competition. Players code algorithms that compete in a head-to-head turn based strategy game, placing defensive structures, managing resources, and coordinating attacks.
- I wrote an AI–assisted tree search algorithm built on top of a highly optimised turn simulator and handcrafted algorithms that find effective attacks and minimal defensive answers to possible incoming attacks.
- **1st Place** on Global Leaderboard April to June 2022, **2nd Place** in Summer Invitational August 2022

International Collegiate Programming Contest (ICPC). The ICPC is a competitive programming contest in which teams of three students from universities across the world (or, in the GCPC, across Germany) compete in five hour contests, solving problems that require mathematical and algorithmic thinking, coding skills, and team work.

- **5th Place** in GCPC 2020, **6th Place** in GCPC 2019

ACADEMIC ACTIVITIES

Peer Reviewer for *Electronic Journal of Probability* and *Stochastic Processes and their Applications*

Invited Conference Talks

JUL 2025	44th Conference on Stochastic Processes and their Applications *(upcoming)*	*Wrocław, Poland*
MAR 2024	Evolution in structured populations: recent progress and new challenges	*University of Oxford*

Invited Seminar Talks

NOV 2023	Bath Probability Seminar *University of Bath*
MAY 2023	Oxford Probability Seminar *University of Oxford*

Contributed Talks

NOV 2023	Junior Probability Seminar	*University of Oxford*
FEB 2023	Oxford Stochastic Analysis Seminar	*University of Oxford*
JUN 2022	Short Talk at PIMS Summer School in Probability	*University of British Columbia, Vancouver*

Conferences

JUN 2025	CHAI Workshop 2025	*UC Berkeley*
JUN 2024	HiGHS Workshop 2024	*University of Edinburgh*
MAR 2024	Conference "*Evolution in structured populations: recent progress and new challenges*"	*University of Oxford*
MAR 2023	Spring School on Probabilistic Methods in Population Biology	*Technische Universität Darmstadt*
SEP 2022	Conference "*Stochastic Models in Mathematical Physics*"	*Technion, Haifa, Israel*
JUN 2022	PIMS Summer School in Probability	*University of British Columbia*
MAY 2022	CRM Conference "*Branching systems, PDEs, and population models*"	*Université de Montréal*

TEACHING EXPERIENCE

St Peter's College, Oxford
College Lecturer — 01/2022 – NOW

Tutored undergraduate students in analysis, measure theory, and integration. Involved in the annual undergraduate interview and admissions process. Tutored visiting students in one-on-one and small group tutorials.

Department of Statistics, University of Oxford
Class Tutor — 01/2022 – 06/2024

Tutored undergraduate students in probability theory.

Karlsruhe Institute of Technology
Class Tutor — 10/2017 – 09/2020

Taught classes and marked exams for undergraduate students in probability theory, measure theory, and analysis.

PUBLICATIONS

[1] **Koepernik, Peter** (2024). The Brownian Spatial Coalescent. *arXiv:2401.08557, submitted*.

[2] **Koepernik, Peter** (2024). On a repulsion-diffusion equation with immigration. *Discrete and Continuous Dynamical Systems*, 44(4), 1106-1133.

[3] **Hambly, Ben and Koepernik, Peter** (2023). Dimension results and local times for superdiffusions on fractals. *Stochastic Processes and their Applications*, 158, 377-417.

[4] **Koepernik, Peter** (2023). Convergence Rates for Nearest Neighbour Regression in Infinite Dimensions. *St Catherine's Academic Review*, 1, 45-63.

[4] **Koepernik, Peter and Pfaff, Florian** (2021). Consistency of Gaussian process regression in metric spaces. *Journal of Machine Learning Research*, 22(244), 1-27.