Grigorios A. Pavliotis

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Personal Data

Date of birth: February 28, 1976
Place of birth: Thessaloniki, Greece
Citizenship: British, Greek

Education

March 2008: Certificate of Advanced Study in Learning and Teaching, Imperial College London.
May 2002: PhD in Mathematics, Rensselaer Polytechnic Institute.
May 2000: MSc. in Applied Mathematics, Rensselaer Polytechnic Institute.
September 1997: BSc in Physics, Aristotle University of Thessaloniki.

Professional Appointments

- **May, July 2019** Von Neumann Visiting Professor, Department of Mathematics, TUM, Munich, Germany.
- **March 2019** Visiting Professor, Department of Mathematics, EPFL, Lausanne, Switzerland.
- **January 2018–present** Head of the Applied Mathematics and Mathematical Physics Section, Imperial College London, UK.
- **August 2014 – present** Professor of Applied Mathematics, Department of Mathematics, Imperial College London, UK.
- **October 2011 – July 2014** Reader in Applied Mathematics, Department of Mathematics, Imperial College London, UK.
- **March 2012 – September 2012** Invited Professor, Biocomputing Group, Department of Mathematics, Freie Universitat, Berlin, Germany. http://www.biocomputing-berlin.de/biocomputing/en/
- **September 2011 – February 2012** Invited Professor, CERMICS - Ecole des Ponts ParisTech, Paris, France. http://www-roc.inria.fr/micmac/spip.php?rubrique184
- **October 2008 – September 2011** Senior Lecturer in Applied Mathematics, Department of Mathematics, Imperial College London, UK.
- **October 2005 – September 2008** Lecturer in Applied 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

- **June 2019**, Computing and Mathematical Sciences, California Institute of Technology, USA (2 weeks).
- **May 2016**, Institute for Analysis and Scientific Computing, TU Wien, Austria (1 week).
- **June 2015**, Bernoulli Center (CIB), EPFL, Switzerland (1 week).
- **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)

Visiting Positions (Contd.)

- **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)
- **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.

Major Grants

- EPSRC funding profile: http://gow.epsrc.ac.uk/NGBOViewPerson.aspx?PersonId=-188882.
- JP Morgan Faculty Grant Award *Dynamics, Control and Uncertainty Quantication for Stable Machine Learning Algorithms.* (co-I; PI: Dr P. Parpas; co-I: Dr N. Kantas) $150,000. https://www.jpmorgan.com/global/technology/ai/awards/faculty-award-recipients
- EP/P031587/1 Nonlocal Partial Differential Equations: entropies, gradient flows, phase transitions and applications. 09/2017-09/2020. (PI; co-I: Professor J.A. Carrillo) £449,210 http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/P031587/1
- EP/L025159/1 Statistical mechanics of soft matter: Derivation, analysis and implementation of dynamic density functional theories. 11/2014-11/2017 (co-I; PI: Professor S. Kalliadasis; co-I: Dr. B. Goddard). £379,072. http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/L025159/1
- EP/L024926/1 Mathematical fundamentals of Metamaterials for multiscale Physics and Mechanics.07/2014-07/2019. (co-I; PI: Professor R.V. Craster) £2,551,402. http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/L024926/1.
- EP/L020564/1 Multiscale Analysis of Complex Interfacial Phenomena (MACIPh): Coarse graining, Molecular modelling, stochasticity, and experimentation. 06/2014–06/2019. (co-I; PI: Professor S. Kalliadasis). £1,616,110. http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/L020564/1
- EP/J009636/1. *Creating macroscale effective interfaces encapsulating microstructural physics..* 10/12-04/16. Funds two postdocs travel, computer.PI. Co-Is: R.V. Craster and A.O. Parry (IC). £550,000. http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/J009636/1
- EP/H034587/1. *Active-dissipative nonlinear spatially extended media: Complexity, coarse-graining, multiscale analysis and numerical methods..* 10/10-31/03/14. Funded one post-doc, one PhD student, travel, computer. PI S. Kalliadasis (IC). £390,155. http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/H034587/1

Postdoctoral Mentoring

- A. Borovykh, 09/2019-08/2021. Now an assistant professor at the Warwick Business School.
- U. Vaes, since 01/2019. Now a Researcher (Inria Starting Faculty Position) at Inria Paris.
- M. G. Delgadino, since 09/2017. Now an Assistant Professor at UT Austin.
- H. Hutridurga, 09/2016–08/2018. Now an Assistant Professor at the Indian Institute of Technology Bombay
- S. Gomes, 06/2016–08/2018. Now a Zeeman Lecturer at the University of Warwick.
- A. Duncan, 06/2014-08/2016. Currently a lecturer at Imperial College London.
- R. Joubaud, 10/2012-03/2014. Currently in Industry, France.
- M. Schmuck, 04/2011-09/2013, co-mentored with Professor S. Kalliadasis. Currently a lecturer at Heriot-Watt University.
- B. Goddard, 09/2012-09/2014 co-mentored with Professor S. Kalliadasis. Currently a lecturer at the University of Edinburgh.
- M. Pradas, 10/2012-09/2014, co-mentored with Professor S. Kalliadasis. Currently a lecturer at the Open University.

Graduate Student Supervision: PhD Students

- T. Schroeder, since 09/2021. Jointly supervised with Dr A.B. Duncan.
- T. Diamantakis, since 09/2020. Jointly supervised with Professor D.D. Holm.
- L. Da Costa, Since 09/2019.
- M. Chak, Since 10/2018. Co-supervised with Dr. N. Kantas.
- R. Gvalani, since 09/2016–06/2020. Co-supervised with Professor J.A. Carrillo. Currently a Research Associate at the Max Planck Institute, Leipzig.
- R. Tomlin, since 10/2015, co-supervised with Professor D.T. Papageorgiou. Currently a postdoc at Imperial College
- L. Ellam, 11/2016–03/2019. Co-supervised with Professor M. Girolami. Currently a Lecturer in Econometrics - De Montfort University.
- N. Nüsken, 10/2014–06/2018. Currently a postdoc at the the University of Potsdam, Germany.
- U. Vaes, 10/2013-05/2019. Now a Researcher (Inria Starting Faculty Position) at Inria Paris.
- S. Gomes, 10/2012-06/2016, co-supervised with Professor D.T. Papageorgiou. Currently an Assistant Professor at Warwick University.
- S. Krumscheid, 10/2010-09/2014. Currently a junior professor at Aachen.
- M. Ottobre, since 10/2008-01/2012. Now a Reader at Heriot-Watt University.
- K. Zygalakis, University of Warwick 09/04–11/08 (Co–supervised with A.M. Stuart). Currently an associate professor at the University of Edinburgh.

