

Johannes Zimmer

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Education

PhD in Mathematics, Technische Universität München, October 2000, summa cum laude

Diploma in Mathematics, Technische Universität München, November 1997, average 1.0

Visiting scholar, State University of New York, Stony Brook, Spring 1997

Professional experience

Reader in Applied Mathematics, University of Bath, Department of Mathematical Sciences, since September 2009

Lecturer in Applied Mathematics, University of Bath, Department of Mathematical Sciences, September 2004 – August 2009

Postdoctoral Fellow and Emmy Noether Fellow, Max Planck Institute for Mathematics in the Sciences, September 2003 – August 2004

Lecturer in Mechanical Engineering, California Institute of Technology, Division of Engineering and Applied Science, January 2002 – June 2002

Postdoctoral Fellow, California Institute of Technology, Division of Engineering and Applied Science, September 2001 – August 2003

Postdoctoral Fellow, Technische Universität München, Centre for Mathematical Sciences, November 2000 – August 2001

Scientific Assistant, Technische Universität München, Centre for Mathematical Sciences, December 1997 – October 2000

Awards and fellowships

- Timoshenko Visiting Scholar, Stanford University, 2004 – 2005
- Advanced Research Fellowship, Engineering and Physical Sciences Research Council, October 2004 – September 2009
- Emmy Noether Stipend, Deutsche Forschungsgemeinschaft, January 2004
- Award of the Deutsche Mathematiker-Vereinigung (German Mathematical Society) at the students' conference 1997 (14 awards nationwide)
- Award of the Hurwitz-Gesellschaft zur Förderung der Mathematik an der TU München (Mathematical Society of the Technische Universität München) for excellent PhD thesis, 2001
- Award of the Hurwitz-Gesellschaft zur Förderung der Mathematik an der TU München (Mathematical Society of the Technische Universität München) for excellent diploma thesis, 1997
- Scholar, Studienstiftung des Deutschen Volkes, 1992 – 1997 (German National Merit Foundation)

Professional activities

Organiser (with Wolfgang König, Peter Mörters, Mark Peletier), Oberwolfach conference ‘Interplay of Analysis and Probability in Physics’, Oberwolfach, 22 – 28 January 2012

Organiser (with Chris Budd), Mid-term Meeting EU Initial Training Network FIRST (Fronts and Interfaces in Science and Technology), Bath, 13 – 15 December 2011

Organiser (with Ben Leimkuhler, Carl Dettmann), Minisymposium ‘Novel mathematical developments for molecular modelling’, Multiscale Molecular Modelling (M3), Edinburgh, 30 June – 3 July 2010

Organiser (with Giovanni Ciccotti, Saiful Islam, Roman Schubert, Florian Theil), Conference ‘Mathematical Challenges of Molecular Dynamics’, Warwick, 13 – 15 July 2009

Organiser (with Geoffrey Burton, L. Edward Fraenkel), Workshop ‘Variational and Topological Methods and Water Waves’, Bath, 14 – 16 May 2009

Organiser (with Wolfgang König, Peter Mörters), Oberwolfach conference ‘Interplay of Analysis and Probability in Physics’, Oberwolfach, 30 November – 6 December 2008

Organiser (with Mike Allen, Gero Friesecke, Saiful Islam, Ben Leimkuhler, Steve Wiggins), Conference ‘Mathematical Challenges of Molecular Dynamics’, Warwick, 14 – 16 July 2008

Organiser (with Chris J. Budd, Giles Hunt, Srikanth Phani), Workshop ‘Lattice Models’, Bath, 30 June – 2 July 2008

Organiser (with Isabelle Catto, Isaac Chenchiah, Ivan Veselić), Mini-Workshop ‘Multiscale and variational methods in materials science and the quantum theory of solids’, Oberwolfach, 11 – 17 February 2007

Organiser (with Roger Moser, Peter Mörters, Mathew Penrose, Hartmut Schwetlick), Workshop ‘Analysis and stochastics of growth processes’, Bath, 11 – 15 September 2006

Organiser (with Stephen Watson), Minisymposium ‘Dissipative multi-scale models in material science’, British Applied Mathematics Colloquium, Keele, 25 April 2006

