CURRICULUM VITAE: ANDREW STUART

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1 Personal Details

• Date of Birth: 19^{th} August 1962

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2 Academic History

- 10/99-PRESENT. Warwick University, Mathematics Institute. Professor of Applied Mathematics.
- 9/95-9/99. Stanford University, Departments of Computer Science and Mechanical Engineering. Associate Professor (with tenure).
- 9/91-9/95. Stanford University, Departments of Computer Science and Mechanical Engineering. Assistant Professor.
- 1/89-3/92. Bath University, School of Mathematics. Lecturer.
- 8/87-12/88. MIT, Mathematics Department. Instructor in Applied Mathematics.

- 10/86-7/87. Oxford University, Mathematical Institute. SERC Postdoctoral Research Assistant.
- 10/83-9/86. Oxford University, Computing Laboratory. PhD.
- 9/80-7/83. Bristol University, Mathematics Department. 1st Class BSc.(Hons) in Mathematics.

3 Additional Positions Held

- 1/15–12/16. SIAM Activity Group on Uncertainty Quantification, Chair.
- 1/05-6/07. Warwick University, Director, Centre for Scientific Computing.
- 7/97–6/99. Stanford University, Associate Director, Graduate Program in Scientific Computing and Computational Mathematics.
- 6/90–12/93. NASA Ames, Consultant.

4 Awards and Honours

- Leslie Fox Prize For Numerical Analysis (IMA, UK). September 1989
- Monroe Martin Prize in Applied Mathematics (IPST, Maryland). February 1996.
- James Wilkinson Prize in Numerical Analysis and Scientific Computing (SIAM). July 1997.
- Germund Dahlquist Prize (SIAM). September 1997
- Richard C DiPrima Memorial Lecture, RPI. February 1999.
- Junior Whitehead Prize (London Mathematical Society). June 2000.
- Ron Di Perna Memorial Lecture, Berkeley. February 7th 2002.
- Royal Society/Leverhulme Trust Senior Research Fellowship, Academic Year 2002/2003.
- ICIAM 2007, Zurich. Plenary Lecturer.
- J.D. Crawford Prize (SIAM). May 2007
- Ordway Distinguished Visiting Professor, University of Minnesota, 2007–2008.
- European Research Council, Advanced Investigator, 2008–2014.
- SIAM Fellow, Elected 2009.
- Royal Society/Wolfson Merit Award 2013.
- ICM 2014, Seoul. Invited Lecturer.

5 Publications

A complete list of refereed journals publications, books and book chapters follows. For further details see:

 $\label{eq:https://scholar.google.co.uk/citations?user} = \texttt{BQwkpBOAAAAJ\&hl} = \texttt{en}$ and:

http://www2.warwick.ac.uk/fac/sci/maths/people/staff/andrew_stuart/

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- [121] M. Ottobre, N.S.Pillai, F.J. Pinski and A.M.Stuart, *A function space HMC algorithm with second order Langevin diffusion limit.* Bernoulli 22(2016) 60-106.
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- [116] A. Duncan, C.M. Elliott, G.A. Pavliotis and A.M. Stuart, *A multiscale analysis of diffusions on rapidly varying surfaces*. J. Nonlinear Science, 25 (2015) 389-449.
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- [112] M. Hairer, A.M. Stuart and S.J. Vollmer, *Spectral Gaps for a MetropolisHastings Algorithm in Infinite Dimensions*. The Annals of Applied Probability, **24**(2014), 2455-2490.
- [111] N.S.Pillai, A.M. Stuart and A.H. Thiery, *Noisy gradient flow from a random walk in Hilbert space*, Stochastic PDEs: Analysis and Computation, **2**(2014), 196–232.
- [110] V. H Hoang, K.J.H. Law and A.M. Stuart, *Determining white noise forcing from Eulerian observations in the Navier-Stokes equation*. Stochaastic PDEs: Analysis and Computation, **2**(2014), 233–261.
- [109] S. Agapiou, A.M. Stuart and Y-X. Zhang, *Bayesian posterior contraction rates for linear severely ill-posed inverse problems*, Journal of Inverse and Ill-Posed Problems, **22**(2014), 297–321.

- [108] K.J.H. Law, A. Shukla and A.M. Stuart, *Analysis of the 3DVAR Filter for the Partially Observed Lorenz '63 Model*, Discrete and Continuous Dynamical Systems A, **34**(2014), 1061–1078.
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- [3] A.M.Stuart Existence of Solutions of a Two-Point Free Boundary Problem Arising in the Theory of Porous Medium Combustion. IMA J. Appl. Math. 38,(1987) 23–34.
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TO APPEAR/SUBMITTED

A.M.Stuart and A.L.Teckentrup, *Posterior consistency for Gaussian process approximations of Bayesian posterior distributions*, (submitted).

R.Scheichl, A.M.Stuart and A.L.Teckentrup, *Quasi Monte-Carlo and multi-level Monte Carlo for computing posterior expectations in elliptic inverse problems*, (submitted).

C.-E. Brehier, M. Hairer and A.M.Stuart, *Weak error estimates for trajectories of SPDEs under spectral Galerkin discretization*, (submitted).

C.Schillings and A.M.Stuart, *Analysis of the ensemble Kalman filter for inverse problems*, (submitted).

M.M.Dunlop, M.A.Iglesias and A.M.Stuart, *Hierarchical Bayesian level set inversion*, (submitted).

W. Lee and A.M. Stuart, *Derivation and analysis of simplified filters for complex dynamical systems*, (submitted).

M.A. Iglesias, K. Lin, S. Lu, A.M. Stuart, *Filter based methods for statistical linear inverse problems*, (submitted).

S. Agapiou, O. Papaspiliopoulos, D. Sanz-Alonso, A. M. Stuart, *Importance sampling: computational complexity and intrinsic dimension*, (submitted).

M.M.Dunlop and A.M.Stuart, MAP estimators for piecewise continuous inversion, (submitted).

M.M.Dunlop and A.M.Stuart, *The Bayesian formulation of EIT: analysis and algorithms*, (submitted).

