

# Grigorios A. Pavliotis

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**Personal Data**     **Date of birth:** February 28, 1976  
**Place of birth:** Thessaloniki, Greece  
**Citizenship:** Greek

**Education**            **May 2002:** Ph.D in Mathematics, Rensselaer Polytechnic Institute.  
**May 2000:** M.Sc. in Applied Mathematics, Rensselaer Polytechnic Institute.  
**September 1997:** BS in Physics, Aristotle University of Thessaloniki.  
**March 2008:** Certificate of Advanced Study in Learning and Teaching, Imperial College London.

**Professional Appointments**

- **September 2011 – February 2012** Invited Professor, CERMICS - Ecole des Ponts ParisTech, Paris, France. <http://www-roc.inria.fr/micmac/spip.php?rubrique184>
- **October 2011 – present** Reader in Applied Analysis and Computational Mathematics, Department of Mathematics, Imperial College London, UK.
- **October 2008 – September 2011** Senior Lecturer in Applied Analysis and Computational Mathematics, Department of Mathematics, Imperial College London, UK.
- **October 2005 – September 2008** Lecturer in Applied Analysis and Computational Mathematics, Department of Mathematics, Imperial College London, UK.
- **October 2004 – September 2005** Chapman Fellow, Department of Mathematics, Imperial College London, UK.
- **October 2003 – September 2004** Temporary Lecturer, Mathematics Institute, University of Warwick, UK.
- **June 2002 – September 2003** Postdoctoral Fellow, Mathematics Institute, University of Warwick, UK.

**Visiting Positions**

- **April 2010**, Institute for Mathematics and its Applications (IMA), Minneapolis, MI, USA (2 weeks).
- **February 2010**, Statistical and Applied Mathematical Sciences Institute (SAMSI), NC, USA (2 weeks)
- **August/September 2009**, Department of Mathematics, EPFL, Switzerland (1 week)
- **May 2009**, Department of Applied Mathematics, University of Crete, Greece (1 week)
- **April 2009**, Department of Mathematics, EPFL, Switzerland (2 weeks)
- **May 2008**, CWI, Amsterdam, the Netherlands (2 weeks)
- **July 2007**, Department of Mathematics, University of Bielefeld, Germany (1 week)
- **April 2007**, Mathematical Sciences Research Institute (MSRI), Berkeley, CA, USA (1 month)
- **June 2006** Department of Applied Mathematics, Ecole Polytechnique, Paris, France (1 week)
- **June 2006** Max-Planck Institute for Mathematics in the Sciences, Leipzig, Germany (1 week)