Organiser (with Gero Friesecke, Ilia Kamotski, Vladimir Kamotski, Valery Smyshlyaev), Workshop ‘Multi-scale problems: modelling, analysis and applications’, Bath, 12 – 14 September 2005

Organiser (with Stephan Luckhaus), ICMS Workshop ‘Dynamical Problems in Mathematical Materials Science’, Edinburgh, 17 – 23 July 2005

Publications and theses (Downloadable from <http://www.maths.bath.ac.uk/~zimmer>)

Published or accepted articles

- [1] Amit Acharya, Karsten Matthies, and Johannes Zimmer. Travelling wave solutions for a quasilinear model of field dislocation mechanics. *J. Mech. Phys. Solids*, 58(12):2043–2053, 2010.
- [2] Stefan Adams, Nicolas Dirr, Mark A. Peletier, and Johannes Zimmer. From a large-deviations principle to the Wasserstein gradient flow: a new micro-macro passage. *Communications in Mathematical Physics*, 307:791–815, 2011.
- [3] Natalia Babych and Johannes Zimmer. Asymptotics of resonances in a thermoelastic model with light local mass perturbations. *Quart. Appl. Math.*, 67(2):311–326, 2009.
- [4] Kaushik Bhattacharya, Sergio Conti, Giovanni Zanzotto, and Johannes Zimmer. Crystal symmetry and the reversibility of martensitic transformations. *Nature*, 428(6978):55–59, 2004.
- [5] Isaac Vikram Chenchiah, Marc Oliver Rieger, and Johannes Zimmer. Gradient flows in asymmetric metric spaces. *Nonlinear Anal.*, 71(11):5820–5834, 2009.
- [6] Julia Collins and Johannes Zimmer. An asymmetric Arzelà-Ascoli theorem. *Topology Appl.*, 154(11):2312–2322, 2007.

- [7] Patrick W. Dondl, Kai Hormann, and Johannes Zimmer. Modeling transformation paths of multiphase materials: The triple point of zirconia. *Phys. Rev. B*, 79(10):104114, 2009.
- [8] Patrick W. Dondl and Johannes Zimmer. Modeling and simulation of martensitic phase transitions with a triple point. *J. Mech. Phys. Solids*, 52(9):2057–2077, 2004.
- [9] Michael Herrmann, Hartmut Schwetlick, and Johannes Zimmer. On selection criteria for problems with moving inhomogeneities. 2011. In press, online first, *Contin. Mech. Thermodyn.*, <http://www.md-net.org.uk/preprints/hsz.pdf>.
- [10] Kai Hormann and Johannes Zimmer. On Landau theory and symmetric energy landscapes for phase transitions. *J. Mech. Phys. Solids*, 55(7):1385–1409, 2007.
- [11] Carl-Friedrich Kreiner and Johannes Zimmer. Topology and geometry of nontrivial rank-one convex hulls for two-by-two matrices. *ESAIM Control Optim. Calc. Var.*, 12(2):253–270, 2006.
- [12] Carl-Friedrich Kreiner and Johannes Zimmer. Heteroclinic travelling waves for the lattice sine-Gordon equation with linear pair interaction. *Discrete Contin. Dyn. Syst.*, 25(3):915–931, 2009.
- [13] Carl-Friedrich Kreiner and Johannes Zimmer. Travelling wave solutions for the discrete sine-Gordon equation with nonlinear pair interaction. *Nonlinear Anal.*, 70(9):3146–3158, 2009.
- [14] Carl-Friedrich Kreiner and Johannes Zimmer. Existence of subsonic heteroclinic waves for the Frenkel-Kontorova model with piecewise quadratic on-site potential. *Nonlinearity*, 24(4):1137–1163, 2011.
- [15] Carl-Friedrich Kreiner, Johannes Zimmer, and Isaac Chenchiah. Towards the efficient computation of effective properties of microstructured materials. *Comptes Rendus Mecanique*, 332(3):169–174, 2004.
- [16] Martin Kružík and Johannes Zimmer. On an extension of the space of bounded deformations. Accepted for publication, *Zeitschrift für Analysis und Anwendungen*. Preprint http://www.bath.ac.uk/math-sci/bics/preprints/BICS09_5.pdf.
- [17] Martin Kružík and Johannes Zimmer. Evolutionary problems in non-reflexive spaces. *ESAIM Control Optim. Calc. Var.*, 16(1):1–22, 2010.
- [18] Martin Kružík and Johannes Zimmer. A model of shape memory alloys taking into account plasticity. *IMA J. Appl. Math.*, 76(1):193–216, 2011.
- [19] Martin Kružík and Johannes Zimmer. Rate-independent processes with linear growth energies and time-dependent boundary conditions. *Discrete Contin. Dyn. Syst. Series S*, 5(3):591–604, 2012.
- [20] Julia Kundin, Heike Emmerich, and Johannes Zimmer. Three-dimensional model of martensitic transformations with elasto-plastic effects. *Philosophical Magazine*, 90(11):1495–1510, 2010.
- [21] Julia Kundin, Heike Emmerich, and Johannes Zimmer. Mathematical concepts for the micro-mechanical modeling of dislocation dynamics with a phase-field approach. *Philosophical Magazine*, 91(1):97–121, 2011.
- [22] Marc Oliver Rieger and Johannes Zimmer. Global existence for nonconvex thermoelasticity. *Adv. Math. Sci. Appl.*, 15(2):559–569, 2005.
- [23] Marc Oliver Rieger and Johannes Zimmer. Young measure flow as a model for damage. *Z. Angew. Math. Phys.*, 60(1):1–32, 2009.
- [24] Dierk Schleicher and Johannes Zimmer. Escaping points of exponential maps. *J. London Math. Soc. (2)*, 67(2):380–400, 2003.
- [25] Dierk Schleicher and Johannes Zimmer. Periodic points and dynamic rays of exponential maps. *Ann. Acad. Sci. Fenn. Math.*, 28(2):327–354, 2003.
- [26] Hartmut Schwetlick and Johannes Zimmer. Solitary waves for nonconvex FPU lattices. *J. Nonlinear Sci.*, 17(1):1–12, 2007.
- [27] Hartmut Schwetlick and Johannes Zimmer. Calculation of long time classical trajectories: Algorithmic treatment and applications for molecular systems. *J. Chem. Phys.*, 130(12):124106, 2009.

