Ludger Pähler

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Doctoral Candidacy

Technical University Munich **Munich, GER**
PhD in Fluid Mechanics *2017–2021*
Completing a PhD on the Uncertainty Quantification of Turbulent 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 **Bad Vilbel, GER**
German Abitur, 1.2 (very good) *2004–2013*

Workshops & Conferences Attended

University of Souther California **Los Angeles, USA**
Uncertainty Quantification Summer School, *Aug 2018*

Isaac Newton Institute for Mathematical Sciences **Cambridge, UK**
Surrogate Models for UQ in complex systems, *Feb 2018*

Imperial College **London, UK**
Firedrake Workshop, *Mar 2017*

University of York **York, UK**
Probability in the North Conference, *Aug 2015*

Experience

University of York **York, UK**
Student Researcher *Jun 2015–Sep 2015*
Supported by a project studentship of £1440

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, HTML, PBS, Julia, MATLAB & Octave: Advanced Proficiency

PyTorch, Pyro - Deep Probabilistic Programming: Intermediate Proficiency

Professional Memberships

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

References

Name	E-mail
○ Nikolaus Adams, PhD Supervisor	○ nikolaus.adams@tum.de
○ Lawrence Mitchell, Thesis Supervisor (MSc)	○ lawrence.mitchell@imperial.ac.uk
○ Zdzislaw Brzezniak, Thesis Supervisor (BSc)	○ zdzislaw.brzezniak@york.ac.uk