- Visiting Positions (Continued)
- **March 2003** Visiting Research Fellow, IAS, School of Mathematics, Princeton, NJ, USA (1 month)
  - **July-August 2002** Visiting Research Fellow, SCCM, Stanford University, CA, USA (2 months)
  - **1997, March – July, 1998 February - May** Research Assistant, Solvay Institute for Physics and Chemistry, Free University of Brussels, Belgium.
  - **1996, July - August** Research Assistant, Department of Theoretical Physics, University of Jena, Germany.
- Teaching Experience
- **Stochastic processes**, autumn terms 2008/09, 2009/10, 2010/11. 30 lectures, course offered to fourth year and MSc students.
  - **Applied stochastic processes** autumn terms 2007/08, 2008/09, 2009/10, 2010/2011. 20 lectures, course offered to PhD students, part of the EPSRC taught course centre in pure and applied mathematics.
  - **Dynamics**, winter terms 2007/08, 2008/09, 2009/10, 2010/11. 18 lectures, second year course, second part of the course *Fluids and Dynamics*.
  - **Mathematics for electrical engineers**, winter/summer terms 2006/07, 2007/08. (30 lectures, first year course).
  - **Homogenization theory for partial differential Equations**. Winter term 2003/04 (at Warwick University), autumn terms 2004/05, 2005/06, 2006/07. 30 lectures, course offered to fourth year and MSc students.
  - **3D Geometry and motion**. Autumn term 2003/04, Warwick University. 30 lectures, first year course.
- Graduate Student Supervision: PhD Students
- E. Papaefthymiou, PhD Student, since 10/2010, co-supervised with Professor D.T. Papageorgiou.
  - S. Krumscheid, PhD student, since 10/2010.
  - M. Ottobre, PhD student, since 10/2008-01/2012. Currently holds an EPSRC Postdoctoral Prize fellowship.
  - K. Zygalakis, Ph.D Student University of Warwick 09/04–11/08 (Co-supervised with A.M. Stuart). Now a lecturer at the University of Southampton.
- Graduate Student Supervision: MSc and Diploma Students
- V. Belz, MSc student, 01/2011–09/2011.
  - A. Kamoutsi (NTUA, Greece), Diploma thesis, since 10/2010.
  - A. Neidle, fourth year project, since 10/2010.
  - J. Strbac, MSc student, 01-09/2010.
  - M. Dubois, MSc student, 01-09/2010.
  - Z. Fan, MSc student, 01-09/2010.
  - A. Othman, MSc student (co-supervised with C.J. Cotter) 05/09-09/09
  - L. Costard, MSc student, 06/09-09/09.
  - E. Espic, MSc student, 06/09-09/09.
  - H S Wun, MSc student, 10/08-09/09.
  - A. Johann, MSc student, 05/08–09/08 (Co-supervised with J.C. Vassilicos).
  - A. Vogianou, Erasmus student (diploma thesis), 09/07-12/07.
  - P. Chirawatthanaporn, MSc. student, 05/07–09/07 (Co-supervised with J.C. Vassilicos).
  - A. Sykulski, MSc. student, Imperial College London 10/06–09/07 (Co-supervised with S. Olhede).
  - O. Hamid, MSc. student, Imperial College London 10/04–9/05.
  - S. Morrelet, MSc. student, Imperial College London 10/04–9/05.
  - C. Cuthbertson, MSc. student, University of Warwick 10/03–04/04 (Co-supervised with P. Wiberg).
  - L. Band, MSc. student, University of Warwick 10/02–04/03 (Co-supervised with A.M. Stuart).

Grants/Awards	<ul style="list-style-type: none"> <li>• Grant from the (EPSRC funded) Platform Grant, Department of Mathematics, Imperial College London, London Mathematical Society and the Grantham Institute for Climate Change for the organization of workshop <i>Critical Transitions in Complex Systems</i>. £12,000. co-PIs: J. Lamb, M. Rasmussen.</li> <li>• Grant from the (EPSRC funded) Platform Grant, Department of Mathematics, Imperial College London for the organization of workshop <i>Mathematics of Structured Surfaces</i>. £8,500. co-PIs: R. Craster and A.O. Parry.</li> <li>• Engineering and Physical Sciences Research Council. <i>Active-dissipative non-linear spatially extended media: Complexity, coarse-graining, multiscale analysis and numerical methods</i>. 10/10-9/13. Funds one post-doc, one PhD student, travel, computer. Co-PI S. Kalliadasis (IC). £400,000. <a href="http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/H034587/1">http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/H034587/1</a></li> <li>• Grant from Netherlands Organisation for Scientific Research (through the Lorentz Center) for the organization of Workshop on Coherent Structures in Evolutionary Equations, 12-16 July 2010, Lorentz Center, The Netherlands. 12,000 Euros.</li> <li>• Travel Grant from EPFL, Switzerland, August 2009, 1,700 Swiss Francs.</li> <li>• Travel Grant from EPFL, Switzerland, April 2009, 2,200 Swiss Francs.</li> <li>• Grant from EPSRC/LMS for organizing a short course on Multiscale Methods (Warwick University, April 2007), £ 15,000.</li> <li>• Travel Grant from the Royal Society of London, July 2007, £ 1000.</li> <li>• Travel Grant from the Royal Society of London, July 2006, £ 1,300.</li> <li>• Travel Grant from the Royal Society of London, May 2005, £ 1,100.</li> <li>• The Rensselaer Department of Mathematical Sciences Joaquin B. Diaz Prize for the Best Thesis in 2002, May 2002.</li> <li>• Erasmus Fellowship, Spring 1997.</li> <li>• A.I.E.S.E.C. Fellowship, Summer 1996.</li> </ul>
Course Development	<p><b>Homogenization theory for Partial Differential Equations.</b> Course for fourth year and MSc students. Basic introduction to the mathematical theory of homogenization for PDEs and applications to homogenization for SDEs. Taught it 4 times (2004-2007).</p> <p><b>Applied Stochastic Processes.</b> Course for MSc and PhD students in applied mathematics and mathematical physics. Introduction to the theory of continuous time stochastic processes. Markov processes, forward (Fokker-Planck) and backward Kolmogorov equations, stochastic differential equations (SDEs). Methods of solution for the Fokker-Planck equation, Asymptotic problems for Markov processes. Reaction rate theory, Brownian motion in periodic potentials, numerical methods for SDEs. Introduction to non-equilibrium statistical mechanics. Taught it 4 times (2008-2011)</p>
Research Interests	<p><b>Multiscale analysis and numerics for stochastic differential equations.</b></p> <p><b>Theory:</b> Analysis for hypoelliptic diffusions, asymptotic problems for non-Markovian processes, amplitude equations for stochastic PDEs, averaging/homogenization for SDEs.</p> <p><b>Numerics:</b> Parameter estimation for multiscale diffusions, numerical methods for multiscale stochastic PDEs.</p> <p><b>Stochastic Modeling and Applications:</b> Brownian motors, surface diffusion, inertial particles, non-equilibrium statistical mechanics, atmosphere/ocean science, noise-induced transitions. Interface hydrodynamics, physics of complex systems.</p>
Editorial	<p><b>Associate editor for SIAM J. MMS</b> <a href="http://www.siam.org/journals/mms/board.php">http://www.siam.org/journals/mms/board.php</a>.</p>