Graduate Student Supervision: MSc and Diploma Thesis Students

- F. Kelbell, 01/2020-09/2021 (co-supervised with D. Kalise) U. Adomaityte 01/20-09/21 (co-supervised with T. Bertrand) S. Quattrini 01/20-09/21. E. Carvello, 09/2020-06/2021. T. Farghly , 09/2019-06/2020. A. Alecio, 01-09/2018. J. Huang, 12/2017-06/2018. Y. Zhang, 12/2017-09/2018. E. Fausti, 12/2016-09/2017. U. Gangadharaswamy, 10/2016-09/2017. M. Myhrmann, 01/2017-09/2017. M. R. Passeggeri, 12/2014-09/2015. F. He, 10/2014-06/2015. U. Vaes, 10/2013-09/2014. M. Majorel, 12/2013-09/2014. F. Pons Llopis, 12/2013-09/2014. A. Farid, 12/2013-09/2014. V. Belz, 01/2011–09/2011. A. Neidle, 10/2010-06/2011. J. Strbac, 01-09/2010. M. Dubois, 01-09/2010. Z. Fan, 01-09/2010. A. Othman, (co-supervised with C.J. Cotter) 05/09-09/09 L. Costard, 06/09-09/09. E. Espic, 06/09-09/09. H S Wun, 10/08-09/09. A. Johann, 05/08–09/08 (Co–supervised with J.C. Vassilicos). A. Vogiannou, Erasmus student (diploma thesis), 09/07-12/07. P. Chirawatthanaporn, 05/07–09/07 (Co–supervised with J.C. Vassilicos). A. Sykulski, 10/06–09/07 (Co–supervised with S. Olhede). O. Hamid, 10/04–9/05. S. Morrelet, 10/04–9/05. C. Cuthbertson, University of Warwick 10/03–04/04 (Co-supervised with P. Wiberg). L. Band, University of Warwick 10/02–04/03 (Co-supervised with A.M. Stuart).

Course Development

Topics on the Theory of Markov Processes Graduate-level course offered to students at EPFL (March 2019), TU Munich (May and July 2019). Markov diffusion semigroups: infinitesimal generators, ergodic theory for Markov processes, convergence to equilibrium, functional inequalities, Bakry-Emery theory/Gamma calculus. Nonlinear diffusion processes of McKean type, long time behaviour of solutions of the McKean-Vlasov PDE; non-uniqueness of invariant measures for McKean-Vlasov PDEs and phase transitions.

Introduction to Stochastic Differential Equations Course offered to MSc, MSci and PhD students. Properties of Brownian motion, martingales, the Itô stochastic integral, Itô's formula, existence and uniqueness theory for stochastic differential equations, methods for obtaining explicit solutions, elementary ergodic theory for diffusion processes. Taught four times, Term I 2017-18, 2019-'20, '20-21, '21-'22.

Homogenization theory for Partial Differential Equations. Course for fourth year and MSc students. Basic introduction to the mathematical theory of homogenization for PDEs and applications to homogenization for SDEs. Taught 4 times (2004-2007).

Applied Stochastic Processes. 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 8 times (2007-2011, 2013, 2015-2016).

Topics in Non-Equilibrium Statistical Mechanics Course for MSc students. Classical open systems. Derivation of stochastic differential equations from first principles. Linear response theory. Taught one time (FU Berlin, Summer Term 2012).

Computational Stochastic Processes Course offered to MSc students. Simulation of stochastic processes, numerical solution of stochastic differential equations, Markov Chain Monte Carlo, importance sampling, bias reduction techniques. Part of the MSc programme in Applied Mathematics and to MRes students. Taught 3 times, 2013-14. 2014-15, 2016-17.

Teaching Experience

- **Topics on the Theory of Markov Processes**, March-April 2019. 15 Lectures. EPFL, course offered to MSc and to PhD students. TU Munich, 22 Lectures, course offered to PhD students.
- **Stochastic Differential Equations**, winter term 2017/18, 2019/20, 20/21, 21/22. 33 Lectures. Department of Mathematics, Imperial College London, course offered to MSci, MSc and to PhD students.
- **Computational Stochastic Processes**, winter terms 2013/14, 2014/15, 2016/17. 33 Lectures. Department of Mathematics, Imperial College London, course offered to MSc and to MRes students.
- **Topics in Non-Equilibrium Statistical Mechanics**, summer term 2011/12. 20 lectures, Berlin Mathematical School, Berlin, Germany.
- **Stochastic processes**, autumn terms 2008/09, 2009/10, 2010/11, 2012/13, 2015/16, 2016/17. 33 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.

Teaching Experience-contd

- **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.

Research Interests

Statistical dynamics, McKean-Vlasov-Fokker-Planck equations. Global optimization, optimal control for PDEs and Machine Learning. Analysis, statistical inference and numerical methods for multiscale stochastic dynamical systems. Molecular dynamics and computational statistical mechanics

- **Global optimization, optimal control for PDEs, machine learning:** Development and analysis of global optimization algorithms. Optimal control for agent-based models and for McKean-Vlasov PDEs. Applications to learning algorithms.
- **Numerical Analysis and Statistical Inference:** Parameter estimation for multiscale diffusions, numerical methods for multiscale stochastic PDEs. Filtering and control for multiscale stochastic systems.
- **Markov Chain Monte Carlo.** Development and analysis of accelerated sampling techniques. MCMC for multiscale probability measures. Computational statistical mechanics.
- **Diffusion processes and stochastic differential equations:** spectral theory for hypoelliptic operators, asymptotic problems for non-Markovian processes, averaging/homogenization for SDEs.
- **Statistical Mechanics:** density functional theory, mean field limits for interacting diffusions, phase transitions, non-equilibrium statistical mechanics, kinetic theory and transport processes.