- [28] Hartmut Schwetlick and Johannes Zimmer. Existence of dynamic phase transitions in a one-dimensional lattice model with piecewise quadratic interaction potential. *SIAM J. Math. Anal.*, 41(3):1231–1271, 2009.
- [29] Christine Venney and Johannes Zimmer. Persistence of supersonic periodic solutions for chains with anharmonic interaction potentials between neighbours and next to nearest neighbours. Accepted for publication, *Dynamical Systems*.
- [30] Johannes Zimmer. Global existence for a nonlinear system in thermoviscoelasticity with nonconvex energy. *J. Math. Anal. Appl.*, 292(2):589–604, 2004.
- [31] Johannes Zimmer. Stored energy functions for phase transitions in crystals. *Arch. Ration. Mech. Anal.*, 172(2):191–212, 2004.
- [32] Johannes Zimmer. Jog my shape memory: dynamics as a challenge in mathematical materials science. *Philos. Trans. R. Soc. Lond. Ser. A Math. Phys. Eng. Sci.*, 364(1849):3285–3300, 2006.

Conference proceedings

- [33] Martin Kružík and Johannes Zimmer. Rate-independent processes with linear growth energies and time-dependent boundary conditions. In *Publicazione IMATI-CNR, 29PV10/27/0 (Special Section of EquaDiff 2007)*, pages 17–22, 2010.
- [34] Johannes Zimmer. Dynamical problems with nonconvex energies as a model of damage in materials. *Oberwolfach Reports*, 1(3):1650–1652, 2004. Workshop *Phasenübergänge*.
- [35] Johannes Zimmer. Discrete dynamic models for phase transitions. *Oberwolfach Reports*, 4(1):391–392, 2007. Miniworkshop *Multiscale and Variational Methods in Material Science and Quantum Theory of Solids*.
- [36] Johannes Zimmer. Evolutionary problems with energies with linear growth. *Oberwolfach Reports*, 4(1):655–657, 2007. Workshop *Analysis and Numerics for Rate-Independent Processes*.
- [37] Johannes Zimmer. Travelling waves in atomic models for phase-transforming materials and kinetic relations. *Oberwolfach Reports*, 4(2):1642–1645, 2007. Workshop *Phase Transitions*.
- [38] Johannes Zimmer. Travelling waves in atomistic chains and kinetic relations. *Oberwolfach Reports*, 2008. Workshop *Atomistic Models of Materials: Mathematical Challenges*.
- [39] Johannes Zimmer. A variational approach to the Hamiltonian boundary value problem: existence and approximation. *Oberwolfach Reports*, 2010. Workshop *Microstructures in Solids: From Quantum Models to Continua*.