## Publications

All of my publications are available from [http://www2.imperial.ac.uk/~pavl/publ\\_prepr.htm](http://www2.imperial.ac.uk/~pavl/publ_prepr.htm).

### Books

- [1]. *Applied Stochastic Processes*. To be submitted to the publisher on 05/2012. Current version available from [http://www2.imperial.ac.uk/~pavl/stoch\\_proc\\_notes.pdf](http://www2.imperial.ac.uk/~pavl/stoch_proc_notes.pdf).
- [2]. *Multiscale Methods: Averaging and Homogenization*. (with A.M. Stuart), Springer (2008), vol. 53 in the series *Texts in Applied Mathematics*. The second part of the book is available from <http://www2.imperial.ac.uk/~pavl/multiscale.html>.

### Papers in submission

- [1]. *Upscaled phase field models for interfacial dynamics in strongly heterogeneous/perforated domains* (with M. Schmuck, M. Pradas, S. Kalliadasis). Submitted, January 2012.
- [2]. *Semi-Parametric Drift and Diffusion Estimation for Multiscale Diffusions* (with S. Krumcheid, S. Kalliadasis). Submitted, November 2011.
- [3]. *A New Mode Reduction Strategy for the Generalized Kuramoto-Sivashinsky Equation* (with M. Schmuck, M. Pradas Gene, S. Kalliadasis). Submitted, November 2011.
- [4]. *The Overdamped Limit of dynamic Density Functional Theory: Rigorous Results*. (with B. Goddard and S. Kalliadasis). Submitted, August 2011.
- [5]. *Additive Noise Effects in Active Nonlinear Spatially Extended Systems* (with M. Pradas Gene, D. Tseluiko, S. Kalliadasis, D.T. Papageorgiou). Submitted, August 2011.
- [6]. *Exponential Return to Equilibrium for Hypocoelliptic Quadratic Systems* (with M. Ottobre and K. Pravda-Starov). Submitted, June 2011.

### Papers published in refereed journals

- [1]. *Numerical methods for stochastic partial differential equations with multiple scales*. (with A. Abdulle) J. Comp. Phys. in press (2012). Available from <http://www.sciencedirect.com/science/article/pii/S0021999111006954>.
- [2]. *Noise induced state transitions, intermittency and universality in the noisy Kuramoto-Sivashinsky equation*. (With M. Pradas Gene, D. Tseluiko, S. Kalliadasis, D.T. Papageorgiou.) Phys. Rev. Lett. Phys. Rev. Lett. 106, 060602 (2011).
- [3]. *Asymptotic Analysis for the Generalized Langevin Equation*. (with M. Ottobre). Nonlinearity, **24** 1629-1653 (2011).
- [4]. *Contact lines over random topographical substrates. Part II. Dynamics*. (with N. Savva and S. Kalliadasis). J. Fluid Mechanics, **672** pp. 384-410 (2011).
- [5]. *Contact lines over random topographical substrates. Part I. Statics*. (with N. Savva and S. Kalliadasis). J. Fluid Mechanics, **672** pp. 358-383 (2011).
- [6]. *Asymptotic Analysis for Foreign Exchange Derivatives with Stochastic Volatility*. ( With C. Cuthbertson, A. Rafailidis and P. Wiberg ). Int. J. Theor. and Appl. Finance, **13**(7) 1131-1147 (2010).
- [7]. *Asymptotic Analysis of the Green-Kubo Formula*. IMA J. Appl. Math. **75**(6) 951-967, 2010.