Editorial

- Associate editor for Stochastics and Partial Differential Equations: Analysis and Computations. `https://www.springer.com/journal/40072/editors`
- Associate editor for SIAM J. Uncertainty Quantification. `https://www.siam.org/journals/juq/board.php`
- Associate editor for SIAM J. MMS. `http://www.siam.org/journals/mms/board.php`
- Associate Editor for SIAM Review, 2013 – 2018.
- Associate editor for IMA J. Applied Mathematics `https://academic.oup.com/imamat/pages/Editorial_Board`
- Associate Editor for Communications in Mathematical Sciences. `http://intlpress.com/site/pub/pages/journals/items/cms/_home/editorial/index.html`

Publications

All of my publications are available from http://www2.imperial.ac.uk/~pavl/publ_prepr.htm.
Google scholar: https://scholar.google.com/citations?user=YSvkuSQAAAAJ&hl=en
Arxiv: https://arxiv.org/find/all/1/au:+pavliotis/0/1/0/all/0/1
Web of Knowledge: http://www.researcherid.com/rid/C-1340-2011
ORCID: https://orcid.org/0000-0002-3468-9227

Books

[1]. *Stochastic Processes and Applications.* Springer (2014), vol. 60 in the series *Texts in Applied Mathematics.*

[2]. *Multiscale Methods: Averaging and Homogenization.* (with A.M. Stuart), Springer (2008), vol. 53 in the series *Texts in Applied Mathematics.*

Submitted--Preprints

[3]. *Optimizing interacting Langevin dynamics using spectral gaps* (with A. Borovykh; N. Kantas P. Parpas) July 2021. ICML workshop Beyond First Order Methods in ML Systems.

[4]. *Parameter Estimation for the McKean-Vlasov Stochastic Differential Equation* (L. Sharrock, N. Kantas, P. Parpas), preprint, June 2021.

[5]. *Eigenfunction martingale estimating functions and filtered data for drift estimation of discretely observed multiscale diffusions* (with A. Abdulle and A. Zanoni). Submitted, April 2021.

[6]. *On the Generalised Langevin Equation for Simulated Annealing* (with M. Chak, N. Kantas) Submitted, March 2020.

[7]. *The Thermodynamics of Urban and Regional Structure* (with L. Ellam, M. Girolami, A. Wilson). Submitted, May 2018.

[8]. *Nonreversible Langevin Samplers: Splitting Schemes, Analysis and Implementation* (with A.B. Duncan and K.C. Zygalakis). preprint, August 2017.

[9]. *Brownian motion in an N-scale periodic potential* (with A.B. Duncan). Submitted to SIAM J. MMS, May 2017.

Papers published in refereed journals

[10]. *Bayesian Mechanics for Stationary Processes* (with L. Da Costa, K. Friston, C. Heins), Proc. Roy. Soc. London A, to appear (2021).

[11]. *Derivative-Free Bayesian Inversion Using Multiscale Dynamics* (with A.M. Stuart and U. Vaes). SIAM J. Appl Dyn. Syst. To appear (2021).

[12]. *Noisy bounded confidence models for opinion dynamics: the effect of boundary conditions on phase transitions* (with B. Goddard, B. Gooding, H. Short). IMA J. Appl. Math. to appear (2021).

[13]. *Drift Estimation of Multiscale Diffusions Based on Filtered Data* (with A. Abdulle, G. Garegnani, A. Zanoni, A.M. Stuart) Foundations of Computational Mathematics, (2021), https://doi.org/10.1007/s10208-021-09541-9

[14]. *Spectroscopy of phase transitions for multiagent systems* (with V. Lucarini and N. Zagli). CHAOS 31, 061103 (2021).

[15]. *On the diffusive-mean field limit for weakly interacting diffusions exhibiting phase transitions* (with M.G. Delgadino and R. Gvalani). Archive for Rational Mechanics and Analysis, 241, pp 91–148 (2021).

[16]. *On stochastic mirror descent with interacting particles: convergence properties and variance reduction* (with A. Borovykh, N. Kantas, P. Parpas). Physica D. 418 (2021) 132844.

[17]. *Scaling limits for the generalized Langevin equation* (with G. Stoltz and U. Vaes). J. Nonlinear Science 31(8) 2021.

[18]. *Response Theory and Phase Transitions for the Thermodynamic Limit of Interacting Identical Systems* (with V. Lucarini and N. Zagli). Proc. Roy. Soc. London A. 476(2244) (2020).

[19]. *Homogenization and hypocoercivity for Fokker-Planck equation driven by weakly compressible shear flows (with M. Coti-Zelati) IMA J. Appl. Math., 85(6) 951-979 (2020).*

[20]. *A proof of the mean-field limit for λ-convex potentials using Γ-convergence.* (with J.A. Carrillo and M.G. Delgadino). J. Func. Analysis 279 (10), (2020), 108734

[21]. *Manifold learning for accelerating coarse-grained optimization* (with Y. Kevrekidis et al). J. Comp. Dyn. 7(2); #14, (2020).

[22]. *Mean field limits for interacting diffusions with colored noise: phase transitions and spectral numerical methods* (with S. Gomes and U. Vaes). SIAM J. MMS, 18(3) pp. 1343-1370 (2020).

[23]. *Long-time behaviour and phase transitions for the McKean-Vlasov equation on the torus* (with J. A. Carrillo, R. S. Gvalani, A. Schlichting). Archive for Rational Mechanics and Analysis, 235 (2020) 635-690.

[24]. *Accelerated convergence to equilibrium and reduced asymptotic variance for Langevin dynamics using Stratonovich perturbations* (with A. Abdulle and G. Vilmart). Com. Rend. Acad. Sci. **357** (2019) 349-354.