- P.R.Conrad, M.Girolami, S.Sarkka, A.M.Stuart and K.C.Zygalakis, *Probability measures for numerical solution of differential equations*, (submitted).
- M. Iglesias, Y. Lu and A.M. Stuart, *A Bayesian level set method for geometric inverse problems*, (Interfaces and Free Boundary Problems, to appear).
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- M. Ottobre and A.M. Stuart, *Diffusion Limit for the Random Walk Metropolis Algorithm out of Stationarity*, submitted.

BOOKS

Publications available online here:

http://www2.warwick.ac.uk/fac/sci/maths/people/staff/andrew_stuart/cv2/

- [5b] A.M. Stuart, T.J. Sullivan and J. Voss, Matrix Analysis and Algorithms. In preparation.
- [4b] K.J.H. Law, A.M. Stuart and K.C. Zygalakis, *Data Assimilation: A Mathematical Introduction*. Springer, 2015, 257 pages.
- [3b] G.A. Pavliotis and A.M. Stuart, *Multiscale Methods: Averaging and Homogenization*. Springer, 2008, 328 pages.
- [2b] O. Gonzalez and A.M. Stuart, *A First Course in Continuum Mechanics*. Cambridge University Press, 2008, 413 pages.
- [1b] A.M. Stuart and A.R. Humphries *Dynamical Systems and Numerical Analysis* Cambridge University Press, 1996, 686 pages.

ANNUAL REVIEWS, BOOK CHAPTERS, UNREFEREED ARTICLES.

Publications available online here:

http://www2.warwick.ac.uk/fac/sci/maths/people/staff/andrew_stuart/cv3/

- [20c] S. Reich and A.M. Stuart. *Data assimilation: new challenges in deterministic and random dynamical systems.* SIAM News, October and November 2015.
- [19c] M. Iglesias and A.M. Stuart. *Inverse problems and uncertainty quantification*. SIAM News, July/August 2014.
- [18c] G. Pavliotis, Y. Pokern and A.M. Stuart. *Parameter estimation for multiscale diffusions: an overview.* Appears in "Statistical Methods for Stochastic Differential Equations (SemStat Proceedings 2007)", CRC Press, 2012.
- [17c] J. Nolen, G. Pavliotis and A.M. Stuart. *Multiscale modelling and inverse problems*. Appears in Springer Lecture Notes in Computational Science, "Numerical Analysis of Multiscale Problems", editors I.G. Graham, T. Hou, O. Lakkis and R. Scheichl, Springer, 2011.
- [16c] M. Hairer, A.M. Stuart and J. Voss. *Signal processing problems on function space: Bayesian formulation, stochastic PDEs and effective MCMC methods*. Appears in The Oxford Handbook of Nonlinear Filtering, Editors D. Crisan and B. Rozovsky, Oxford University Press, 2011.
- [15c] A.M. Stuart. Inverse problems: a Bayesian perspective. Acta Numerica 2010.

- [14c] D. White and A.M. Stuart. *Greens functions by Monte Carlo*. Appears in Monte Carlo and Quasi-Monte Carlo Methods 2008, Editors P. L' Ecuyer, A.B. Owen, Springer, 2009.
- [13c] A. Beskos and A.M. Stuart. *Computational complexity of Metropolis-Hastings methods in high dimensions*. Appears in Monte Carlo and Quasi-Monte Carlo Methods 2008, Editors P. L' Ecuyer, A.B. Owen, Springer, 2009.
- [12c] A. Beskos and A.M. Stuart. *MCMC methods for sampling function space*. Appears in ICIAM Invited Lectures 2007, Editors R. Jeltsch and G. Wanner, European Mathematical Society, 2008.
- [11c] M. Hairer, A.M.Stuart and J. Voss. *Sampling conditioned diffusions*. Appears in "Trends in Stochastic Analysis", Editors J. Blath, P. Mörters and M. Sceutzow. LMS Lecture Notes 353, Cambridge University Press, (2008).
- [10c] G.A. Pavliotis, A.M. Stuart and L. Band, *Monte Carlo studies of effective diffusivities for inertial particles*. Appears in *Monte Carlo and Quasi-Monte Carlo Methods 2004*, H. Niederreiter and D. Talay, Eds, Springer-Verlag Berlin, Heidelberg 2006, pp. 431–441.
- [9c] A.R. Humphries and A.M. Stuart, *Numerical Analysis of Deterministic and Random Dynamical Systems*. Appears in *Modern Methods in Scientific Computing and Applications*, Anne Bourlioux and Martin J. Gander, Eds, Kluwer, NATO Science Ser. II, vol. 75.
- [8c] H. Sigurgeirsson and A.M. Stuart *Statistics from computations*. Appears in *Foundations of Computational Mathematics*, Editors R.A. DeVore, A. Iserles and E. Suli.
- [7c] H. Lamba and A.M. Stuart *Convergence proofs for numerical software*. Appears in "Dynamics of Algorithms", editors R. de la Llave, L. Petzold and J. Lorenz, IMA Volumes in Mathematics and its Applications, #188, Springer, 1999.
- [6c] A.M. Stuart *Convergence and stability in the numerical approximation of dynamical systems*. Appears in "State of the Art in Numerical Analysis 1996", editors I.A. Duff and G.A. Watson, Oxford University Press, 1997.
- [5c] A.M. Stuart *Perturbation Theory for Infinite Dimensional Dynamical Systems*. Appears in "Advances in Numerical Analysis", editor M. Ainsworth, J. Levesley, M. Marletta and W.A. Light, Oxford University Press, Oxford, 1995, 105 pages.
- [4c] A.M. Stuart *Numerical Analysis of Dynamical Systems*. Acta Numerica 1994, Cambridge University Press, Cambridge, 1994, pages 467–572.
- [3c] A.R. Humphries, D.A. Jones and A.M. Stuart *Approximation of dissipative partial differential equations over long time intervals*. Appears in: "Numerical Analysis", editors G.A. Watson and D.F. Griffiths, Longman 1994.
- [2c] A.M.Stuart *The global attractor under discretisation*. Appears in *Continuation and Bifurcation: Numerical Techniques and Applications*, Eds: D. Roose, B. de Dier and A. Spence. NATO ASI Series, Kluwer, Dordecht, 1990.
- [1c] A.M.Stuart *The Mathematics of Porous Medium Combustion*. Appears in *Nonlinear Diffusion Equations and Their Equilibrium States* Eds W.-M. Ni and J.Serrin. Springer, New York, 1988.