Introductions to Oberwolfach Reports

- [40] Mini-workshop: Multiscale and Variational Methods in Material Science and Quantum Theory of Solids. *Oberwolfach Rep.*, 4(1):371–415, 2007. Abstracts from the mini-workshop held February 11–17, 2007, Organized by Isabelle Catto, Isaac Chenchiah, Ivan Veselić and Johannes Zimmer, Oberwolfach Reports. Vol. 4, no. 1.
- [41] Interplay of analysis and probability in physics. *Oberwolfach Rep.*, 5(4):3065–3138, 2008. Abstracts from the workshop held November 30–December 6, 2008, Organized by Wolfgang König, Peter Mörters and Johannes Zimmer, Oberwolfach Reports. Vol. 5, no. 4.

Editorial activity

- [42] Peter Mörters, Roger Moser, Mathew Penrose, Hartmut Schwetlick, and Johannes Zimmer, editors. *Analysis and stochastics of growth processes and interface models*. Oxford University Press, Oxford, 2008.

Book review

- [43] Johannes Zimmer. Review of *Variational and Extremum Principles in Macroscopic Systems*, Stanislaw Sieniutycz and Henrik Farkas (eds). *J. Phys. A: Math. Gen.*, 39(14):3851–3852, 2006.

Theses

- [44] Johannes Zimmer. Über das Iterationsverhalten von postsingulär endlichen Exponentialabbildungen (On the iteration of postsingularly finite exponential maps). Master's thesis, Technische Universität München, 1997.
- [45] Johannes Zimmer. *Mathematische Modellierung und Analyse von Formgedächtnislegierungen in mehreren Raumdimensionen (Mathematical Modeling and Analysis of Shape Memory Alloys in Several Space Dimensions)*. PhD thesis, Technische Universität München, 2000.

Grants

- Royal Society, International Travel Grant, 2010, £1 498
- EPSRC Mathematical Sciences Small Grant 'Analysis of multi-scale problems in mathematical chemistry', 1 June 2010 – 31 May 2013, £16 187
- ITN Fronts and Interfaces in Science and Technology (FIRST), 1 January 2010 – 31 December 2013, Investigator WPB7, Upscaling of interacting particle systems
- Leverhulme Trust, Visiting Professorship for Mark Peletier, 2009, £29 590
- Royal Society, International Joint Project 'Analysis of rate-independent elasto-plasticity and applications in biomechanics', 1 June 2009 – 31 May 2011, £4 360 (with Martin Kružík)
- EPSRC Mathematical Sciences Small Grant 'Workshop: Variational and Topological Methods and Water Waves', 1 January 2009 – 31 August 2009, £10 683 (with Geoffrey Burton, L. Edward Fraenkel)
- Nuffield Foundation, Undergraduate Research Bursary 'Existence of subsonic waves in lattice models', 2008, £1 400 (with Richard Lupton and Hartmut Schwetlick)
- Ideas Factory Partnering Award, 'Inhomogeneities in materials and applications for engineering materials', April – July 2008, £8 000 (with A. Srikantha Phani and Ron Stevens)
- EPSRC network grant 'Mathematical Challenges of Molecular Dynamics: A Mathematical-Chemical Forum', 1 April 2008 – 31 March 2011, £78 234 (with Gero Friesecke, Saiful Islam, Ben Leimkuhler, Steve Wiggins)
- Ideas Factory Flexible Award, 'Lattice models and their continuum limit(s)', July – November 2007, £2 000 (with A. Srikantha Phani)
- London Mathematical Society, Scheme 4 Grant, June 2007, £600
- Nuffield Foundation, Undergraduate Research Bursary 'Analysis in asymmetric metric spaces', 2005, £1 302 (with Julia Collins)
- ICMS Workshop 'Dynamical Problems in Mathematical Materials Science', 17 – 23 July 2005: £17 400 (EPSRC), £1 000 (LMS), (with Stephan Luckhaus)
- EPSRC Advanced Research Fellowship 'Mathematical Analysis of the Static and Dynamic Behaviour of Materials with Phase Transitions and Microstructures', 1 October 2004 – 30 September 2009, £271 225
- EPSRC grant 'Mathematical Analysis of the Static and Dynamic Behaviour of Materials with Phase Transitions and Microstructures', 1 October 2004 – 30 September 2007, £69 172
- Bath Institute for Complex Systems, Deputy Theme Manager, January 2005 – December 2009
- Emmy Noether Stipend (ca. €502 400), 2004