[25]. *Instability, rupture and fluctuations in thin liquid films: Theory and computations (with M. A. Duran-Olivencia, R. Gvalani and S. Kalliadasis). J. Stat. Phys.* **174***(3) pp. 579-604 (2019).*

[26]. *Dynamics of the Desai-Zwanzig model in multi-well and random energy landscapes* (with S.N. Gomes, S. Kalliadasis, P. Yatsyshin). Physical Review E, **99**, 032109 (2019).

[27]. *Recent advances in the evolution of interfaces: thermodynamics, upscaling, and universality* (with M. Schmuck and S. Kalliadasis). Computational Materials Science 156, 441–451 (2019).

[28]. *Constructing sampling schemes via coupling: Markov semigroups and optimal transport* (with N. Nuesken). SIAM/ASA J. Uncertainty Quantification, **7**(1), 324–382. (2019).

[29]. *Optimal control of thin liquid films and transverse mode effects* (with R.J. Tomlin, S.N. Gomes, D.T. Papageorgiou). SIADS, **18**(1) 117–149 (2019).

[30]. *Mean field limits for non-Markovian interacting particles: convergence to equilibrium, GENERIC formalism, asymptotic limits and phase transitions* (with H. Duong). Comm. Math. Sci **16**(8) (2018), pp. 2199-2230.

[31]. *Cloaking via mapping for the heat equation* (with R. Craster, S. Guenneau, H. Hutridurga). SIAM J. MMS, **16**(3), 1146–1174 (2018).

[32]. *Stochastic Modeling of Urban Structure* (with L. Ellam, M. Girolami and A. Wilson). Proceeding Roy. Soc. London A, **474**(2213) (2018).

[33]. *Mean Field Limits for Interacting Diffusions in a Two-Scale Potential* (with S.N. Gomes). J. Nonlinear Sci. **28**(3), pp. 905-941, (2018).

[34]. *Using Perturbed Underdamped Langevin Dynamics to Efficiently Sample from Probability Distributions* (With A.B. Duncan and N . Nusken). J. Stat. Phys. 169(6) pp. 1098-1131 (2017).

[35]. *Three-dimensional wave evolution on electrified falling films* (with R.J. Tomlin and D.T. Papageorgiou). J. Fluid Mech. 822 pp. 54-79 (2017).

[36]. *Stabilizing nontrivial solutions of the generalized Kuramoto-Sivashinsky equation using feedback and optimal control* (with S.N. Gomes and D.T. Papageorgiou). IMA J. Appl. Math. **82**(1) pp 158-195 (2017).

[37]. *Controlling roughening processes in the stochastic Kuramoto-Sivashinsky equation* (with S. Gomes, S. Kalliadasis, D.T. Papageorgiou and M. Pradas). Submitted to Physica D, Physica D 348 33–43 (2017).

[38]. *Spectral methods for multiscale stochastic differential equations* (with A. Abdulle and U. Vaes). Submitted to SIAM J. UQ, 5-1 (2017), pp. 720-761.

[39]. *Noise-induced transitions in rugged energy landscapes* (with A.B. Duncan, S. Kalliadasis, M. Pradas). Phys. Rev. E, 94, 032107 (2016).

[40]. *Variance Reduction using Nonreversible Langevin Samplers* (with A. Duncan and T. Lelievre). J. Stat. Phys. 163(3) pp 457-491, (2016).

[41]. *Stabilising falling liquid film flows using feedback control* (with A. B. Thompson, S. N. Gomes, D. T. Papageorgiou). Phys. Fluids 28, 012107 (2016).

[42]. *Efficient numerical calculation of drift and diffusion coefficients in the diffusion approximation of kinetic equations* (with V. Bonnaillie-Noel, J.A. Carrillo and T. Goudon). IMA J. Num. Analysis **36**(4) pp. 1536–1569 (2016).

[43]. *Controlling Spatiotemporal Chaos in Active Dissipative-Dispersive Nonlinear Systems.* (with S. Gomes, S. Kalliadasis, D.T. Papageorgiou and M. Pradas). Phys Rev E 92, 022912 (2015).

[44]. *Data-driven coarse graining in action: Modelling and prediction of complex systems* (with S. Kalliadasis, S. Krumscheid and M. Pradas Gene). Phys. Rev. E 92, 042139 (2015).

[45]. *A new framework for extracting coarse-grained models from time series with multiscale structure* (with S. Kalliadasis and S. Krumscheid). J. Comp. Phys. 296, pp. 314-328 (2015).

[46]. *Some remarks on degenerate hypoelliptic Ornstein-Uhlenbeck operators* (with M. Ottobre and K. Pravda-Starov). J. Math. Analysis Appl. 429(2), pp. 676-712 (2015)

[47]. *A multiscale analysis of diffusions on rapidly varying surfaces* (with A.B. Duncan, C.M. Elliott, A.M. Stuart). J. Nonlinear Science, 25(2), pp. 389-449 (2015).

[48]. *Langevin dynamics with space-time periodic nonequilibrium forcing* (with R. Joubaud and G. Stoltz). J. Stat. Phys., 158(1) pp 1-36 (2015).

[49]. *A New Mode Reduction Strategy for the Generalized Kuramoto-Sivashinsky Equation* (with M. Schmuck, M. Pradas Gene, S. Kalliadasis). IMA J. Appl. Math., 80(2), pp. 273-301 (2015).

[50]. *Optimal control of multiscale systems using reduced-order models* (with W. Zhang, J.C. Latorre and C. Hartmann). J. Comp. Dyn. 1(2), pp 279-308, (2014).

[51]. *Mapping multiplicative to additive noise* (with K.J. Rubin and G. Pruessner). J. Physics A, **47** (2014) 195001.

[52]. *Rate of Convergence of Phase Field Equations in Strongly Heterogeneous Media towards their Homogenized Limit.* (with M. Schmuck and S. Kalliadasis). Applied Math. Lett., **35** (2014) pp 12-17.

[53]. Numerical Methods for Computing Effective Transport Properties of Flashing Brownian Motors (with J.C. Latorre and P.R. Kramer). J. Comp. Phys., 257, Part A, pp. 57–82 (2014).