6 Invited Lectures

PLENARY LECTURES

• Biennial Numerical Analysis Conference, Dundee, Scotland; June 29th- July 2nd

- **1993**. "Approximation of Dissipative Partial Differential Equations Over Long Time Intervals".
- Canadian Applied Mathematics Society Meeting, St. John's, Newfoundland; May 31st—June 3rd 1995. "Deterministic and Probabilistic Analysis of Adaptive Algorithms for Initial-Value Problems".
- The State of the Art in Numerical Analysis, University of York, England; April 1st–6th 1996. "Convergence and Stability in the Numerical Analysis of Dynamical Systems".
- Australia-New Zealand Applied Mathematicis Annual Meeting, Melbourne, Australia; February 2nd-7th 1997. "Computational Aspects of Deterministic and Random Dynamical Systems".
- SIAM Annual Meeting, Stanford, July 14th–18th 1997. "Numerical Algorithms as Dynamical Systems".
- SciCADE 97, Scientific Computing and Differential Equations, University of Trieste; September 15th–19th 1997. "Statistical Properties of Computations for Large Coupled Systems of Oscillators".
- Foundations of Computational Mathematics, Oxford, July 19th–28th 1999. "Statistics and Computations".
- IMACS World Congress, Lausanne, August 21st–25th 2000. "Coupled Particle-Field Problems: Analysis and Computation."
- British Applied Mathematics Colloqium, Reading, April 2nd 2001. "Particles in a Turbulent Velocity Field: A Random Dynamical System."
- Biennial Numerical Analysis Conference, Dundee, Scotland; June 2001. "Particles in a Random Velocity Field".
- SciCADE 2003, Norway; July 2003. "Fitting SDEs to Partially Observed Dynamics".
- First East Asia SIAM Conference, Hong Kong, December 12th–16th 2005. "Stochastic PDEs, Data Assimilation and Signal Processing".
- ICFD Conference on Numerical Methods for Fluid Dynamics, Reading, March 26th–29th 2007. "Ensemble Data Assimilation".
- ICIAM07: 6th International Congress on Industrial and Applied Mathematics, Zurich, July 16–20th 2007. "MCMC Methods for Sampling Function Space: Applications and Algorithms".
- MCQMC08: Eighth International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, Montreal, July 8–11th 2008. "MCMC in High Dimensions".
- ICNAAM 2009, Rethymnon, Crete, September 18–22, 2009. "Approximation of Inverse Problems."
- DSPDEs'10: Emerging Topics in Dynamical Systems and Partial Differential Equations, Barcelona, May 31-June 4, 2010. "Well-Posed Inverse Problems".
- Meeting of the Dutch Probability and Statistics Community, Lunteren. November 15

 17, 2010. Two lectures on the "Bayesian Approach to Inverse Problems".

- **ENUMATH 2011, Leicester**. September 5–6, 2011. "Filtering the Navier-Stokes Equation".
- Frontiers of Computational and Applied Mathematics, BICMR Beijing, October 21–25, 2011. "Filtering the Navier-Stokes Equation".
- ESF-JSPS Mathematics for Innovation: Large and Complex Systems, Tokyo, February 28th–March 4th, 2012. "Bayesian Inverse Problems."
- European Congress of Mathematics, Krakow, July 2nd-6th, 2012. "Probing Probability Measures in High Dimensions".
- ICNAAM 2012, Kos, Greece, September 19–25, 2012. "Analysis of Ensemble Kalman methods for inverse problems."
- SciCADE 2013, Valladolid, Spain; September 2013. "Computational Methods for Bayesian Inverse Problems".
- **SIAM UQ**, Savannah, Georgia, USA; March 31st–April 3rd 2014. "Uncertainty Quantification in Bayesian Inversion".
- ICM 2014, Seoul, South Korea; August 19th 2014. "The Bayesian Approach To Inverse Problems".
- ICCP9, International Conference on Computational Physics, NUS Singapore, 7th–11th January 2015. "Well-Posed Bayesian Geometric Inverse Problems".
- **SIAM Dynamical Systems**, Snowbird, Utah, USA; May 17th–21st 2015. "Data Assimilation: New Challenges in Stochastic Dynamical Systems".
- **EQUADIFF**, Lyon, France; July 6th–July 10th 2015. "Data Assimilation: New Challenges in Stochastic Dynamical Systems".
- Stochastic Processes and Applications, Oxford, UK; July 13th–July 17th 2015. "Data Assimilation: New Challenges in High Dimensional Probability."
- European Mathematical Society 25th Anniversary Meeting, Paris, France; October 22nd 2015.
- International Conference on Applied Mathematics 2016, City University of Hong Kong, May 30th–June 2nd 2016.
- MCQMC2016, Stanford, California, August 14th–19th 2016.

INVITED CONFERENCE/WORKSHOP PRESENTATIONS

- LMS/SERC Symposium on Evolution Problems, University of Durham, England; July 1st-July 14th 1992. "Numerical Analysis of Dissipative and Gradient Dynamical Systems".
- Canadian Applied Mathematics Society Meeting, York, Ontario; May 31st—June 3rd 1993. "Long Time Approximation Theory for Evolution Equations".
- Symposium in Honour of Leslie Fox, Oxford, England; June 24th–June 25th 1993. "Analysis and Computations for a Model of Solid Phase Transitions".
- NSF-CBMS Conference on Approximation Dynamics, Columbia, Missouri; June 1st-June 5th 1995. "Numerical Stability Issues in Long-Time Simulations."

