

# CURRICULUM VITAE: ANDREW STUART

## Contents

<b>1</b>	<b>Personal Details</b>	<b>1</b>
<b>2</b>	<b>Academic History</b>	<b>1</b>
<b>3</b>	<b>Additional Positions Held</b>	<b>2</b>
<b>4</b>	<b>Awards and Honours</b>	<b>2</b>
<b>5</b>	<b>Publications</b>	<b>3</b>
<b>6</b>	<b>Invited Lectures</b>	<b>12</b>
<b>7</b>	<b>Research Supervision</b>	<b>19</b>
7.1	Postdoctoral Research Assistants . . . . .	19
7.2	Research Students . . . . .	20
<b>8</b>	<b>Research Funding</b>	<b>21</b>
<b>9</b>	<b>Service to Scientific Community</b>	<b>23</b>
<b>10</b>	<b>Teaching</b>	<b>24</b>

## 1 Personal Details

- **Date of Birth:** 19<sup>th</sup> August 1962
- **Mailing Address:**  
Mathematics Institute,  
University of Warwick  
Coventry CV4 7AL, UK
- **E-Mail:** a.m.stuart@warwick.ac.uk
- **Telephone:** +44-24-7652-2685
- **Webpages:** <http://homepages.warwick.ac.uk/~masdr/>

## 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

Publications available online here:

[http://www2.warwick.ac.uk/fac/sci/math/people/staff/andrew\\_stuart/cv/](http://www2.warwick.ac.uk/fac/sci/math/people/staff/andrew_stuart/cv/)

[126] M.M.Dunlop and A.M.Stuart, The Bayesian formulation of EIT: analysis and algorithms. *Inverse Problems and Imaging* **10**(2016) 1007-1036.

[125] M.M.Dunlop, M.A.Iglesias and A.M.Stuart, Hierarchical Bayesian level set inversion. *Statistics and Computing* (2016).

[124] M.M.Dunlop and A.M.Stuart, MAP estimators for piecewise continuous inversion. *Inverse Problems* **32**(2016) 105003.

[123] P.R.Conrad, M.Girolami, S.Sarkka, A.M.Stuart and K.C.Zygalakis, Statistical analysis of differential equations: introducing probability measures on numerical solutions. *Statistics and Computing* (2016). Online publication pdf BibTeX

[122] K. J. H. Law, D. Sanz-Alonso, A. Shukla, and A. M. Stuart, *Filter accuracy for the Lorenz 96 model: fixed versus adaptive observation operators*. *Physica D: Nonlinear Phenomena*, **325**(2016), 113.

[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.

[120] F.J. Pinski, G. Simpson, A.M. Stuart and H. Weber, *Algorithms for Kullback-Leibler approximation for probability measures in infinite dimensions*. *SIAM J. Sci. Comp.* **37**(2015), 2733–2757.

[119] D. Sanz-Alonso and A.M. Stuart, *Long-time asymptotics of the filtering distribution for partially observed chaotic dynamical systems*, *SIAM J UQ* **3**(2015), 1200–1220.

[118] F.J. Pinski, G. Simpson, A.M.Stuart and H.Weber, *Kullback-Leibler approximation for probability measures on infinite dimensional spaces*. *SIAM J. Mathematical Analysis* 47(2015) 4091-4122.

[117] A. Beskos, A. Jasra, E.A. Muzaffer and A.M. Stuart, *Sequential Monte Carlo methods for Bayesian elliptic inverse problems*. *Stat. Comp.* 25 (2015) 727–737.

[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.

[115] M.A. Iglesias, K. Lin, A.M. Stuart, *Well-posed Bayesian geometric inverse problems arising in subsurface flow*. *Inverse Problems*, 30 (2014) 114001.

[114] S. Agapiou, J.M. Bardsley, O. Papaspiliopoulos and A. M. Stuart, *Analysis of the Gibbs sampler for hierarchical inverse problems*. *SIAM JUQ*, 2 (2014) 514-544.