[54]. *Derivation of effective macroscopic Stokes-Cahn-Hilliard equations for periodic immiscible flows in porous media.* (with M. Schmuck, M. Pradas and S. Kalliadasis). Nonlinearity, **26**(12), pp. 3259–3277, (2013).

[55]. *Optimal nonreversible linear drift for the convergence to equilibrium of a diffusion.* (with T. Lelievre and F. Nier). J. Stat. Phys. **152**(2) 237-274 (2013).

[56]. *Semi-Parametric Drift and Diffusion Estimation for Multiscale Diffusions* (with S. Krumcheid, S. Kalliadasis). SIAM J. MMS **11**(2), 442–473 (2013).

[57]. *Nonlinear interfacial dynamics in stratified multilayer channel flows.* (with E.S. Papaeuthymiou and, D.T. Papageorgiou). J. Fluid Mech. 734, pp 114-143 (2013).

[58]. *A new stochastic mode reduction strategy for dissipative systems* (with M. Schmuck, M. Pradas Gene, S. Kalliadasis). Phys. Rev. Lett. 110, 244101, (2013).

[59]. *Corrections to Einstein's relation for Brownian motion in a tilted periodic potential* (with J.C. Latorre and P.R. Kramer). Journal of Statistical Physics, **150**(4), 776-803 (2013).

[60]. *Generalized Dynamical Density Functional Theory for Classical Fluids* (with B. Goddard, A. Nold, N. Savva, S. Kalliadasis). Phys. Rev. Let. **109**, 120603, (2012).

[61]. *Upscaled phase field models for interfacial dynamics in strongly heterogeneous/perforated domains* (with M. Schmuck, M. Pradas, S. Kalliadasis). Proc. Roy. Soc. London A, **468**, 3705-3724 (2012).

[62]. *The Overdamped Limit of dynamic Density Functional Theory: Rigorous Results.* (with B. Goddard and S. Kalliadasis). SIAM J. MMS, 10-2, pp. 633-663 (2012).

[63]. *Additive Noise Effects in Active Nonlinear Spatially Extended Systems* (with M. Pradas Gene, D. Tseluiko, S. Kalliadasis, D.T. Papageorgiou). Eur. J. Appl. Math., **23**(5) 563-591 (2012).

[64]. *Exponential Return to Equilibrium for Hypoelliptic Quadratic Systems* (with M. Ottobre and K. Pravda-Starov). J. Func. Analysis 262(9) pp. 4000-4039 (2012).

[65]. *Numerical methods for stochastic partial differential equations with multiple scales.* (with A. Abdulle) J. Comp. Phys, 231(6) pp. 2482–2497 (2012).

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[69]. *Contact lines over random topographical substrates. Part I. Statics.* (with N. Savva and S. Kalliadasis). J. Fluid Mechanics, **672** pp. 358-383 (2011).

[70]. *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).

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[72]. *Two-dimensional droplet spreading over random topographical substrates.* (with N. Savva and S. Kalliadasis). Phys. Rev. Lett. 104, 084501 (2010).

[73]. *Estimating eddy diffusivities from Lagrangian observations* (with C.J. Cotter), Comm. Math. Sci. **7**(4), 805-838 (2009).

[74]. *Multiscale Inference for high frequency data* (with S. Olhede and A. Sykulski), SIAM J. MMS **8**(2), 393-427 (2009).

[75]. *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).

[76]. *Maximum Likelihood Drift Estimation for Multiscale Diffusions* (with A. Papavasiliou and A.M. Stuart), Stoch. Proc. Appl. **119**(10), 3173-3210 (2009) .

[77]. *Diffusive Transport in Periodic Potentials: Underdamped Dynamics* (with A. Vogiannou), Fluct. Noise Lett. **8**(2) L155-173 (2008).

[78]. *From Ballistic to Diffusive Behavior in Periodic Potentials.* (with M. Hairer), J. Stat. Phys. **131**(1) 175-202 (2008).

[79]. *Optimizing the Source Distribution in Fluid Mixing.* (with J-L. Thiffeault), Physica D, **237**(7), 918-929 (2008).

[80]. *Homogenization for Inertial Particles in a Random Flow.* (With A.M. Stuart and K.C. Zygalakis), Comm. Math. Sci., **5**(3) 507-531 (2007).

[81]. *Multiscale Analysis for Stochastic PDEs with Quadratic Nonlinearities.* (With D. Blömker and M. Hairer), Nonlinearity, 20 1721-1744 (2007).

[82]. *Estimates for the Two-Dimensional Navier-Stokes Equations in Terms of the Reynolds Number.* (With J.D. Gibbon), J. Math. Phys., 48, 065202 (2007).

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[87]. *Modulation Equations: Stochastic Bifurcation in Large Domains.* (with D. Blömker and M. Hairer), *Comm. Math. Phys.* **258**(2) 479–512, (2005).

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[89]. *Periodic Homogenization for Hypoelliptic Diffusions.* (with M. Hairer), J. Stat. Phys. 117 no. 1/2 (2004), 261-279.

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[91]. *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.

[92]. Riemannian curvature and stability of monoparametric families of trajectories. (with G. Bozis) *Inverse Problems*, 15 (1999) 141-153.

Peer Reviewed Book Chapters and Conference Proceedings

[93]. *Stochastic Mirror Descent for Fast Distributed Optimization and Federated Learning* (with A. Borovykh, N. Kantas, P. Parpas) OPT2020: 17th Annual Workshop on Optimization for Machine Learning (2020).

[94]. *To interact or not? The convergence properties of interacting stochastic mirror descent* (with A. Borovykh, N. Kantas, P. Parpas) Workshop on "Beyond first-order methods in ML systems" at 36th International Conference on Machine Learning (ICML) 2020.

[95]. *Regularized transformation optics for transient heat transfer.* (with Craster, R. Guenneau, S., Hutridurga, H.) 11TH International Congress on Engineered Materials Platforms for Novel Wave Phenomena (Metamaterials) pp. 127-129 (2017).