- ODE to NODE, Norwegian Workshop on Future Directions in Numerical Solution of Ordinary Differential Equations; June 19th–22nd 1995. "Numerical Analysis and Dynamical Systems."
- Conference on Dynamical Numerical Analysis, Atlanta, Georgia; December 14th–16th 1995. "Software for Initial-Value Problems as a Discontinuous Dynamical System."
- Invariant Measures and Invariant Manifolds; Workshop on Ergodic Theory and Numerical Analysis of Dynamical Systems. Brakel, Germany, June 2nd-5th 1996. "Probabilistic Techniques in the Numerical Analysis of Dynamical Systems."
- Institute for Mathematics and Its Applications, Minnesota, Fall 1997. Two lectures as part of the year long program in "Emerging Applications of Dynamical Systems".
- South African Numerical Analysis Conference, Cape Town, April 15th–17th 1998. Two presentations in "Computational Aspects of Stochastic Processes".
- Meeting of the Dutch Numerical Analysis Community, Zeist, September 23th–25th 1998. Two presentations in "Computational Aspects of Stochastic Processes".
- Dynamics Days, Georgia Institute of Technology, January 4th-6th 1999. "Computational Statistical Mechanics".
- Workshop on Transfer Operators, Paderborn, March 5th–8th 2000. "Ergodicity of Degenerate SDEs."
- Workshop on Dynamical Systems, Fields Institute, Toronto, Canada; December 2–7th 2001. "Particles in a Random Velocity Field".
- Workshop on Differential Equations and Applications, Instanbul Technical University, Turkey; September 18–20 2002. "Inertial Particles: Analysis and Algorithms."
- Workshop on Multi-scale Modelling, SAMSI, North Carolina; February 2nd-7th. "Inertial Particles: Analysis and Algorithms."
- Workshop on Stochastic PDEs, Princeton IAS; March 3rd-7th 2003. "White Noise Limits for Inertial Particles."
- Conference on SDEs and SPDEs, ICMS, Edinburgh; March 31st April 4th 2003. "Fitting SDEs to Partially Observed Dynamics".
- Markov Chains: Theory, Algorithms and Applications, Durham, UK. July 25th–August 3rd 2003. "Ergodicity of SDEs and Approximation".
- Isaac Newton Institute, Workshop on Computation in Granular and Particle Laden Flows. October 15th, 2003. "Algorithms for Inertial Particles".
- Stochastic PDEs and Applications, Trento, Italy. January 7-10, 2004. "Nonlinear Stochastic PDEs Arising in Filtering".
- Algorithms for Macromolecular Modelling IV, Lecicester, August 18–21st 2004. "Fitting SDEs to Molecular Dynamics"
- Raglan Dynamical Systems Meeting, New Zealand, August 31st–September 3rd 2004. Two lectures on "Variable Reduction in Stochastic Systems".
- Dave Sloan Retirement Meeting, Strathclyde, Glasgow, September 9th-10th 2004. "Stochastic PDEs and Conditional Path Sampling".

- Future Challenges in Multiscale Modelling and Simulation, IMA Minnesota, November 18th–20th 2004. "Conditional Path Samplings of SDEs and the Langevin MCMC Method".
- **Prestissimo Workshop on Molecular Dynamics**, Institute Henri Poincare, December 1st–3rd 2004. "Infinite Dimensional Sampling".
- Mathematical Issues and Challenges in Data Assimilation for Geophysical Systems: Interdisciplinary Perspectives, IPAM, UCLA, February 22nd–26th, 2004. "Lagrangian Data Assimilation and Infinite Dimensional Sampling".
- Qualitative Numerical Analysis of High-dimensional Nonlinear Systems, Bristol University, March 21st–24th 2005. "Extracting Macroscopic Dynamics: Model Problems and Algorithms."
- **BIRS Workshop on Molecular Dynamics**, Banff, Alberta, Canada, June 5th-9th 2005. "Infinite dimensional MCMC methods".
- **Computational SDEs**, Bedlewo, Poland, September 9th–24th 2005. "Stochastic PDEs for Path Sampling".
- Parameter Estimation in Continuous Time, Edinburgh, Scotland, December 3rd-7th 2005. "Bayesian Sampling for Conditioned Diffusions".
- Frankfurt Stochastik-Tage, Frankfurt, Germany, March 14th-17th 2006. "Stochastic PDEs for Sampling Conditioned Diffusions".
- Sandy Davie 60th Birthday Conference, Edinburgh, Scotland, March 24th 2006. "MCMC in Infinite Dimensions".
- Stochastic Analysis and Stochastic PDEs, Giorgi Center, Pisa, April 3rd-8th 2006. "MCMC in Infinite Dimensions".
- The Mathematics of Data Assimilation, Warwick University, May 22-24th 2006. "Path sampling and data assimilation."
- New Developments in MCMC Diffusions, Images and Other Challenges, Warwick, August 22-24, 2006. "Sampling Conditioned Diffusions".
- Stochastic Complex Systems, Bath, England, September 18th-20th 2006. "MCMC in High Dimensional Spaces".
- Analysis, Modeling and Simulation of Multiscale Problems, Munich, October 9-11, 2006. "Parameter Estimation for Multiscale Diffusions".
- Advances and Challenges in the Solution of Stochastic Partial Differential Equations, Brown University, October 20–22, 2006.
- Numerics and Theory for Stochastic Evolution Equations, Bielefeld, November 22nd—24th 2006. "MCMC Methods for Sampling Conditioned Diffusions."
- **SIAM UK/IE Annual Meeting**, Oxford, January 5th 2007. "MCMC Methods in High Dimensions."
- Stanford 50: State of the Art and Future Directions of Computational Mathematics and Numerical Computing, Stanford, March 29th–31st 2007. "MCMC in Infinite Dimensions."