[113] D.T.B. Kelly, K.J.H. Law, A.M. Stuart, *Well-posedness and accuracy of the ensemble Kalman filter In discrete and continuous time*. *Nonlinearity*, **27**(2014) 2579-2603.

[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*. *Stochastic 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.

[107] D. Blömker, K.J.H. Law, A.M. Stuart and K. Zygalakis, *Accuracy and stability of the continuous-time 3DVAR filter for the Navier-Stokes equation*, Nonlinearity **26**(2013), 2193–2219.

[106] A. Beskos, N. Pillai, G.O. Roberts, J.-M. Sanz-Serna and A.M. Stuart, *Optimal tuning of hybrid Monte-Carlo*, Bernoulli, **19**(2013), 1501–1534.

[105] M.A. Iglesias, K.J.H. Law and A.M. Stuart, *Evaluation of Gaussian approximations for data assimilation in reservoir models*, Computational Geosciences, **17**(2013), 851–885.

[104] M. Dashti, K.J.H. Law, A.M. Stuart and J. Voss, *MAP estimators and posterior consistency in Bayesian nonparametric inverse problems*, Inverse Problems, **29**(2013) 095017.

[103] S.L. Cotter, G.O. Roberts, A.M. Stuart and D. White, *MCMC methods for functions: modifying old algorithms to make them faster*, Stat. Sci. **28**(2013), 424–446.

[102] V.H. Hoang, Ch. Schwab and A.M. Stuart, *Complexity analysis of accelerated MCMC methods for Bayesian inversion*. Inverse Problems. **29**(2013) 085010.

[101] S. Agapiou, S. Larsson and A.M. Stuart, *Posterior consistency of the Bayesian approach to linear ill-posed inverse problems*. Stochastic Processes and Their Applications, **123**(2013), 3828–3860.

[100] Y. Pokern, A.M. Stuart and J.H. Van Zanten, *Posterior consistency via precision operators for nonparametric drift estimation SDEs*. Stochastic Processes and Their Applications, **123**(2013), 603–628.

[99] M.A. Iglesias, K.J.H. Law and A.M. Stuart, *Ensemble Kalman Methods for Inverse Problems*. Inverse Problems, **29**(2013), 045001.

[98] C.E.A. Brett, K.F. Lam, K.J.H. Law, D.S. McCormick, M.R. Scott, A.M. Stuart, *Accuracy and stability of filters for dissipative PDEs*. Physica D **245**(2013), 34–45.

[97] N.S. Pillai, A.M. Stuart and A.H. Thiery, *Optimal scaling and diffusion limits for the Langevin algorithm in high dimensions*. Annals of Applied Probability **22**(2012), 2320–2356.

[96] K.J.H. Law and A.M. Stuart, *Evaluating data assimilation algorithms*. Monthly Weather Review **140**(2012), 3757–3782.

[95] O. Papaspiliopoulos, Y. Pokern, G.O. Roberts and A.M. Stuart, *Nonparametric estimation of diffusions: a differential equations approach*. Biometrika **99**(2012), 511–531.

[94] M. Dashti, S. Harris and A.M. Stuart, *Besov priors for Bayesian inverse problems*. Inv. Prob. Imag. **6**(2012), 183–200.

[93] J.C. Mattingly, N. Pillai and A.M. Stuart, *Diffusion limits of random walk Metropolis algorithms in high dimensions*, Ann. Appl. Prob. **22**(2012), 881–930.

[92] Ch. Schwab and A.M. Stuart, *Sparse deterministic approximation of Bayesian inverse problems*. Inverse Problems. **28**(2012) 045003.