[96]. *Effective macroscopic Stokes-Cahn-Hilliard equations for periodic immiscible flows in porous media.* (with M. Schmuck and S. Kalliadasis). Proceedings of the European Conference on Complex Systems 2012, Springer Proceedings in Complexity 2013, pp 1005-1010.

[97]. *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.

[98]. *Multiscale modeling and inverse problems.* (with J. Nolen and A.M. Stuart) in *N*umerical analysis of multiscale problems, 1–34, Lect. Notes Comput. Sci. Eng., 83, Springer, Heidelberg, 2012

[99]. *Some Remarks on Stabilization by Additive Noise.* with D. Blömker and M. Hairer in *S*tochastic Partial Differential Equations and Applications, Edited by G. Da Prato and L. Tubaro, *Quaderni di Matematica*, vol 25,pp. 37–50, 2011.

[100]. *Stochastic Swift–Hohenberg Equation Near a Change of Stability.* (With D. Blömker and M. Hairer), Proceedings of Equadiff-11, pp. 25–37. 2005.

[101]. *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

[102]. PhD Thesis: *Homogenization Theory for Advection–Diffusion Equations with Mean Flow.* Thesis Advisor: P.R. Kramer, RPI, USA, May 2002.

[103]. Diploma Thesis: *Chaos and Integrability in a Simple Geodesic Flow.* Thesis Advisor: I. Antoniou, Free University of Brussels, Belgium, July 1997.

Short Courses/Summer Schools

- **Mean Field Limits for Weakly Interacting Diffusions: long time behaviour and phase transitions**. λ Greek Stochastics, Corfu, Greece. August 27-29 2019. `http://www.stochastics.gr/meetings/lambda/`
- **Linear and Nonlinear Markov Semigroups**. California Institute of Technology, USA June 2019. `ttp://cmx.caltec`.edu/pavliotis.html
- **Sampling from probability measures using stochastic differential equations**. Summer school in numerical analysis, NTUA, Athens, Greece. July 2018.
- **MaxEnt principles and the Fokker-Planck equation**. Alan Turing Institute, July 2018.

- **Introduction to Stochastic Differential Equations**. CRITICS SUMMER SCHOOL, KULHUSE, DENMARK. August 2016.
- **Nonreversible Langevin Samplers**. Alan Turing Institute, June 2016.
- **Homogenization methods.** 4 one-hour lectures. **From the Grain to the Continuum: Two Phase Dynamics of a Partially Molten, Polycrystalline Aggregate.** INI, Cambridge, UK, 12-13 April 2016.
- **Stochastic processes and nonequilibrium statistical mechanics** 10 2-hour lectures, Peking University Summer School in mathematics, Beijing, China, July 2014.
- **Coarse-graining techniques for deterministic and stochastic systems** Four 2-hour lectures, part of the summer school **Emergent dynamics of discrete and stochastic multiscale systems.** ICMS Advanced Study Center, Eindhoven University of Technology, 17-21 June 2013.
- **Multiscale methods for SDEs and PDEs.** Three (90 min) lectures, part of the summer course **Applied and Numerical Analysis of PDEs and SDEs** Mathematics Institute, Warwick University, 02-04 July 2012.
- **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 2012)`

- **Optimal Langevin Samplers** John Hopkins, 20/10/21.
- **On the diffusive-mean field limit for weakly interacting diffusions exhibiting phase transitions** Oxford, 18/10/21.
- **Optimal Langevin Samplers** U. Delaware, 11/10/21.
- **Optimal Langevin Samplers** Lorentz Center, *Non-reversible Markovian Monte Carlo* 02–06/08/21.
- **Mean field limits for interacting diffusions with colored noise: phase transitions and spectral numerical methods** *New trends in numerical multiscale methods and beyond* Mittag-Leffler Institute. July 12-16 2021.
- **On stochastic mirror descent with interacting particles: convergence properties and variance reduction** *SIAM Conference on Mathematical Aspects of Materials Science* May 17–28 2021.
- **Mean field limits for interacting particles and dynamical density functional theory** *New directions in classical density functional theory* ICMS, 3–6 May 2021.
- **Inference and Data-Driven Coarse-Graining for Multiscale Diffusions** *SIAM Conference on Computational Science and Engineering.* 05/03/2021.

- **Mean field limits for weakly interacting diffusions: phase transitions and fluctuations**. U. Arizona 03 March 2021.
- **Mean field limits for weakly interacting diffusions: phase transitions and fluctuations**. U. Mass Amherst 22 September 2020.
- **Mean field limits for weakly interacting diffusions and applications** *IPAM Online Workshop: Stochastic Analysis Related to Hamilton-Jacobi PDEs.* 22 May, 2020.
- **Mean field limits of weakly interacting diffusions and applications.** INS, Shanghai, Colloquium e-Seminar, 24 April, 2020.
- **Mean field limits for weakly interacting diffusions and applications** U. Edinburgh, 22 April, 2020.
- **Mean field limits for weakly interacting diffusions: phase transitions and fluctuations**. *Multiscale Methods for Deterministic and Stochastic Systems* Geneva, Switzerland 27–29 January, 2020.
- **Long Time Behaviour, Phase Transitions and Fluctuations for the McKean-Vlasov Equation** *Dynamics, Equations and Applications.* Krakow, Poland 16-20 September 2019.
- **Long Time Behaviour of the McKean-Vlasov equation: Phase transitions and Fluctuations** *Nonlinear Processes and their Applications.* St Etienne, France July 02-05 2019.
- **Spectral methods for linear and nonlinear Fokker-Planck equations**. ICIAM, Valencia, July 15-19 2019.
- **The sharp, the flat and the shallow: Can weakly interacting agents learn to escape bad minima?** Thirty-sixth International Conference on Machine Learning, ICML 2019, Workshop on AI in Finance: Applications and Infrastructure for Multi-Agent Learning, 14 June 2019.
- **Optimal Langevin Samplers**. Department of Mathematics, U. Geneva, Switzerland, 15 March 2019.
- **Optimal Langevin Samplers**. Department of Mathematics, U. Manchester, 22 January 2019.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation**. Department of Mathematics, U. Birmingham, 04 December 2018.
- **Optimal Langevin Samplers**. *Symmetries, asymptotics and multi-scale approaches.* Royal Statistical Society, London, 30 October 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *Homogenization in Disordered Media.* Durham LMS Symposium, 22 August 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *Interaction Between PDEs and Probability.* UIMP, Santander, Spain, August 12 - 16, 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *Working Group on Multiscale Strategies.* IMA, U. Minnesota June 18 - 29, 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *Workshop on Stochastic Analysis, Geometry and Statistics.* Department of Mathematics, Imperial College London, 21 June 2018.
- **Data-driven Methodologies in Applied Mathematics**. Big data and data science for learning in the digital world, Madrid, Spain. June 03–06 2018.
- **Phase transitions for mean field limits of noisy interacting agents** *Data-Driven Modelling of Complex Systems.* The Alan Turing Institute, 8–10 May 2018.