- MSRI Berkeley, Mathematical Issues in Stochastic Approaches for Multiscale Modeling, May 21st-25th 2007. "Computational Complexity of MCMC Methods in High Dimensions."
- **SIAM Conference on Dynamical Systems**, Snowbird, UTAH. May 27th–June 1st 2007. "Sampling the Posterior for Partially Observed Dynamics."
- Isaac Newton Workshop on Effective Computational Methods for Highly Oscillatory Problems: The Interplay between Mathematical Theory and Applications, Cambridge, July 2nd-7th 2007.
- Hausdorff Centre, Workshop on Stochastic Processes and Algorithms, Bonn, September 3rd-7th 2007.
- Monte Carlo Methods: Theory and Applications. Brown University, Rhode Island, USA, April 25th–26th 2008. "Data Assimilation: Mathematical Foundations and Effective Algorithms".
- Numerical Modelling of Complex Dynamical Systems. Lorentz Center, Leiden, Netherlands, May 6th–9th 2008. "Inverse Problems for the Navier-Stokes Equation".
- Stochastic Analysis, Random Fields and Applications. Ascona, Switzerland, May 19th–23rd 2008. "Mathematical Foundations of Data Assimilation".
- Workshop on Ensemble Kalman Filter for Reservoir Simulation Models. Voss, Norway, June 18th–20th 2008. "Data Assimilation: Mathematical Foundations and Effective Algorithms".
- Mathematical challenges in climate science. Lorentz Center, Leiden, Netherlands, March 9th–13th 2009. "A Mathematical Framework For Data Assimilation".
- Peter Kloeden 60th Birthday Conference. Sevilla, Spain, June 22nd–26th 2009. "A Mathematical Framework For Data Assimilation".
- SAMSI Program on Stochastic Dynamics. Research Triangle Park North Carolina, August 30 September 2, 2009. Two talks: "MCMC in High Dimensions" and "Approximation of Inverse Problems."
- Sparse Representation of Multiscale Data and Images: Theory and Applications.

 Nanyang University, Singapore, December 14 December 17, 2009. "Well-Posed Bayesian Inverse Problems"
- Newton Institute: SPDE Opening Workshop, "SPDE Limits of MCMC Methods". January 4–8, 2010.
- ICMS Workshop on Uncertainty Quantification, Edinburgh, May 24–28, 2010. "Bayesian Approach to an Elliptic Inverse Problem from Groundwater Flow."
- **Newton Institute: Approximation of SPDEs**, "Hybrid Monte Carlo on Hilbert Spaces". June 28–July 2, 2010.
- Scottish Computational Mathematics Symposium 2010 (Dave Griffiths Retirement Meeting), "Hybrid Monte Carlo: geometric integration and statistics". September 6, 2010.
- European Science Foundation conference on Highly Oscillatory Problems: From Theory to Applications. INI Cambridge, September 12–17, 2010. "Hybrid Monte Carlo on Hilbert Spaces".

- NASPDE 2010, Freiberg, September 20-21, 2010. "Weak approximation of an elliptic inverse problem".
- BIRS Workshop on Stochastic Multiscale Methods, Banff, Alberta, Canada, March 27th-April 1st 2011. "Bayesian Approach to Inverse Problems".
- FoCM 2011, Workshop on Computational PDEs. Budapest, July 12-14, 2011. "Diffusion Limits for MCMC in High Dimensions".
- LMS-EPSRC Durham Symposium: Data Assimilation, August 2–14 2011. Two lectures on "Filtering in Data Assimilation."
- Fudan University, Workshop on Statistical Inverse Modelling. Shanghai, September 5th–9th, 2011. "Filtering The Navier-Stokes Equation" and "MCMC in High Dimensions".
- Brown University, Workshop on Geometric Methods for Infinite Dimensional Dynamical Systems. November 4th–6th, 2011. "Filtering The Navier-Stokes Equation".
- Warwick Symposium/Easter Probability Meeting. Warwick, March 26th–30th, 2012. "Bayesian posterior consistency for linear inverse problems."
- **SIAM Conference on Uncertainty Quantification**. Raliegh, North Carolina, April 2nd–5th, 2012. "Bayesian Inversion."
- **SUSTAIN Workshop on Confronting Statistical Intractability**. Bristol, April 16th–19th, 2012. "Bayesian posterior consistency for linear inverse problems."
- ICMS Edinburgh: Advances in MCMC. Edinburgh, April 21st–23rd, 2012. "MCMC in High Dimensions".
- Fudan University, Workshop on Stochastic and Statistical Modelling of Turbulent Dynamical Systems. Shanghai, May 22nd–27th, 2012. "How does EnKF Work?" and "How does 3DVAR Work?".
- Oxford University, Workshop on Data Assimilation. Oxford, September 24th-28th, 2012. "Ensemble Kalman Methods for Inverse Problems."
- IMA, Minnesota, Workshop on Theory and Applications of Stochastic PDEs. Minneapolis, January 14-18, 2013. "The Continuous-Time 3DVAR Filter for the Navier-Stokes Equation."
- ICES, UT Austin, Workshop on Multiscale Modeling. Austin, April 28th–May 1st, 2013. "Approximate Gaussian Filters for High Dimensional Problems".
- Haussdorff Center, Bonn, Workshop on Uncertainty Quantification. May 13th–17th 2013. "Well-posedness and accuracy for approximate Gaussian filters."
- SciCADE 2013. Valladolid, Spain, September 16th–20th 2013. "Gibbs sampling for hierarchical Bayesian inverse problems".
- **German Probability and Statistics Meeting**, March 4th–6th 2014, Ulm, Germany. "Approximation of probability measures with respect to Kullback-Leibler divergence."
- Monte Carlo Inference for Complex Statistical Models, Isaac Newton Institute, Cambridge, April 22nd–25th 2014. "The Filtering Distribution For Partially Observed Chaotic Dynamical Systems".

- Multiscale Problems from Physics, Biology and Materials Science Shanghai Jiaotong University, May 28th–31st 2014. "The Filtering Distribution For Partially Observed Chaotic Dynamical Systems."
- Chemniz Symposium on Inverse Problems, Chemniz, Germany, September 18th–19th 2014. "Bayesian Geometric Inverse Problems."
- Workshop on Data Assimilation, Fudan University, Shanghai. March 23rd–26th 2015. "Long-time asymptotics of the filtering distribution for partially observed chaotic dynamical systems."
- Workshop on Uncertainty Quantification for Multiscale Stochastic Systems and Applications, IPAM, UCLA, USA. January 19th–22nd 2016. "Hierarchical Bayesian Level Set Inversion."
- Workshop on Challenges in High-Dimensional Analysis and Computation, San Servolo, Venice, Italy. May 2nd–6th 2016. "Importance sampling: computational complexity and intrinsic dimension."