- [91] F. Pinski and A.M. Stuart and F. Theil,  $\Gamma$ – limit for transition paths of maximal probability. *J. Stat. Phys.* **146**(2012), 955–974.
- [90] S.L. Cotter, M. Dashti and A.M. Stuart, *Variational data assimilation using targeted random walks*. *Int. J. Num. Meth. Fluids.* **68**, 403–421. DOI: 10.1002/fld.2510
- [89] M. Dashti and A.M. Stuart, *Uncertainty quantification and weak approximation of elliptic inverse problems*. *SIAM J. Num. Anal.* **49**(2011), 2524–2542. DOI: 10.1137/100814664
- [88] W. Lee, D. McDougall and A.M. Stuart, *Kalman filtering and smoothing for linear wave equations with model error*. *Inverse Problems.* **27** (2011) 095008.
- [87] A. Beskos, F.J. Pinski, J.-M. Sanz-Serna and A.M. Stuart, *Hybrid Monte-Carlo on Hilbert Spaces*, *Stoch. Proc. Applic.* **121**(2011), 2201–2230.
- [86] M. Hairer, A.M. Stuart and J. Voss, *Sampling conditioned hypoelliptic diffusions*. *Ann. Appl. Prob.* **21**(2011), 669–698.
- [85] I. Melbourne and A.M. Stuart, *A note on diffusion limits of chaotic skew product flows*. *Nonlinearity* **24**(2011), 1361–1367.
- [84] P. Fearnhead, O. Papaspiliopoulos, G.O. Roberts and A.M. Stuart, *Random-weight particle filtering of continuous time stochastic processes*. *J. Roy. Stat. Soc.* **72B**(2010), 497–512.
- [83] J.C. Mattingly, A.M. Stuart and M. Tretyakov, *Convergence of numerical time-averaging and stationary measures via the Poisson equation*. *SIAM J. Num. Anal.* **48**(2010), 552–577.
- [82] F.J. Pinski and A.M. Stuart, *Transition paths in molecules: gradient descent in pathspace*. *J. Chem. Phys.* **132**(2010), 184104.
- [81] S.L. Cotter, M. Dashti and A.M. Stuart, *Approximation of Bayesian Inverse Problems*. *SIAM J. Num. Anal.* **48**(2010), 322–345.
- [80] S.L. Cotter, M. Dashti, J.C. Robinson and A.M. Stuart, *Bayesian inverse problems for functions and applications to fluid mechanics*. *Inverse Problems* **25**(2009), 115008; doi:10.1088/0266-5611/25/11/115008
- [79] Y. Pokern, A.M. Stuart and E. Vanden Eijnden, *Remarks on Drift Estimation for Diffusion Processes*. *SIAM Multiscale Modeling Simulation* **8**(2009), 69–95. doi: 10.1137/070694806
- [78] A. Beskos, G.O. Roberts and A.M. Stuart, *Optimal scalings of Metropolis-Hastings algorithms for non-product targets in high dimensions*. *Ann. Appl. Prob.* **19**(2009), 863–898.
- [77] A. Papavasiliou, G. Pavliotis and A.M. Stuart, *Maximum Likelihood Estimation for Multi-scale Diffusions*. *Stoch. Proc. and Applic.* **19**(2009), 3173–3210.  
<http://dx.doi.org/10.1016/j.spa.2009.05.003>
- [76] Y. Pokern, A.M. Stuart and P. Wiberg, *Parameter estimation for partially observed hypoelliptic diffusions*. *J. Roy. Stat. Soc. B* **71**(2009), 49–73.
- [75] G. Pavliotis, A.M. Stuart and K. Zygalkis, *Calculating effective diffusivities in the limit of vanishing molecular diffusion*. *J. Comp. Phys.* **228**(2009), 1030–1055.
- [74] A. Beskos, G. Roberts, A.M. Stuart and J. Voss, *An MCMC Method for Diffusion Bridges*. *Stochastics and Dynamics*, **8**(2008), 319–350.
- [73] A. Apte, C.K.R.T. Jones, A.M. Stuart and J. Voss, *Data assimilation: mathematical and statistical perspectives*. *Int. J. Num. Meth. Fluids* **56**(2008), 1033–1046.
- [72] A. Apte, C.K.R.T. Jones and A.M. Stuart, *A Bayesian approach to Lagrangian data assimilation*. *Tellus*, **60**(2008), 336–347.