- **Optimal Langevin Samplers** *Workshop on Network Inference and Random Dynamics.* Imperial College London, 03 May 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *Workshop on PDEs/SPDEs and Functional Inequalities.* Bedlewo Conference Center, Poland, 22-28 April 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation**. Department of Mathematics, University of Geneva, Switzerland, 15 March 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation**. IST, Vienna, Austria, 13 March 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *Workshop on Dynamics of Networks.* Imperial College London, 09 February 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation** *New Perspectives in Analysis, Probability and Applications.* Department of Mathematics, University of Sussex, 24–26 January 2018.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation**. *Random Dynamical Systems* Lorentz Center, Leiden, The Netherlands, 4–8 Dec 2017.
- **Long time behaviour and Phase transitions for the McKean-Vlasov Equation** EPFL, Lausanne, Switzerland, 16 November 2017.
- **Long time behaviour and phase transitions for the McKean-Vlasov equation**. U. Warwick Applied Mathematics Seminar, 03 November 2017.
- **Noise-induced transitions and mean field limits for multiscale diffusions**. *LMS – EPSRC Durham Symposium on Stochastic Analysis* 10 to 20 July 2017.
- **Noise-induced transitions and mean field limits for multiscale diffusions**. Analysis/Stochastic Analysis Intercontinental Conference. Imperial College London. 26 – 30 June 2017.
- **Noise-induced transitions and mean field limits for multiscale diffusions**. U. Bonn stochastic analysis seminar 03 May 2017.
- **Spectral methods for Langevin dynamics with a multiscale structure.** *Numerical aspects of nonequilibrium dynamics.* Inst. H. Poincare, Paris, France. 25 April 2017 - 27 April 2017.
- **Noise-induced transitions and mean field limits for multiscale diffusions**. AACHEN-AUGSBURG Applied Analysis meeting 05 April 2017.
- **Noise-induced transitions and mean field limits for multiscale Diffusions**. ICL-UCL Conference Day, 03/04/2017.
- **Noise-induced transitions and mean field limits for multiscale diffusions.** Workshop on Multiscale methods for stochastic dynamics. University of Geneva, Switzerland, 31/02/2017.
- **Optimal Langevin samplers**. MCMC and Particle Methods, ICMS, Edinburgh, UK, 05/09/2016.
- **Data-driven coarse-graining and applications**. CRITICS SUMMER SCHOOL, KULHUSE, DENMARK. 31/08/2016.
- **Data-driven coarse-graining and applications**. Mathematics of Dispersion in the Environment. U. Birmingham 04/04/2016.
- **Optimal Langevin Samplers**. University of Glasgow 30/10/2015.

- **Optimal Langevin Samplers**. Workshop on nonreversible MCMC, University of Warwick, 21/09/2015.
- **Efficient numerical calculation of drift and diffusion coefficients in the diffusion approximation of kinetic equations.** Oberwolfach Workshop *Interplay of Analysis and Probability in Applied Mathematics*, 26/07-01/08 2015.
- **Analysis of stochastic multiscale systems: derivation of coarse-grained models, calculation of effective coefficients and data driven approaches** Postgraduate ASI in Mathematical and Physical Sciences: Modelling, Numerical Analysis and Applications. Newton Institute, Cambridge 20/07/2015.
- **Linear Response Theory, The Green-Kubo formula and Langevin Dynamics**, 7th International Workshop and Summer School on Nonequilibrium Thermodynamics. Hilvarenbeek, The Netherlands, 07/07/2015.
- **Accelerating convergence and reducing variance for Langevin samplers,** University of Lille, France, 30/06/2015.
- **Accelerating convergence and reducing variance for Langevin samplers**, EPFL, Lausanne, Switzerland, 17/06/2015.
- **Accelerating convergence and reducing variance for Langevin samplers,** University of Nottingham, 26/05/2015.
- **Accelerating convergence and reducing variance for Langevin samplers,** University of Bath, 26/03/2015.
- **Accelerating convergence and reducing variance for Langevin samplers,** Workshop: *Analytic approaches to scaling limits for random systems*, Hausdorff Center, Bonn, Germany, 28/01/2015.
- **Accelerating convergence and reducing variance for Langevin samplers,** University of Edinburgh, 27/11/2014.
- **Inference and Inverse Problems for Multiscale Diffusions**. Workshop *Stochastic and Multiscale Inverse Problems*, Paris 03/10/2014.
- **Accelerating Convergence to Equilibrium for Nonreversible Diffusions**. Stochastic and Multiscale Problems Workshop. University of Oxford, 31/08/2014.
- **Noise Induced State Transitions, Intermittency and Universality in the Noisy Kuramoto-Sivashinsky Equation**. SIAM Conference on Nonlinear Waves 11/08/2014.
- **Accelerating Convergence to Equilibrium for Diffusion Processes**. University of Beijing, China, 31/07/2014.
- **Accelerating Convergence to Equilibrium for Diffusion Processes**. University of Warwick, 18/06/2014.
- **Accelerating Convergence to Equilibrium for Diffusion Processes**. University of Southampton 13/05/2014.
- **Accelerating Convergence to Equilibrium for Diffusion Processes**. Workshop on Multiscale Methods and High Performance Computing, ICMS, Edinburgh 08/05/2014
- **Data driven approaches to the modeling of multiscale systems**. Workshop "Stochastic Modeling of Multiscale Systems", Eindhoven Multiscale Institute, December 2-6 2013.
- **Speeding up convergence to equilibrium for diffusion processes** University of Essex, 21 October 2013.