Selected presentations

- Workshop ‘Averaging Methods for Multiscale Phenomena in Engineering Materials’ Carnegie Mellon University, Pittsburgh 2 – 4 April 2012
- Workshop ‘Multiscale Systems: theory and applications’, University of Warwick, 12 – 14 December 2011
- ENUMATH Conference, Leicester, 5 – 9 September 2011. Minisymposium ‘Numerical Methods for Molecular Dynamics’
Invited talk: *On the existence and consistent approximation of long time classical trajectories and applications for molecular systems*
- Conference ‘Continuum and kinetic methods in the theory of shocks, fronts, dislocations and interfaces’, Heraklion, 20 – 24 June 2011
Invited talk: *Moving phase boundaries: a lattice model and its continuum implications*
- OxPDE-Royal Society International Seminar ‘Entropy and Convexity for Nonlinear Partial Differential Equations’, Kavli Royal Society International Centre, 16 – 17 June 2011 Invited talk: *Towards nonequilibrium thermodynamics: what can we learn from particle models?*
- Universität Zürich, 12 May 2011
Invited talk: *The Hamiltonian boundary value problem: existence, numerical approximation and homogenisation via Maupertuis principle* (Arbeitsgemeinschaft Analysis)
- FIRST (Fronts and InteRfaces in Science and Technology) Workshop ‘Ill-posed problems’ & Workshop on Nonconvex Evolution Problems, Istituto Nazionale di Alta Matematica, Rome, 29 November – 3 December 2010
Invited talk: *Ill-posed problem in nonlinear elasticity: Macro and micro*
- Banff International Research Station for Mathematical Innovation and Discovery workshop ‘Rate-independent systems: Modeling, Analysis, and Computations’, 29 August – 3 September 2010
Invited talk: *Rate-independent evolution for an elastic-plastic model of shape memory alloys and related function spaces*
- Multiscale Molecular Modelling (M3), Edinburgh, 30 June – 3 July 2010. Minisymposium ‘Novel mathematical developments for molecular modelling’
Invited talk: *Computing reaction trajectories: a convergent string method*
- First FIRST Conference (Fronts and InteRfaces in Science and Technology), Orsay, 28 – 30 June 2010
Invited talk: *WPB7: Upscaling of interacting particle systems*
- Joint SIAM/RSME-SCM-SEMA Meeting ‘Emerging Topics in Dynamical Systems and Partial Differential Equations’ (DSPDES’10), Barcelona, 31 May – 4 June 2010. Minisymposium ‘Effective Macroscopic Descriptions of Microscopic Dynamics’
Invited talk: *Waves in Lattice Models for Moving Interfaces and their Macroscopic Implications*
- SIAM Conference on Mathematical Aspects of Materials Science (MS10), Philadelphia, 22 – 26 May 2010. Minisymposium ‘Mechanics and Mathematics of Microstructure in Materials’
Invited talk: *Waves in lattice models for moving interfaces and macroscopic implications*
- Oberwolfach conference ‘Microstructures in Solids: From Quantum Models to Continua’, Oberwolfach, 14 – 20 March 2010
Talk: *A variational approach to the Hamiltonian boundary value problem*
- Minisymposium ‘Atomistic Systems and Elasticity Theory’, Gemeinsame Jahrestagung Deutsche Mathematiker-Vereinigung (DMV) & Gesellschaft für Didaktik der Mathematik (GDM), 1 – 5 March 2010
Invited talk: *Existence of travelling waves in lattice models for solid-solid phase transitions*

