# Ludger Paehler

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https://github.com/ludgerpaehler

## Doctoral Candidacy

**Technical University Munich** **Munich, GER**
*PhD in Mechanical Engineering* *2017–2021*
Completing a PhD in the Uncertainty Quantification of Turbulence Gas Dynamics 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 the 3D Reactive Shock Bubble Interaction (RSBI) model. Further analysis is being done using Bayesian Optimization with regard to the parametrization in the search for the true experimental parameters.

## Postgraduate Education

**Imperial College** **London, UK**
*MSc Applied Mathematics* *2016–2017*
Taking courses in 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 at Berkeley** **Berkeley, USA**
*Summer School* *2014*

## Workshops & Conferences Attended

**Imperial College** **London, UK**
*Firedrake Workshop,* *Mar 2017*
User and Developer Workshop

**University of York** **York, UK**
*Probability in the North Conference,* *Aug 2015*
Various talks about Rough Path Theory and the KPZ Equation

## 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.

**F1F9** **New Delhi, IND**
*Intern* *Mar 2014–Apr 2014*
Created financial models in Excel and worked in the Excel standard FAST

## Languages

**German**: Native speaker

**English**: Bilingual proficiency

## Programming Languages

**Python**: Advanced Proficiency, familiar with PETSc and MPI

**Fortran**: Advanced Proficiency

**MATLAB & Octave**: Advanced Proficiency

**LaTeX**: Advanced Proficiency

**R**: Advanced Proficiency

**Java**: Elementary Proficiency

## Professional Memberships

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

## References

| Name | E-mail |
|---|---|
| ○ Jonathan Mestel, Course Advisor | ○ j.mestel@imperial.ac.uk |
| ○ Lawrence Mitchell, Thesis Supervisor (MSc) | ○ lawrence.mitchell@imperial.ac.uk |
| ○ Zdzislaw Brzezniak, Thesis Supervisor (BSc) | ○ zdzislaw.brzezniak@york.ac.uk |
| ○ Stephen Connor, Tutor | ○ stephen.connor@york.ac.uk |
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