- [8]. *Two-dimensional droplet spreading over random topographical substrates.* (with N. Savva and S. Kalliadasis). *Phys. Rev. Lett.* 104, 084501 (2010).
- [9]. *Estimating eddy diffusivities from Lagrangian observations* (with C.J. Cotter), *Comm. Math. Sci.* **7**(4), 805-838 (2009).
- [10]. *Multiscale Inference for high frequency data* (with S. Olhede and A. Sykulski), *SIAM J. MMS* **8**(2), 393-427 (2009).
- [11]. *Calculating Effective Diffusivities in the Limit of Vanishing Molecular Diffusion* (with A.M. Stuart and K.C. Zygalakis) *J. Comp. Phys.* 228(4) 1030-1055 (2009).
- [12]. *Maximum Likelihood Drift Estimation for Multiscale Diffusions* (with A. Papavasiliou and A.M. Stuart), *Stoch. Proc. Appl.* **119**(10), 3173-3210 (2009) .
- [13]. *Diffusive Transport in Periodic Potentials: Underdamped Dynamics* (with A. Vogianou), *Fluct. Noise Lett.* **8**(2) L155-173 (2008).
- [14]. *From Ballistic to Diffusive Behavior in Periodic Potentials.* (with M. Hairer), *J. Stat. Phys.* **131**(1) 175-202 (2008).
- [15]. *Optimizing the Source Distribution in Fluid Mixing.* (with J-L. Thiffeault), *Physica D*, **237**(7), 918-929 (2008).
- [16]. *Homogenization for Inertial Particles in a Random Flow.* ( With A.M. Stuart and K.C. Zygalakis ), *Comm. Math. Sci.*, **5**(3) 507-531 (2007).
- [17]. *Multiscale Analysis for Stochastic PDEs with Quadratic Nonlinearities.* ( With D. Blömker and M. Hairer ), *Nonlinearity*, 20 1721-1744 (2007).
- [18]. *Estimates for the Two-Dimensional Navier-Stokes Equations in Terms of the Reynolds Number.* ( With J.D. Gibbon ), *J. Math. Phys.*, 48, 065202 (2007).
- [19]. *Parameter Estimation for Multiscale Diffusions.* (With A.M. Stuart), *J. Stat. Phys.*, **127**(4) 741-781, (2007).
- [20]. *A Multiscale Approach to Brownian Motors* *Phys. Lett. A*, 344 (2005) 331–345.
- [21]. *Periodic Homogenization for Inertial Particles.* (with A.M. Stuart), *Physica D*, 204 161–187, (2005).
- [22]. *Analysis of White Noise Limits for Stochastic Systems with two Fast Relaxation Times.* (with A.M. Stuart), *SIAM J. MMS* **4**(1) 1–35, (2005).
- [23]. *Modulation Equations: Stochastic Bifurcation in Large Domains.* (with D. Blömker and M. Hairer), *Comm. Math. Phys.* **258**(2) 479–512, (2005).
- [24]. *Itô versus Stratonovich White Noise Limits for Systems with Inertia and Colored Multiplicative Noise.* (with R. Kupferman and A.M. Stuart), *Phys. Rev. E*, 70 036120 (2004).
- [25]. *Periodic Homogenization for Hypocoelliptic Diffusions.* (with M. Hairer), *J. Stat. Phys.* 117 no. 1/2 (2004), 261-279.
- [26]. *White Noise Limits for Inertial Particles in a Random Field.* (with A.M. Stuart), *SIAM J. MMS*, **1**(4) (2003) 527–553.
- [27]. *A Perturbation Based Numerical Method for Solving a Three Dimensional Axisymmetric Indentation Problem.* (with M.H. Holmes), *J. Engineering Mathematics*, **43**(1) 2002 1-17.
- [28]. *Riemannian curvature and stability of monoparametric families of trajectories.* (with G. Bozis) *Inverse Problems*, 15 (1999) 141-153.