- Short term stay, Carnegie Mellon University, 1 – 8 October 2009
Invited talk: *Moving interfaces in solids: from conservative lattice models for phase transitions to macroscopic dissipation* (Center for Multiscale Modeling for Engineering Materials)
- Short term stay, Carnegie Mellon University, 1 – 8 October 2009
Invited talk: *Dynamic problems in plasticity and related function spaces* (Center for Nonlinear Analysis)
- Jacobs University Bremen, 29 September 2009
Invited talk: *Moving interfaces in solids: from conservative lattice models to macroscopic dissipation* (Mathematical Colloquium)
- Short term stay, University of Illinois at Urbana-Champaign, Urbana-Champaign, 27 August – 5 September 2009
Invited talk: *Moving interfaces in solids: from conservative lattice models for phase transitions to macroscopic dissipation* (Harmonic Analysis and Mathematical Physics Seminar)
- Conference ‘Phase Transitions’, Leipzig, Max Planck Institute for Mathematics in the Sciences, Leipzig, 23 – 28 August 2009
Invited talk: *Dynamic lattice models for elastic phase transitions and dislocations*
- Conference ‘Mathematical Challenges Motivated by Multi-Phase Materials: Analytical, Stochastic and Discrete Aspects’, Anogia, 21 – 26 June 2009
Invited talk: *Dynamics of elastic phase transitions: from a conservative lattice model to macroscopic dissipation*

Selected research stays, conference and workshop participation

- Workshop ‘Coherent structures in evolutionary equations’, Lorentz Center, 12 – 16 July 2010
- IMA Summer program on Classical and Quantum Approaches in Molecular Modeling, Institute of Mathematics and its Applications, Minnesota, 22 July – 4 August 2007
- Univerzita Karlova (Charles University), 3 – 30 November 2006
Invited talk: *On waves in discrete models of elasticity and plasticity* (Nečasů v seminář z mechaniky kontinua, Nečas’ seminar on continuum mechanics)
- Oberwolfach conference ‘PDE and Materials’, Oberwolfach, 24 – 30 September 2006
- IMA Thematic year on Mathematics of Materials and Macromolecules: Multiple Scales, Disorder, and Singularities, Institute of Mathematics and its Applications, Minnesota, 23 January – 6 February 2005 and 29 May – 12 June 2005
- Short term stay, Ecole Polytechnique, Palaiseau, 2 – 5 November 2003
- Short course ‘An introduction to quasiconvexity’ and Conference ‘Quasiconvexity and its applications’, Princeton, 12 – 13 November 2002 and 14 – 16 November 2002
- Oberwolfach conference ‘Mathematical Continuum Mechanics’, Oberwolfach, 20 – 26 August 2000
- DMV Seminar ‘Nonlinear Partial Differential Equations: Oscillations, Singularities, and Microstructure’, Oberwolfach, 23 – 29 May 1999
- Short term stay, University of Oxford, 28 February – 5 March 1999
- Short term stay, Max Planck Institute for Mathematics in the Sciences, Leipzig, 8 – 13 November 1998
- Oberwolfach conference ‘Calculus of variations’, Oberwolfach, 5 – 10 July 1998

Refereeing activity

Annales Academiæ Scientiarum Fennicæ, Archive for Rational Mechanics and Analysis, Illinois Journal of Mathematics, International Centre for Mathematical Sciences (ICMS), International Journal of Engineering Science, International Journal of Materials Research (formerly Zeitschrift für Metallkunde), International Journal of Mathematics and Mathematical Sciences, International Journal of Solids and Structures, Journal of Applied Physics, Journal of Chemical Physics, Journal of the London Mathematical Society, Journal of the Mechanics and Physics of Solids, Journal of Nonlinear Science, Modélisation Mathématiques et Analyse Numérique (Mathematical Modelling and Numerical Analysis), Mathematical Reviews, Nonlinearity, Philosophical Magazine, Philosophical Magazine Letters, Proceedings of the Royal Society. Series A. Mathematical, Physical and Engineering Sciences, Quarterly Journal of Mechanics and Applied Mathematics, SIAM Journal on Mathematical Analysis, SIAM Journal on Applied Mathematics, Topology, ZAMM Zeitschrift für Angewandte Mathematik und Mechanik (Journal of Applied Mathematics and Mechanics)