- **Speeding up convergence to equilibrium for diffusion processes** University of Reading, 15 October 2013.
- **Statistical inference and sampling in molecular dynamics simulations**. Royal Society Meeting, Kavli Seminar: Multiscale systems: linking quantum chemistry, molecular dynamics, and microfluidic hydrodynamics, 22-23 July 2013.
- **Speeding up convergence to equilibrium for diffusion processes** Multiscale Inverse Problems, Warwick University 17-19 June 2013.
- **General dynamical density functional theory for classical fluids** U. Bristol 01/05/2013.
- **Optimal nonreversible linear drift for the convergence to equilibrium of a diffusion process and applications** Department of Mathematics, University of Chicago 24/04/2013.
- **Optimal nonreversible linear drift for the convergence to equilibrium of a diffusion process and applications** Workshop on Randomness and PDEs, Nantes, France, 15-17/04/2013.
- **Statistical inference for multiscale diffusions**. AHOI Workshop on Ambit Stochastics and Applications at Imperial College London, 25-27 March 2013.
- **Convergence to equilibrium for nonreversible diffusions** Queen Mary UL 22/01/2013.
- **Optimal nonreversible linear drift for the convergence to equilibrium of a diffusion process and applications** Imperial College London 18/01/2013.
- **Convergence to equilibrium for nonreversible diffusions.** U Cardiff 03/12/2012.
- **General dynamical density functional theory for classical fluids** Imperial College London 14/10/2012.
- **General dynamical density functional theory for classical fluids**, *Modelling the Dynamics of Complex Molecular Systems* Lorentz Center, Leiden, The Netherlands. 17/08/2012.
- **Analysis and Numerics for SPDEs with Multiple Scales.** FU Berlin 25/06/2012.
- **Analysis and Numerics for SPDEs with Multiple Scales.** RWTH Aachen 19/06/2012.
- **Analysis and Numerics for SPDEs with Multiple Scales.** K.U. Leuven 15/02/2012.
- **Long Time Asymptotics for Open Classical Systems** U. Lille 07/02/2012.
- **Markovian Approximation of Open Classical Systems** Workshop on Interplay of Analysis and Probability in Physics, Oberwolfach, Germany, 22-28/01/2012.
- **Long Time Asymptotics for Open Classical Systems** Cergy-Pontoise 18/01/2012.

Other Activities

- Head of the Applied Mathematics and Mathematical Physics Section, Department of Mathematics, Imperial College London, since January 2018.
- Course Director of MSc program in Applied Mathematics. Department of Mathematics, Imperial College London. From 10/2009-09/2015.
- Conference/Workshop organization:
  - Co-organizer of Workshop on *Stochastic Analysis Related to Hamilton-Jacobi PDEs* May 18-22, 2020 `http://www.ipam.ucla.edu/programs/workshops/workshop-iv-stochastic-analysis-related-to-hamilton-jacobi-pdes/`.

- Co-Organizer (with Professor T. Lelievre) of workshop *Interacting Particle Systems and applications*, Imperial College London, December 9-10, 2020.
- Co-Organizer (with Dr M. Delgadino and Professor J.A. Carrillo) of minisymposium on *Interacting particle systems: Mean-field limits and applications to machine learning*, ICIAM, Valencia July 15-19, 2019.
- Co-organizer (with A. Gundy and E. McCoy)of the 37th Max Ent Workshop, 02–06 July, 2018 The Alan Turing Institute.
- Co-organizer (with G. Stoltz and C. Hartmann) of ICMS workshop on *Computational methods for statistical mechanics*, 2 - 6 June 2014, ICMS, Edinburgh.
- Co-organizer (with J. Lamb and M. Rasmussen) of Workshop on Critical Transitions in Complex Systems , 19-23 March 2012, Imperial College London, UK.
- Co-organizer (with M. Hairer and A.M. Stuart) of Workshop on Multiscale Systems: Theory and Applications , 12-16 December 2011, Warwick University, UK.
- Co-organizer (with K.C. Zygalakis) of Minisymposium on Homogenization at Equadiff 2011, Loughborough University 01-05 August 2011.
- Co-organizer (with S. Kalliadasis and 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 J. Rademacher, CWI, Amsterdam, The Netherlands) of Workshop on Coherent Structures in Evolutionary Equations, 12-16 July 2010, Lorentz Center, The Netherlands.
- 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. D. Blömker, of workshop on *Multiscale Analysis for Stochastic Dynamics*. Mathematics Institute, University of Warwick, UK, October 20 2003.

- Organizer of the Applied Mathematics and Mathematical Physics (AMMP) Colloquium, Department of Mathematics, Imperial College London, from January 2007 to June 2011.
- Co-organizer, with Professor A.M. Stuart, of the Computational and Applied Mathematics Seminar, Fall term, 2002, Mathematics Institute, University of Warwick.
- External examiner for 18 PhD theses (U. Warwick, Ecole des Ponts, University of Bath, Queen Mary U. London, U. Grenoble, Lille U., FU Berlin, U. Edinburgh, EPFL, Eindhoven University of Technology, ENS Lyon, Karlstads U., Sweden, Aalto U. Finland). Internal examiner for 20 PhD theses.
- Reviewer for the EPSRC, German Science Foundation, Israel Science Foundation, Netherlands Organisation for Scientific Research, ERC, French National Research Agency (ANR), ICMS, Franco-British research partnerships programme, Greek Science Foundation, Swiss Science Foundation, Canadian Science Foundation, Qatar National Research Fund, Hong Kong Research Grants Council.
- Referee for J. Functional Analysis, 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 Mehcanics 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.

Professional Societies

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

November 2, 2021