- [1]. *Parameter Estimation for Multiscale Diffusions: an Overview*. (with Y. Pokern and A.M. Stuart) in *Statistical Methods for Stochastic Differential Equations* edited by M. Kessler, A. Lindner, M. Sorensen, 2012.
- [2]. *Multiscale Modelling and Inverse Problems*. (with J. Nolen and A.M. Stuart). in *Numerical Analysis of Multiscale Problems (Lecture Notes in Computational Science and Engineering)*, Edited by I.G. Graham, T. Hou, O. Lakkis and R. Scheichl, 2011.
- [3]. *Some Remarks on Stabilization by Additive Noise*. with D. Blömker and M. Hairer in *Stochastic Partial Differential Equations and Applications*, Edited by G. Da Prato and L. Tubaro, *Quaderni di Matematica*, vol 25, pp. 37–50, 2011.
- [4]. *Effective Transport Properties for Flashing Ratchets Using Homogenization Theory*. With J.C. Lattore and P.R. Kramer. *PAMM* 7(1) 2008:1080501-1080502.
- [5]. *High Frequency Variability and Microstructure Bias* (with S. Olhede and A. Sykulski), Proceedings of conference on Inference and Estimation in Probabilistic Time-Series Models, Issac Newton Institute for Mathematical Sciences, 2008.
- [6]. *Stochastic Swift–Hohenberg Equation Near a Change of Stability*. ( With D. Blömker and M. Hairer ), Proceedings of Equadiff-11, pp. 25–37. 2005.
- [7]. *Stochastic Modulation Equations*. (with D. Blömker and M. Hairer), *PAMM* 5 (1) pp.611-612, 2005.
- [8]. *Monte Carlo Studies of Effective Diffusivities for Inertial Particles*. (with A.M. Stuart and L. Band), *Monte Carlo and quasi-Monte Carlo methods 2004*, 431–441, Springer, Berlin, 2006.

#### Theses

- [1]. **Ph.D Thesis:** *Homogenization Theory for Advection–Diffusion Equations with Mean Flow*. Thesis Advisor: P.R. Kramer, RPI, USA, May 2002.
- [2]. **Diploma Thesis:** *Chaos and Integrability in a Simple Geodesic Flow*. Thesis Advisor: I. Antoniou, Free University of Brussels, Belgium, July 1997.

#### Short Courses

- **Markovian Approximation and Linear Response Theory for Classical Open Systems**. Two lectures (four hours), CERMICS - Ecole des Ponts ParisTech 09,28/11/2011.
- **An Introduction to Random Perturbations in Continuous Time**. Four lectures, part of the short course **Stochastic and Random Dynamics** Department of Mathematics, Imperial College London, 19–23 November 2007.
- **Multiscale Methods for Partial Differential Equations**. One of the two main lecturers of the short course on **Multiscale Methods**, Department of Mathematics, Warwick University, 15–20 April 2007.
- **Multiscale Methods for Partial Differential Equations**. One of the two main lecturers of the short course on **Multiscale Methods**, MSRI, Berkeley, CA, USA, 2–5 April 2007.

#### Main Presentations (Since 2005)

- **Diffusive Limits for Non-Markovian Langevin Equations**. Equadiff 2011, Loughborough 04/08/2011
- **Long Time Asymptotics for Non-Markovian Langevin Equations**. Coarse-graining of many-body systems: analysis, computations and applications, University of Crete, 08/06/2011