Member, EPSRC College, 2006–2009, since 2010. U.S. Army Research Office, Engineering and Physical Sciences Research Council, Netherlands Organisation for Scientific Research, U.S. Department of Energy, Office of Basic Energy Sciences, Japanese Society for the Promotion of Science

Examiner for PhD theses

Stéphane Capet, University of Warwick

Steven Green, University of Bath

Professional memberships

Deutsche Mathematiker-Vereinigung (German mathematical association) since 1998

American Mathematical Society since 2001

London Mathematical Society since 2006

Teaching experience

Director of Studies, MSc in Modern Applications of Mathematics, since 2010

2011 University of Bath, MA50190: *Methods for Differential Equations*

2011 University of Bath, MA30170: *Numerical Solution of PDEs I* (Finite Elements)

2010 University of Bath, MA50200: *Topic Review in Applied Mathematics* (with Ch. Budd)

2010 University of Bath, MA30170: *Numerical Solution of PDEs I* (Finite Elements)

2009 University of Bath, MA50200: *Topic Review in Applied Mathematics* (with Ch. Budd)

2009 University of Bath, MA30170: *Numerical Solution of PDEs I* (Finite Elements)

2004 University of Bath, MA50175: *Topics in Differential Equations* (Mathematical materials science, Calculus of Variations)

2002 California Institute of Technology, AM125c: *Engineering Mathematical Principles* (Partial Differential Equations)

2002 California Institute of Technology, AM125b: *Engineering Mathematical Principles* (Linear Algebra, Functional Analysis, Ordinary Differential Equations)

1999–2000 Technische Universität München, *Seminar: Sobolevräume* (Sobolev spaces)

1999 Technische Universität München, *Proseminar: Mathematische Kristallographie* (Mathematical Crystallography)

1997–1999 Technische Universität München, Tutorials on *Real and Complex Analysis* (Two year course)

1995–1997 Technische Universität München, Tutorials on *Numerical Analysis I and II* for students in mathematics and computer science

Supervised postdoctoral scholars and students

- Achin Bansal, project *Efficient computation of topologies on a finite set*, University of Bath, May – July 2009
- Gourav Vijayvergiya, project *Analysis of plasmon resonances in spheroidal shaped metal nanoparticles*, University of Bath, May – July 2007 (with Stefan Maier)
- Dr. Natalia Babych, May 2006–April 2007
- Andrew Milne, MSc Modern Applications of Mathematics, *Modelling and simulation of non-linear diffusion for optoelectronics applications*, July – September 2006 (with Frederica Causa and Jayanta Sarma)
- Supreet Singh Bahga, project *Analysis of gold nanoparticles via FDTD simulation*, University of Bath, May – July 2006 (with Stefan Maier)
- Gemma Nicholson, MSc Modern Applications of Mathematics, *Modelling and simulation of 2D non-linear diffusion for optoelectronics applications*, July – September 2005 (with Frederica Causa and Jayanta Sarma)
- Rupesh Mishra, project, Max Planck Institute for Mathematics in the Sciences, Leipzig, May – July 2004
- Carl-Friedrich Kreiner, PhD student, Max Planck Institute for Mathematics in the Sciences, Leipzig, 2003 – 2007
- Carl-Friedrich Kreiner, Diploma Thesis in Mathematics, *Algebraic methods for convexity notions in the calculus of variations*, Technische Universität München / California Institute of Technology, 2003
- Patrick Dondl, Diploma Thesis in Physics, *Phase Transition in a Material with a Triple Point*, Technische Universität München / California Institute of Technology, 2002
- Christiane Steinich, project *Numerische Simulation von martensitischen Phasenübergängen* (Numerical Simulation of Martensitic and Phase Transitions), Technische Universität München, 2000