

Ludger Pähler

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📄 <https://ludgerpaehler.github.io/>

Doctoral Candidacy

Technical University Munich

Munich, GER

PhD in Fluid Mechanics

2017–2021

Completing a PhD on the Uncertainty Quantification of Turbulence Reactive Flows under the supervision of Professor Nikolaus Adams.

Thesis: *Uncertainty Quantification of Reactive Shock Bubble Interactions*

Supervisor: Nikolaus Adams

Description: Investigation of the propagation of experimental uncertainties within 2D & 3D Reactive Shock Bubble Interaction (RSBI) models. Further analysis is being done using Surrogate models for compressible flows and Inverse Bayesian techniques to find the true experimental parameters.

Postgraduate Education

Imperial College

London, UK

MSc Applied Mathematics, Merit

2016–2017

Took courses on Fluid Dynamics, Asymptotic Methods, Vortex Dynamics, Finite Elements, Numerical ODEs, Dynamical Systems and Ergodic Theory. I furthermore took part in a reading group of PhD students which investigated transitions between order and chaos in systems driven by Stochastic and Random Differential Equations.

Thesis: *Non-nested Geometric Multigrid in Complex Domains*

Supervisor: Lawrence Mitchell

Description: Implementing mesh-to-mesh transfers for non-nested meshes and subsequently using it to solve complex PDEs within the multigrid framework. The existing capabilities of Firedrake are extended to support a wider class of problems.

Undergraduate Education

University of York

York, UK

BSc Mathematics, 78% First Class with Honours

2013–2016

Thesis: *A Rigorous Introduction to Stochastic Differential Equations*

Supervisor: Zdzislaw Brzezniak

Description: Assuming a typical undergraduate syllabus I present an introduction to Measure Theory and then subsequently develop the theory of Brownian Motion, Martingales and Stochastic Differential Equations.

Undergraduate Education 2

University of California, Berkeley

Berkeley, USA

Summer School

2014

Pre-University Education

Georg-Büchner-Gymnasium
German Abitur, 1.2 (very good)

Bad Vilbel, GER
2004–2013

Workshops & Conferences Attended

Isaac Newton Institute for Mathematical Sciences
Surrogate Models for UQ in complex systems,
Research Workshop

Cambridge, UK
Feb 2018

Imperial College
Firedrake Workshop,
User and Developer Workshop

London, UK
Mar 2017

University of York
Probability in the North Conference,
Various talks concerning Rough Path Theory and the KPZ Equation

York, UK
Aug 2015

Experience

University of York
Student Researcher
Supported by a project studentship of £1440

York, UK
Jun 2015–Sep 2015

Title: *Option pricing with regret in illiquid markets*

Supervisor: Alet Roux

Description: Numerically analysed a recently developed numerical method for pricing derivatives with multiple payoffs at different times in an illiquid financial market model. The method's behaviour was analysed for different option types and tested for its regularity and conformity with reality.

Languages

German: Native speaker

English: Bilingual proficiency

Programming Languages

Python: Advanced Proficiency, familiar with PETSc and MPI

Fortran, LaTeX, R, MATLAB & Octave: Advanced Proficiency

Pyro - Deep Probabilistic Programming: Intermediate Proficiency

Professional Memberships

Scientific Organizations: APS, IEEE, IEEE/CS, SIAM

References

Name	E-mail
o Nikolaus Adams, PhD Supervisor	o nikolaus.adams@tum.de
o Phaedon-Stelios Koutsourelakis, PhD Mentor	o p.s.koutsourelakis@tum.de
o Lawrence Mitchell, Thesis Supervisor (MSc)	o lawrence.mitchell@imperial.ac.uk
o Zdzislaw Brzezniak, Thesis Supervisor (BSc)	o zdzislaw.brzezniak@york.ac.uk