INVITED TRAINING SCHOOL LECTURE SERIES

- VIth Science and Engineering Research Council Summer School in Numerical Analysis, University of Leicester, England; July 18th–July 29th 1994. "Numerical Analysis of Dynamical Systems".
- Seminaire de Mathematiques Superieures, Montreal, July 8th–22nd 2001. "Numerical Analysis of Deterministic and Random Dynamical Systems."
- Séminaire Europeéens de Statistique, La Manga, Spain, May 5th–12th 2007. "Applications of Stochastic Differential Equations".
- MSRI Berkeley, April 2nd-5th 2007. "An Introduction to Multiscale Methods."
- LMS-EPSRC Short Course, April 15th-20th 2007. Warwick University. "An Introduction to Multiscale Methods."
- LMS-EPSRC Durham Symposium: Numerical Analysis of Multiscale Problems, July 5–15 2010. Series of lectures on "Multiscale modelling and inverse problems."
- CEA-EDR-Inria Schools: Simulation of hybrid dynamical systems and applications to molecular dynamics, IHP Paris, September 27th–30th 2010. Lectures on "MCMC in High Dimensions".
- LMS-EPSRC Short Course on Probability, Oxford, April 3rd–8th 2011. Series of five lectures on "Bayesian approach to inverse problems".
- LMS-EPSRC Durham Symposium: Mathematics of Data Assimilation, August 1st–1th 2011. Two lectures on "Filtering Infinite Dimensional Dynamical Systems."
- Göttingen (Statistics Department) May 29th–May 31st 2012. Six hours of lectures on "Bayesian Inverse Problems".
- **Beijing (School of Mathematical Sciences)** July 23rd–August 3rd 2012. Ten lectures on "Bayesian Inverse Problems"; ten lectures on "Data Assimilation".
- ETH (Seminar for Applied Mathematics October 2012. Six hours of lectures on "Bayesian Inverse Problems".

- **CSCAMM, University of Maryland** June 3rd–14th 2013. Three hours of lectures on "Analysis of Approximate Gaussian Filters for Data Assimilation."
- Woudschoten, Netherlands. October 2nd–4th 2013. "The Bayesian Approach to Inverse Problems: Mathematical Foundations and Algorithms."
- KAUST, Saudi Arabia February 16th–20th 2014. Six hours of lectures on "Data Assimilation".
- Fudan University, China January 12th–15th 2015. Ten hours of lectures on "Uncertainty Quantification".
- **RWTH Aachen, Germany**. February 11th 2015. Short course on "Bayesian Inverse Problems".
- University of Valladolid. June 10th–12th 2015. Short course on "MCMC Methods".
- Chinese Academy Of Sciences, Beijing. August 7th 2015. Short course on "Uncertainty Ouantification".
- Overwolfach, Germany May 16th–20th 2016. Six hours of lectures on "Data Assimilation".

7 Research Supervision

7.1 Postdoctoral Research Assistants

- Fengshan Bai. Postdoc. Bath University, 3/91–12/93 (jointly supervised with Alastair Spence). (Currently a permanent faculty member in Applied Mathematics at Tsinghua University, Beijing).
- Harbir Lamba. Postdoc. Stanford University, 9/96–8/98. (Currently a permanent faculty member in Mathematics at George Mason University).
- Ping Lin. Postdoc. Stanford University, 9/96–8/98. (Currently a permanent faculty member in Mathematics at The University of Dundee, Scotland).
- Justin Wan. Postdoc. Stanford University, 9/96–8/98 (jointly supervised with Gene Golub). (Currently a permanent faculty member in Computer Science at The University of Waterloo, Canada).
- John Terry. Postdoc. Warwick University, 4/00-11/01. (Currently a permanent faculty member at the University of Exeter).
- Xinyu He. Postdoc. Warwick University, 4/00-11/01. (Currently a visitor at Warwick University).
- Petter Wiberg. Postdoc. Warwick University, 10/02-9/04. (Currently at Goldman-Sachs).
- Greg Pavliotis. Postdoc. Warwick University, 10/02-9/04. (Currently a permanent faculty member at Imperial College).
- Jochen Voss. Postdoc. Warwick University, 10/04–3/09. (Currently a permanent faculty member at Leeds University).
- Alex Beskos. Postdoc. Warwick University, 10/05–9/08.) (Currently a permanent faculty member at University College London).
- Natesh Pillai. Postdoc. Warwick University (Statistics), 10/08–9/10 (jointly supervised with Gareth Roberts.) (Currently a tenure-track faculty member at Harvard University).
- Masoumeh Dashti. Postdoc. Warwick University, 10/08–9/11. (Currently a permanent faculty member at the University of Sussex).
- David White. Postdoc. Warwick University, 10/09–3/12. (Currently a software engineer).
- Wongjung Lee. Postdoc. Warwick University, 10/09–12/11 and 1/14–12/14. (Currently a permanent faculty member at Hong Kong City University).

- Kody Law. Postdoc. Warwick University, 02/10–present. (Currently working at Oak Ridge National Laboratory, USA).
- Marco Iglesias. Postdoc. Warwick University, 9/11–10/13. (Currently a permanent faculty member at the University of Nottingham).
- David Kelly. Postdoc. Warwick University, 9/12–10/13. (Currently an Instructor at Courant Institute, NYU).
- Michela Ottobre. Postdoc. Warwick University, 10/12–9/13. (Currently a permanent faculty member at the Heriot-Watt University).
- Kasia Wolny. Postdoc. Warwick University, 10/13–10/14. (Currently a postdoc at Warick University in Statistics).
- Hamid Bazargan. Postdoc. Warwick University, 10/13–12/14. (Currently consulting in the oil industry).
- Sergios Agapiou. Postdoc. Warwick University, 10/13–present. (Currently a permanent faculty member at the University of Cyprus, 08/15).
- Claudia Shillings. Postdoc. Warwick University, 09/14–present.
- Aretha Teckentrup. Postdoc. Warwick University, 09/14-present.
- Patrick Conrad. Postdoc. Warwick University, 09/14-present.
- Shiwei Lan. Postdoc. Warwick University, 08/14-present.