- [71] G. Pavliotis, A.M. Stuart and K.Zygalakis, *Homogenization for inertial particles in a random flow*. Comm. Math. Sci. **5**(2007), 507–531.
- [70] M. Hairer, A.M. Stuart and J. Voss, *Analysis of SPDEs Arising in Path Sampling. Part II: The Nonlinear Case*. Ann. Appl. Prob., **17**(2007), 1657–1706.
- [69] G. Pavliotis and A.M. Stuart, *Parameter Estimation for Multiscale Diffusions*. J. Stat. Phys. **127**(2007), 741–781.
- [68] A. Apte, M. Hairer, A.M. Stuart and J. Voss, *Sampling the posterior: an approach to non-Gaussian data assimilation*. PhysicaD, **230**(2007), 50–64.
- [67] H. Lamba, J.C. Mattingly and A.M. Stuart, *An adaptive Euler-Maruyama scheme for SDEs: Convergence and Stability*. IMA J. Num. Anal., **27**(2007), 479–506.
- [66] D. Barkley, I.G. Kevrekidis and A.M. Stuart *The Moment Map: Nonlinear Dynamics of Density Evolution Via a Few Moments*. SIAM J. Appl. Dyn. Sys., **5**(2006), 403-434.
- [65] M. Hairer, A.M. Stuart, J. Voss and P. Wiberg, *Analysis of SPDEs Arising in Path Sampling. Part I: The Gaussian Case*. Comm. Math. Sci. **4**(2005), 587–603.
- [64] G.A. Pavliotis and A.M. Stuart, *Periodic homogenization for inertial particles*. Physica D, **204**(2005), 161-187.
- [63] G. Pavliotis and A.M. Stuart, *Analysis of white noise limits for stochastic systems with two fast relaxation times*. SIAM Multiscale Modeling and Simulation, **4**(2005), 1–35.
- [62] R. Kupferman and A.M. Stuart, *Fitting SDE models to nonlinear Kac-Zwanzig heat bath models*. Physica D, **199**(2004), 279–316.
- [61] A.M.Stuart, P Wiberg and J. Voss, *Conditional path sampling of SDEs and the Langevin MCMC method*. Comm. Math. Sciences., **2**(2004), 685–697.
- [60] R. Kupferman, G. Pavliotis and A.M. Stuart, *Itô versus Stratonovich white noise limits for systems with inertia and colored multiplicative noise*. Phys. Rev. E **70**(2004) 036120.
- [59] D. Givon, R. Kupferman and A.M. Stuart, *Extracting macroscopic dynamics: model problems and algorithms*. Nonlinearity, **17**(2004), R55–127.
- [58] D.J. Higham and X. Mao and A.M. Stuart, *Mean square stability of numerical solutions to stochastic differential equations*. LMS Journal of Computational Mathematics, **6**(2003), 297–313.
- [57] G. Pavliotis and A.M. Stuart, *White noise limits for inertial particles in a random field*. SIAM Multiscale Modeling and Simulation, **1**(2003), 527–553.
- [56] W. Husinga, C. Schutte and A.M. Stuart, *Extracting macroscopic stochastic models from dynamics*. Comm. Pure. Appl. Math. LVI(2003), 234–269.
- [55] H. Sigurgeirsson and A.M. Stuart, *A model for preferential concentration*. Physics of Fluids, **14**(2002), 4352-4361.
- [54] H. Sigurgeirsson and A.M. Stuart, *Inertial particles in a random field*. Stochastics and Dynamics **2**(2002), 295–310.
- [53] R. Kupferman, A.M. Stuart, J. Terry and P. Tupper *Long time behaviour of large mechanical systems with random initial data*. Stochastics and Dynamics **2**(2002), 533-562.
- [52] J. Mattingly and A.M. Stuart *Geometric ergodicity of some hypo-elliptic diffusions for particle motions*. Markov Processes and Related Fields, **8**(2002), 199-214.