- **Long Time Asymptotics for Open Classical Systems.** Workshop on Evolution Partial Differential Equations and Applications, University of Cyprus, 08/06/2011
- **Analysis and Numerics for SPDEs with Multiple Scales** SIAM Conference on Applications of Dynamical Systems, Snowbird, UT 22/05/2011
- **Long Time Asymptotics for Open Classical Systems.** Annual London Dynamical Systems Group meeting, 06/05/2011.
- **Asymptotic Analysis for the Generalized Langevin Equation.** Oxford Centre for Nonlinear PDEs, University of Oxford UK, 07/02/2011.
- **Asymptotic Analysis for the Generalized Langevin Equation.** CERMICS, Paris, France 13/01/2011.
- **Amplitude Equations for Stochastic PDEs.** Department of Mathematics, Imperial College London, UK, 14/12/2010.
- **Asymptotic Analysis for the Generalized Langevin Equation.** Department of Mathematics, University of Augsburg, Germany, 23/11/2010.
- **Asymptotic Problems for the Generalized Langevin Equation.** Workshop on Simulation of hybrid dynamical systems and applications to molecular dynamics, Institute Henri Poincare, Paris, 27-30 September 2010.
- **Asymptotic Problems for the Generalized Langevin Equation.** Workshop on Stochastic PDEs, University of York, 31 May - 4 June 2010 (part of Semester on Stochastic PDEs, Isaac Newton Institute, Cambridge).
- **Asymptotic Analysis for the Generalized Langevin Equation** Theory and Qualitative Behavior of Stochastic Dynamics - February 8-10, 2010, SAMSI, NC, USA.
- **Asymptotic Problems for the Generalized Langevin Equation.** Annual SIAM UKIE Meeting, Edinburgh 08/01/2010.
- **Asymptotic Problems for the Generalized Langevin Equation.** Department of Mathematics University of Surrey 13/11/2009.
- **Asymptotic Problems for the Generalized Langevin Equation.** Workshop on SPDEs, TU Darmstadt, 24-28 August 2009.
- **Long Time Asymptotics for Randomly Perturbed Hamiltonian Systems.** Workshop on Random Dynamical Systems and Applications, Department of Mathematics, Imperial College London, 12 June 2009.
- **Calculating and Estimating Eddy Diffusivities.** Atmosphere/Ocean Sciences Seminar, Imperial College London, 05 June 2009.
- **Long time/weak friction asymptotics for the Langevin equation.** Stochastic Analysis Seminar, University of Oxford, 25 May 2009.
- **Amplitude equations for stochastic partial differential equations.** Navier-Stokes: analysis, experiments and computations. In honour of Prof John D Gibbon on the occasion of his 60th birthday, 11-13 May 2009 IMS, Imperial College London
- **Long time/weak friction asymptotics for the Langevin equation.** Department of Applied Mathematics, University of Crete, 07 May 2009.
- **On the Derivation of Stochastic Differential Equations from Deterministic Dynamics.** Department of Applied Mathematics, University of Crete, 05 May 2009.

- **Amplitude Equations for Stochastic PDEs.** Department of Mathematics, EPFL, Switzerland, 15 April 2009.
- **Parameter Estimation for Multiscale Diffusions.** Adaptivity, robustness and complexity of multiscale algorithms March 30, 2009 - April 3, 2009, ICMS, Edinburgh.
- **Parameter Estimation for Multiscale Diffusions.** Department of Mathematics, Imperial College London, 27 January 2009.
- **Parameter Estimation for Multiscale Diffusions.** Department of Mathematics, University of Bath, 26 January 2009.
- **Parameter Estimation for Multiscale Diffusions.** Department of Mathematics, University of Edinburgh, 16 January 2009.
- **Weak friction asymptotics for the Langevin equation.** Molecular Dynamics, Thermostats and Convergence to Equilibrium Nov 12, 2008 - Nov 14, 2008, ICMS, Edinburgh.
- **Multiscale Analysis for Stochastic Partial Differential Equations.** Department of Mathematics, University of Bristol, 1 December 2008.
- **Parameter Estimation for Multiscale Diffusions.** Workshop on Mathematical Challenges of Molecular Dynamics, Mathematics Institute, Warwick University, UK, 16 July 2008.
- **From ballistic to diffusive behaviour in periodic potentials.** Workshop on Gradient Models and Elasticity, Mathematics Institute, Warwick University, UK, 11 June 2008.
- **Amplitude Equations for SPDEs.** CWI, Amsterdam, the Netherlands, 27 May 2008.
- **Amplitude Equations for SPDEs.** Department of Mathematics, University of Augsburg, Germany, 17 April 2008.
- **From ballistic to periodic motion in periodic potentials.** Physics Institute, Humboldt University, Berlin, Germany, 14 April 2008.
- **From ballistic to periodic motion in periodic potentials.** Numerical methods in molecular simulation, Hausdorff Institute, Bonn, Germany, 11 April 2008.
- **Multiscale analysis for the stochastic Burgers equation.** Geometric and stochastic methods in geophysical fluid dynamics, Bremen, Germany, 09/01/2008.
- **From Ballistic to Diffusive Motion in Periodic Potentials.** Department of Mathematics, University of Sussex, UK 29/11/2007.
- **From Ballistic to Diffusive Motion in Periodic Potentials.** Department of Mathematics, University of Augsburg, Germany 09/11/2007.
- **From Ballistic to Diffusive Motion in Periodic Potentials.** Department of Mathematics, TU Munich, Germany 08/11/2007.
- **Parameter Estimation for Multiscale Diffusions.** Workshop on Microscopic Origins of Irreversibility and Noise Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany 31/10/2007 -03/11/2007.
- **Amplitude Equations for Stochastic PDEs.** 20th International Conference/Summer School on Nonlinear Science and Complexity University of Patras, Greece 24/07/2007
- **Diffusive transport in periodic structures: underdamped dynamics.** 6th International Conference in Industrial and Applied Mathematics (ICIAM07) 18/07/2007, Zurich, Switzerland.
- **Amplitude Equations for SPDEs.** Department of Mathematics, Columbia University, NY, USA, 23 March 2007.