7.2 Research Students

- Gabriel Lord. PhD. Bath University, 9/90–5/94. (Currently a permanent faculty member in the Mathematics Department at Heriot-Watt University).
- Anthony Humphries. PhD. Bath University, 9/90–2/94. (Currently a permanent faculty member in the Mathematics Department at McGill University).
- Jeremy Smith. PhD. Stanford University, 9/92–6/96. (Currently employed in a software company in Portland, Oregon).
- Hamid Samandari. PhD. Stanford University, 9/92–4/97. (Currently employed by McKinsey in Montreal).
- Tony Shardlow. PhD. Stanford University, 9/93–6/97. (Currently a permanent faculty member in the Mathematics Department at Manchester University).
- Oscar Gonzalez. PhD. Stanford University, 9/94–3/96. Formerly Juan Simo's student. (Currently a permanent faculty member in the Mathematics Department at UT Austin).
- Martin Gander. PhD. Stanford University, 9/95–9/97. (Currently a permanent faculty member in the Mathematics Department at The University of Geneva).
- Hersir Sigurgeirsson. PhD. Stanford University, 1/98–10/01. (Currently employed at Saga Capital, Rekyajivik).
- Paul Tupper. PhD. Stanford University, 1/98–present. (Currently a permanent faculty member in the Mathematics Department at Simon Fraser University).
- Yvo Pokern. PhD. Warwick University, 9/02–8/06. (Currently a permanent faculty member in the Statistics Department at University College London). 1/07–12/09).
- Kostas Zygalakis. PhD. Warwick University, 9/04–11/08. (Jointly supervised with Greg Pavliotis). (Currently a permanent faculty member in the Mathematics Department at The University of Southampton).
- David White. PhD. Warwick University, 10/05-9/09. (Currently working for an optimization software company in Cambridge, UK.).
- Simon Cotter. PhD. Warwick University, 10/06–4/10. (Currently an assistant professor at Manchester University).
- Mike Zhang. PhD. Warwick University, 10/06–9/10. (Jointly supervised with Tessy Papavasiliou). (Currently employed by the IMF, Washington DC.)
- Damon Macdougall. PhD. Warwick University, 10/08–present. (Jointly supervised with Chris Jones). (Currently a research Scientist, ICES, AT Austin.)

- Sebastian Vollmer. PhD. Warwick University, 10/09–9/13. (Jointly supervised with Martin Hairer). (Currently an assistant professor at Oxford University).
- Andrew Duncan. PhD. Warwick University, 10/09–9/13. (Jointly supervised with Charlie Elliott). (Currently a postdoc at Imperial College).
- Sergios Agapiou. PhD. Warwick University, 10/09–9/13. (Jointly supervised with Neil O'Connell). (Currently a permanent faculty member at the University of Cyprus, 08/15).
- Alex Theiry. PhD. Warwick University, 10/09–9/13. resent. (Jointly supervised with Gareth Roberts). (Currently a tenure-track faculty member at National University, Singapore).
- Kui Lin. PhD. Fudan University, 01/13-present. (Visting student at Warwick, supervised by Shuai Lu in Fudan. Now a quantitivae analyst, China.)
- Abhishek Shukla. PhD. Warwick University, 10/11–present. (Jointly supervised with Gareth Roberts).
- Daniel Sanz-Alonso. PhD. Warwick University, 10/12–present. (Jointly supervised with Gareth Roberts). (Postdoc, Division of Applied Mathematics, Brown, from July 2016).
- Matt Dunlop. PhD. Warwick University, 10/13–present. (Jointly supervised with Marco Iglesias). (Postdoc, Computing and Mathematical Sciences, Caltech, from August 2016).
- Yulong Lu. PhD. Warwick University, 10/13-present. (Jointly supervised with Hendrik Weber).
- Neil Chada. PhD. Warwick University. (Jointly supervised with Jonathan Carter, EoN, and Mike Christie, Heriot-Watt, and Areth teckentrup and Claudia Schillings, Warwick). 10/14–present.
- Andrew Peplow. MSc. Math University, 10/89-9/90. (Permanent faculty member at UWE).
- Bjarki Elfarsson. MSc. Warwick University, 10/04-9/05. (Studying for a PhD).
- Billy Donnegan. MPhil. Warwick University, 9/01–present. (Working for a software company).

8 Research Funding

Unless otherwise specified, the following grants have no additional principal investigators. (BU denotes Bath University, SU denotes Stanford University, WU denotes Warwick University).

- DARPA (EQUIPS Program). Inference, Simulation, and Optimization of Complex Systems Under Uncertainty: Theory, Algorithms, and Applications to Turbulent Combustion.
 WU. Additional PI Mark Girolami (Warwick). 9/15–9/18. 13% PI salary, 4 postdoc years, Travel.
- Office of Naval Research. *Accuracy and Stability for Lagrangian Data Assimilation*. WU. 6/15–6/18. 20% PI salary, Travel.
- Engineering and Physical Sciences Research Council. *Enabling Quantification of Uncertainty for Inverse Problems*. WU. 06/13–06/18. 16 postdoc years, 35% PI salary, Travel, Computer. Additional PIs Mike Christie (Heriot-Watt), Mark Girolami (Warwick) and Gareth Roberts (Warwick).
- Office of Naval Research. *Data Assimilation and Control in Oceanography*. WU. 6/11–11/14. 1 postdoc, Travel, Computer. Additional PI, Chris Jones (UNC).
- European Research Council. *Problems on the Applied Mathematics/Statistics Interface*. WU. 12/08–11/14. Funds two postdocs, two PhD students, travel, computer. 50% PI Salary.
- Engineering and Physical Sciences Research Council. *Problems on the Applied Mathematics/Statistics Interface*. WU. 10/08–9/13. Funds one postdoc, one PhD student, travel, computer. 50% PI Salary.