- [51] D.J. Higham, X. Mao and A.M. Stuart *Strong Convergence of Numerical Methods for Nonlinear Stochastic Differential Equations*. SIAM J. Num. Anal **40**(2002), 1041–1063.
- [50] J. Mattingly, A.M. Stuart and D.J. Higham *Ergodicity for SDEs and approximations: locally Lipschitz vector fields and degenerate noise*. Stoch. Proc. and Applics. **101**(2002), 185–232.
- [49] D.J. Estep and A.M. Stuart *The dynamical behaviour of the discontinuous Galerkin method and related difference schemes*. Mathematics of Computation **71** (2002), 1075–1103
- [48] H. Sigurgeirsson, A.M. Stuart and J. Wan *Algorithms for Particle-Field Simulations with Collisions* J. Comp. Phys. **172**(2001), 766–807.
- [47] B. Cano and A.M. Stuart *Under-resolved simulations of heat baths*. J. Comp. Phys. **169**(2001), 193–214.
- [46] B. Cano, E. Suli, A.M. Stuart and J. Warren *Stiff oscillatory systems, delta jumps and white noise*. Found. Comp. Math. **1**(2001), 69–100.
- [45] T. Shardlow and A.M. Stuart *A perturbation theory for ergodic Markov chains with application to numerical approximation*. SIAM J. Num. Anal. **37**(2000), 1120–1137.
- [44] O. Gonzalez, D.J. Higham and A.M. Stuart *On the qualitative properties of modified equations*. IMA J. Num. Anal. **19**(1999), 169–190.
- [43] A.M. Stuart and J. Warren *Analysis and experiments for a computational model of a heat bath*. J. Stat. Phys. **97**(1999), 687–723.
- [42] J.M. Sanz-Serna and A.M. Stuart *Ergodic Properties of Dissipative Differential Equations Subject to Random Impulses*. J. Diff. Eq., **155**(1999), 262–284.
- [41] H. Lamba and A.M. Stuart *Convergence Results for the MATLAB ode23 Routine*. BIT **38**(1998), 751–780.
- [40] D.A. Jones, A.M. Stuart and E.S. Titi *Persistence of Invariant Sets for Dissipative Evolution Equations*. J. Math. Anal. and Applics. **219**(1998), 479–502.
- [39] M. Gander and A. M. Stuart *Space-Time Continuous Analysis of Waveform Relaxation for the Heat Equation*. SIAM J. Sci. Comp. **19**(1998), 2014–2031.
- [38] D.J. Higham and A.M. Stuart *Analysis of the dynamics of error control via a piecewise continuous residual*. BIT **38**(1998), 44–57.
- [37] C.J. Budd, G.P. Koomullil and A.M. Stuart *On the solution of convection-diffusion boundary-value problems by grid adaptation*. SIAM J. Sci. Stat. Comp. **20**(1998), 591–618.
- [36] A.M. Stuart *Probabilistic and Deterministic Convergence Proofs for Software for Initial Value Problems*. Numerical Algorithms **14**(1997), 227–260.
- [35] M. Bjorhus and A.M. Stuart *Waveform relaxation as a dynamical system*. Math. Comp. **66**(1997), 1101–1117.
- [34] C.M. Elliott and A.M. Stuart *The viscous Cahn-Hilliard equation. Part II: Analysis*. J. Diff. Equations. **128**(1996), 387–414.
- [33] D.A. Jones and A.M. Stuart *Attractive Invariant Manifolds Under Approximation. Part I: Inertial Manifolds*. J. Diff. Eq. **123**(1995), 588–637.
- [32] A.M. Stuart and A.R. Humphries *The Essential Stability of Local Error Control for Dissipative and Gradient Dynamical Systems*. SIAM J. Num. Anal. **32**(1995), 1940–1971.