- **Amplitude Equations for SPDEs.** Department of Mathematical Sciences, RPI, NY, USA, 19 March 2007.
- **Parameter Estimation for Multiscale Diffusions.** EMSA Seminar, University of York, November 27 2006.
- **Stochastic Modulation Equations.** SIAM Meeting on Analysis of PDE, Boston, USA July 10–12 2006.
- **A Multiscale Approach to Brownian Motors.** SIAM Annual Meeting, Boston, USA July 10–14 2006.
- **Periodic and Random Homogenization for Hypocoelliptic Diffusions.** Max Planck Institute for Mathematics in the Sciences, 29/06/2006.
- **Parameter Estimation for Multiscale Diffusions.** Department of Applied Mathematics, Ecole Polytechnique, Paris France, 12/06/2006.
- **Parameter Estimation for Multiscale Diffusions.** Workshop on Coarse–Grained Multiscale Models, Mathematics Institute, Warwick University, UK, April 24–26, 2006.
- **A Multiscale Approach to Brownian Motors.** Department of Mathematics, Imperial College London, UK, 28/02/2006.
- **Parameter Estimation for Multiscale Diffusions.** AMMP Colloquium, Department of Mathematics, Imperial College London, UK, 24/01/2006.
- **Parameter Estimation for SDE with Multiple Scales.** Workshop on Parameter Estimation in Continuous Time Models, ICMS, Edinburgh, UK, December 05–09, 2005.
- **A Multiscale Approach to Brownian Motors.** Workshop on Multi-Scale Problems: Modelling, Analysis and Applications, University of Bath, UK, September 12–14, 2005.
- **Multi-Scale Analysis For Inertial Particles In A Random Field .** Workshop on Model Reduction and Coarse–Graining for Multi–scale Phenomena, University of Leicester, UK, August 24–26, 2005.
- **A Multi–scale Approach to Brownian Motors.** LMS Meeting on Mixing and Applications, University of Essex, UK July 04, 2005.
- **Periodic Homogenization for Inertial Particles.** SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA May 22–26 2005.
- **Modulation Equations: Stochastic Bifurcation in Large Domains.** SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA May 22–26 2005.
- **A Multiscale Approach to Brownian Motors.** Applied Mathematics Colloquium, Mathematics Institute, University of Warwick, UK April 18, 2005.
- **Periodic Homogenization for Hypocoelliptic Diffusions.** London Analysis and Probability Seminar, Department of Mathematics, Imperial College London, UK January 13, 2005.

#### Other Activities

- Co-organizer (with Professor J. Lamb and Dr M. Rasmussen) of Workshop on Critical Transitions in Complex Systems , 19-23 March 2012, Imperial College London, UK.
- Co-organizer (with Professor M. Hairer and Professor A.M. Stuart) of Workshop on Multiscale Systems: Theory and Applications , 12-16 December 2011, Warwick University, UK.