- Engineering and Physical Sciences Research Council. *Symposium on Challenges in Scientific Computing*. WU. 10/08–9/09. Funds 6 workshops, one international conference and a visitor program.
- National Centre for Earth Observation (NERC). *Filtering for PDEs*. WU (jointly with Oxford University). 10/09–9/11. 1 Postdoc, Travel, Computer.
- Office of Naval Research. *Bayesian Lagrangian Data Assimilation*. WU. 6/08–6/10. 1 Postdoc, Travel, Computer.
- National Environment Research Council. Data Assimilation for Wave Propagation Problems. WU. 9/09–4/13. 1 PhD Student.
- Engineering and Physical Sciences Research Council. *Stochastic PDEs and Conditioned Diffusions*. WU. 10/05–9/08. 1 postdoc, travel, computer. co-PI Martin Hairer (Warwick).
- Engineering and Physical Sciences Research Council. *Science and Innovation Award: Centre for Discrete Mathematics and Its Applications*. WU. 10/06-9/11. 3 lecturers, 3 postdocs, 6 PhD students, infrastructure. Additional PIs Mike Paterson, Bo Chen.
- Engineering and Physical Sciences Research Council. *Algorithms at the Applied Probability/Numerical Analysis Interface*. WU. 10/05–9/08. 2 Postdocs, Travel, Computer. Additional PI Gareth Roberts (Lancaster).
- Office of Naval Research. *Bayesian Approaches to Lagrangian Data Assimilation*. WU. 6/05–6/08. 1 Postdoc, Travel, Computer.
- Engineering and Physical Sciences Research Council. *Algorithms for Extracting Effective Macroscopic Dynamics*. WU. 10/02–9/05. 1 Postdoc, Travel, Computer.
- Engineering and Physical Sciences Research Council. Centre for Scientific Computing.
 WU. 4/00–3/03. 100 Processor Distributed Memory Parallel Computer. I am PI; additional PIs represent various departments in Science and Engineering.
- Engineering and Physical Sciences Research Council. *Numerical Analysis of Random Dynamical Systems*. WU. 4/00–3/03. 1 Postdoc, Travel, Computer.
- National Science Foundation, *Group Infrastructure Grant (SU)* to support 3 PhD students who are jointly supervised by mathematicians and engineers. SU. Additional PIs Gene Golub, Jean Heegaard, G.M. Homsy and Eric Shaqfeh. 9/96–9/00.
- National Science Foundation, *The Numerical Analysis of Evolution Equations Over Long Time Intervals.* SU. 8/92 5/99. 1 Postdoc and 5 PhD students, Computer, Travel.
- Office of Naval Research, *The Numerical Analysis of Evolution Equations Over Long Time Intervals*. SU. 5/92 10/96. 2 PhD students, Computer, Travel.
- Office of Naval Research, *Analysis of Adaptive Methods for Differential Equations*. SU. 9/93 8/98. 2 PhD students.
- National Science Foundation, to support 5 PhD students in Scientific Computing and Computational Mathematics. SU. Additional PIs – Gene Golub, Joe Oliger and Joe Keller. 9/92–9/97.
- The Science and Engineering Research Council (SERC), UK, for the study of *Connecting Orbits in Partial Differential Equations*. BU. Additional PI Alastair Spence 4/91–4/94, 1 Postdoc, Computer, Travel.

9 Service to Scientific Community

- Editorial Board for the journal Inverse Problems (IOP). (Since 2015).
- Editorial Board for the Journal of Uncertainty Quantification (Begel). (Since 2010).
- Editorial Board for the ASA/SIAM Journal of Uncertainty Quantification (Since 2012).
- Editorial Board for the SIAM Journal on Applied Dynamical Systems. (Since 2001).
- Editorial Board for the IMA Journal of Numerical Analysis. (Since 1997).
- Editorial Board for the Journal Statistics and Computing. (Since 2013).
- Editorial Board for the Journal of Nonlinear Science. (Since 2003).
- Editorial Board for the Journal Foundations of Computational Mathematics. (Since 2012).
- Editorial Board for the Journal Stochastic PDEs: Analysis and Computations. (Since 2012).
- Editorial Board for SMAI Journal of Computational Mathematics. (Since 2013).
- Editorial Board for Quarterly Journal of Mechanics and Applied Mathematics. (1999–2010).
- Editorial Board for LMS Journal of Computation and Mathematics. (1999–2004).
- Editorial Board for the SIAM Journal on Multiscale Modelling and Simulation. (2002–2008).
- Editorial Board for the Communications in Mathematical Sciences. (2003–2008).
- Editorial Board for Physica D. (2004–2007).
- Series Editor for Numerical Mathematics and Scientific Computing (published by OUP). (Since 2002).
- Series Editor for Texts in Applied Mathematics, and other related book series (published by Springer). (Since 2009).
- London Mathematical Society Council. 1/00-12/01.
- EPSRC College. 1/00-present.
- EPSRC Mathematics Strategic Advisory Team. 5/04–9/08.
- Advisory Board OXMOS, New Frontiers in the Mathematics of Solids, Oxford University, 9/06–8/11.
- Advisory Board Berlin Mathematical School 1/09-present.
- London Mathematical Society Nomination Committee. 1/11–12/12.
- UK Research Excellence Framework (REF) Subpanel 10 Advisor, 3/11–12/14.

10 Teaching

In addition to the substantial number of graduate students whose research I have supervised (see above) I have also taught courses widely within Mathematics, Engineering and Computer Science Departments. A list of the courses I have taught at Warwick University may be found here:

 $\texttt{http://homepages.warwick.ac.uk/} \sim \texttt{masdr/teaching.html}$

In addition I will teach a new advanced level course on Uncertainty Quantification this autumn. In the past, whilst at Stanford University, I have taught graduate level *Continuum Mechanics* and *Mathematical Methods to Engineering* students, as well as *Data Structures and Algorithms*, to Computer Science undergraduates. At Bath University I taught *Mathematical Methods* to Electrical Engineering undergraduates.