- [31] G.J. Lord and A.M. Stuart *Gevrey regularity and upper semicontinuity of attractors for a semi-discrete Ginzburg-Landau equation*. Num. Func. Anal. Appl. **16**(1995), 1003-1047.
- [30] D.J. Estep and A.M. Stuart *The rate of error growth in Hamiltonian conserving integrators*. ZAMP **46**(1995), 407-418.
- [29] F. Bai, C.M. Elliott, A. Gardiner, A. Spence and A.M. Stuart *The viscous Cahn-Hilliard equation. Part I: Computations*. Nonlinearity **8**(1995), 131-160.
- [28] F. Bai, A. Spence and A.M. Stuart *Numerical Computations of Coarsening in the Cahn-Hilliard model of phase separation*. Physica D. **78**(1994), 155-165.
- [27] A.M. Stuart and A.R. Humphries *Model Problems in Numerical Stability for Initial Value Problems*. SIAM Review **36**(1994), 226-257.
- [26] A.R. Humphries and A.M. Stuart *Runge-Kutta methods for dissipative and gradient dynamical systems*. SIAM J. Num. Anal. **31**(1994), 1452-1485.
- [25] C.J.Budd, J.W.Dold and A.M.Stuart, *The study of blow-up in a system of partial differential equations with conserved first integral. Part II: Non-zero convection*. SIAM J. Appl. Math. **54**(1994), 610-640.
- [24] F.Bai, A. Spence and A.M.Stuart, *The Numerical Computation of Heteroclinic Connections in Systems of Gradient Partial Differential Equations*. SIAM J. Appl. Math. **35**(1993), 743-769.
- [23] C.J.Budd, J.W.Dold and A.M.Stuart, *The study of blow-up in a system of partial differential equations with conserved first integral. Part I: Zero convection*. SIAM J. Appl. Math. **53**(1993), 718-742.
- [22] C.M.Elliott and A.M.Stuart, *The global dynamics of discrete semilinear parabolic equations*. SIAM J. Num. Anal. **30**(1993), 1622-1663.
- [21] M.A.J.Chaplain and A.M.Stuart, *A model mechanism for the chemotactic response of endothelial cells to tumour angiogenesis factor*. IMA J. Math. Appl. Med. Biol. **10**(1993), 149-168.
- [20] J.M.Sanz-Serna and A.M.Stuart, *A note on uniform in time error estimates for reaction-diffusion equations*. IMA J. Num. Anal. **12**(1992) 457-462.
- [19] D.F.Griffiths, A.M.Stuart and H.C.Yee, *Numerical wave propagation in hyperbolic equations with source terms*. SIAM J. Num. Anal. **29**(1992), 1244-1260.
- [18] A.Iserles and A.M.Stuart, *A unified approach to spurious solutions introduced by time-discretisation. Part II. BDF-like methods*. IMA J. Num. Anal. **12**(1992), 487-502.
- [17] M.A.J.Chaplain and A.M.Stuart, *A mathematical model for the diffusion of tumour angiogenesis factor into the surrounding host tissue*. IMA J. Math. Appl. Med. Biol. **8**(1991), 191-220.
- [16] A.Iserles, A.T.Peplow and A.M.Stuart, *A unified approach to spurious solutions introduced by time-discretisation. Part I Basic Theory*. SIAM J. Num. Anal. **28**(1991), 1723-1751.
- [15] A.M.Stuart and A.T.Peplow, *The dynamics of the theta method*. SIAM J. Sci. Stat. Comp. **12**(1991), 1351-1372.
- [14] A.M.Stuart, *Singular Limits In Free Boundary Problems*. Rocky Mountain J. Math. **21**(1991), 809-811.
- [13] A.M.Stuart and M.S.Floater, *On the Computation of Blow-up*. Euro. J. Appl. Math. **1**(1990), 47-71.