- Co-organizer (with Dr K.C. Zygalakis) of Minisymposium on Homogenization at Equadiff 2011, Loughborough University 01-05 August 2011.
- Co-organizer (with Professor D.T. Papageorgiou) of MSc program in Applied Mathematics. Department of Mathematics, Imperial College London.
- Co-organizer (with Professor S. Kalliadasis and Dr B. Goddard) of MD-Net Annual Meeting (workshop funded by the EPSRC). March 07-09 2011, Department of Mathematics, Imperial College London.
- Co-organizer (with Dr J. Rademacher, CWI, Amsterdam, The Netherlands) of Workshop on Coherent Structures in Evolutionary Equations, 12-16 July 2010, Lorentz Center, The Netherlands.
- Coordinator for the members at large of the EPSRC Network 'Mathematical Challenges in Molecular Dynamics' (U. Warwick, U. Bath, U. Bristol, U. Edinburgh), since October 2009.
- Organizer of the Applied Mathematics and Mathematical Physics (AMMP) Colloquium, Department of Mathematics, Imperial College London, since January 2007.
- Co-organizer (with J. Lamb), of LMS funded workshop on *Random Dynamical Systems and Applications*. Department of Mathematics, Imperial College London, UK, June 12, 2009.
- Co-organizer and main lecturer, with A.M. Stuart, of LMS/EPSRC funded short course on *Multiscale Methods*. Department of Mathematics, University of Warwick, UK, April 15–20, 2007.
- Co-organizer and main lecturer, with A.M. Stuart, of short course on *Multiscale Methods*. MSRI, Berkeley, CA, USA, April 02–05, 2007.
- Co-organizer, with O. Lakkis and P. Plechac of workshop *Multiscale Analysis and Numerics for Stochastic Differential Equations*. University of Sussex, Brighton, UK, February 22–24, 2007.
- Co-organizer, with Dr. L. Deville, of minisymposium on *Asymptotic Problems and Methods for Stochastic Partial Differential Equations*. SIAM meeting on analysis of PDE, Boston, MA, USA, July 10–12, 2006.
- Co-organizer, with Professor A.M. Stuart, of minisymposium on *Analysis and Numerics for Inertial Particles in Random Flows*. MC2QMC2004 , Juan-les-Pins, Côte d'Azur, France, June 7-10, 2004.
- Co-organizer, with Dr. D. Blömker, of minisymposium on *Multiscale Analysis for Stochastic Dynamics*. Mathematics Institute, University of Warwick, UK, October 20 2003.
- Co-organizer, with Professor A.M. Stuart, of the Computational and Applied Mathematics Seminar, Fall term, 2002, Mathematics Institute, University of Warwick.
- Co-organizer (with Dr. P.R. Kramer) of minisymposium *Turbulent Transport in the Presence of Large Scale Inhomogeneities*. First SIAM-EMS Conference on Applied Mathematics in our Changing World Berlin, Germany, September 2-6 2001.
- External examiner of 1 PhD thesis (M. Zhang), Warwick University 10/2011.
- Internal examiner of 4 PhD theses (K. Sung, July 2007, C. Tronci March 2008, T. Faber 27/11/2009, O. Obamubi 09/11/2010).
- Reviewer for EPSRC, Israel Science Foundation, Netherlands Organisation for Scientific Research, French National Research Agency (ANR), ICMS, Franco-British research partnerships programme, Greek Science Foundation, Swiss Science Foundation
- Reviewer of proposal for MSc in Mathematical Sciences, University of Bristol.

- Referee for SIAM J. MMS, SIAM J. Appl. Math., IMA J. Numerical Analysis, SIAM J. Sci. Comp., Comm. Math. Sci., Numerische Mathematik, LMS Journal on Comp. Math., IMA J. Applied Mathematics, J. Stat. Phys., SIAM J. Math. Analysis, M2AN, J. Computational Math., Nonlinearity, Proceedings of the Royal Society of London, European Journal of Applied Mathematics, J. Fluid Mechanics Phys. Let. A, Physica D., J. Diff. Eqns., J. Physics A, J. Physics D, New J. Physics, Annals of Probability, Applied Mathematics and Computation, Stochastic Processes and Applications, European Journal of Applied Mathematics, Springer, Oxford University Press.
- Reviewer for MathSciNet.

#### Professional Societies

- American Mathematical Society.
- Society for Industrial and Applied Mathematics.
- London Mathematical Society.

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