- [12] A.M.Stuart, *Linear Instability Implies Spurious Periodic Solutions*. IMA J. Num. Anal. **9**(1989),465-486.
- [11] J.Norbury and A.M. Stuart, *A Model For Porous Medium Combustion*. Quart. J. Mech. Appl. Math. **42**(1989),159-178.
- [10] A.M.Stuart, *A Note On High/Low Wave Number Interactions In Spatially Discrete Parabolic Equations*. IMA J. Appl. Math. **42**(1989),27-42.
- [9] A.M.Stuart, *Nonlinear Instability In Dissipative Finite Difference Schemes*. SIAM Review **31**(1989),191-220.
- [8] A.M.Stuart, *Singular Free Boundary Problems And Local Bifurcation Theory*. SIAM J. Appl. Math. **49**(1989),72-85.
- [7] A.M.Stuart *Similarity Solutions of a Heat Equation with Nonlinearly Varying Heat Capacity*. IMA J. Appl. Math. **40**(1988), 217–234.
- [6] J.Norbury and A.M.Stuart *Parabolic Free Boundary Problems Arising in Porous Medium Combustion*. IMA J. Appl. Math. **39**(1988), 241–257.
- [5] J.Norbury and A.M.Stuart *Travelling Combustion Waves in a Porous Medium. Part II – Stability* SIAM J. Appl. Math. **48**(1988), 374–392.
- [4] J.Norbury and A.M.Stuart *Travelling Combustion Waves in a Porous Medium. Part I – Existence*. SIAM J. Appl. Math. **48**(1988), 155–169.
- [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.
- [2] J.Norbury and A.M.Stuart *Volterra Integral Equations and a New Gronwall Inequality. Part II: The Nonlinear Case*. Proc. Roy. Soc. Edin. **106A**(1987), 375–384.
- [1] J.Norbury and A.M.Stuart *Volterra Integral Equations and a New Gronwall Inequality. Part I: The Linear Case*. Proc. Roy. Soc. Edin. **106A**(1987), 361–373.

TO APPEAR/SUBMITTED

- J. Kuntz, M. Ottobre, A.M. Stuart, Non-stationary phase of the MALA algorithm (Submitted).
- A, Beskos, M. Girolami, S. Lan, P.E. Farrell and A.M. Stuart, Geometric MCMC for Infinite-Dimensional Inverse Problems. (Submitted).
- D. Sanz-Alonso and A.M. Stuart, Gaussian approximations of small noise diffusions in Kullback-Leibler divergence. (Communications in Mathematical Sciences, To Appear)
- Y. Lu, A.M. Stuart and H. Weber, Gaussian approximations for transition paths in molecular dynamics. (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*, To appear, Journal of Computational Mathematics.
- C.Schillings and A.M.Stuart, *Analysis of the ensemble Kalman filter for inverse problems*, (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. Iglesias, Y. Lu and A.M. Stuart, *A Bayesian level set method for geometric inverse problems*, (Interfaces and Free Boundary Problems, to appear).

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/math/people/staff/andrew\\_stuart/cv2/](http://www2.warwick.ac.uk/fac/sci/math/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/math/people/staff/andrew\\_stuart/cv3/](http://www2.warwick.ac.uk/fac/sci/math/people/staff/andrew_stuart/cv3/)

[22c] P. Bühlmann and A.M. Stuart. *Mathematics, Statistics and Data Science.*, EMS Newsletter, **100**, June 2016, pages 28–30.

[21c] S. Reich and A.M. Stuart. *Data assimilation: new challenges in deterministic and random dynamical systems*. SIAM News, October and November 2015.

[20c] M. Dashti and A.M. Stuart. *The Bayesian Approach to Inverse Problems*. Handbook of Uncertainty Quantification, Editors R. Ghanem, D. Higdon and H. Owhadi, Springer, 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, Dordrecht, 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 Colloquium, 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.
- **CliMathNet Conference 2016**, Exeter University, July 5th–8th 2016.
- **Fifth International Symposium on Data Assimilation**, Reading University, July 18th–22nd 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, Istanbul 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, Leicester, 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-EP SRC 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**. Raleigh, 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”.
- **Hausdorff 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.”
- **Chemnitz Symposium on Inverse Problems**, Chemnitz, 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

- **$V I^{th}$  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 Européens 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 Quantification”.
- **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 Warwick 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, Reykjavik).
- 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. (Visiting student at Warwick, supervised by Shuai Lu in Fudan. Now a quantitavie 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 Olinger 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.