Georg Gottwald

Professor

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Curriculum Vitae

Education

Ph.D.	Applied Mathematics, Monash University, 1999.
Diplom	Physics, Heinrich-Heine Universität Düsseldorf, Germany, 1995.

Employment and Academic Positions

1/2013–	Full Professor, University of Sydney.
1/2013–	Visiting Professor, University of Surrey.
1/2010—12/2014	ARC Future Fellow, University of Sydney.
1/2009—12/2012	Associate Professor, University of Sydney.
1/2006—12/2009	Senior Lecturer, University of Sydney.
1/2004—12/2009	ARC Australian Research Fellowship, University of Sydney.
7/2002—12/2006	Lecturer, University of Sydney.
1/2001— 6/2002	Postdoctoral position at the University of Surrey, U.K. (joint affiliation with Imperial College).
5/1999—12/2000	Postdoctoral position at the Institut Non-Linéaire de Nice, France.
10/1998— 4/1999	Software Developer, Applied Financial Services, Melbourne.

Fellowships and Awards

2010	Future Fellowship, Australian Research Council (4 years).
2010	Australian Research Fellowship (5 years, declined), Australian Research Council.
2004	Australian Research Fellowship (5 years), Australian Research Council.
2003	EPSRC Visiting Fellowship (3 years), U.K.
2000	MASIE Postdoctoral Fellowship (2 years), University of Surrey/Imperial College.
1995	DAAD (Deutscher Akademischer Austauschdienst) (3 years) Postgraduate Fellowship.

Research Funding since 2002

Over $2.1M in competitive grant funding since appointment as a Lecturer in 2002; for example:

357k	*Mathematical model reduction for complex networks*, ARC Discovery Grant. 2017.
372k	*The Shape of Chaos: Geometric Advances in Partially Hyperbolic Dynamics*, ARC Discovery Grant. With Andy Hammerlindl. 2017.
270k	*Extracting macroscopic variables and their dynamics in multiscale systems with metastable states*, ARC Discovery Grant. With Gary Froyland. 2012.
762k	*Stochastic methods in mathematical geophysical fluid dynamics*, ARC Future Fellowship. 2010.
400k	*Stochastic methods in mathematical geophysical fluid dynamics*, ARC Australian Research Fellowship. 2010.
224k	*Nonlinear time series analysis for physiological data*, ARC Discovery Grant. With Michael Breakspear. 2006.
577k	*Geometric methods in geophysical fluid dynamics*, ARC Australian Research Fellowship. 2004.
18k	*Detection of Chaos in Nonlinear Dynamical Systems, and Hypermeander of Spirals in Excitable Media*, EPSRC Visiting Fellowship. 2003.
4.5k	*Geometric methods in numerical geophysical fluid dynamics*, Australian Academy of Sciences travel grant. 2003.

Postgraduate Students

2018–	Wenqi Yue, MSc
2018–	Madeleine Cartwright, PhD
2016–	Caroline Wormell, PhD
2015–	Brent Giggins, PhD
2011–2015	John MacLean, PhD
2008–2011	Lewis Mitchell, PhD
2009–2011	Pamela Guzman, MSc
2008–2009	David Kelly, MSc
2006–2010	Sebastian Hermann, PhD
2007–2008	John Hornibrook, MSc
2004–2008	Shakti Menon, PhD

Postdocs supervised

Ramon Xalvi-Brunet, (now Professor at Escuela Politecnica Nacional, Ecuador)
Andy Hammerlindl, (now Lecturer at Monash University)
Jeroen Wouters, (accepted Lecturer at University of Reading, UK)
Lachlan Smith, (current)

Conferences, Seminars and Summer Schools Organized

Co-organizer	*Workshop on Economics & Climate*, Utrecht, 15-17 July 2019
Co-organizer	*Winter School Les Houches: Physics and Mathematics of Turbulent Flows at Different Scales*, Les Houches, 25 February - 1 March 2019
Co-organizer	*Workshop on Multiscale Methods for Stochastic Dynamics*, Geneva, 31 January - 1 February 2017
Co-organizer	*Annual R&D Workshop: Data Assimilation*, Bureau of Meteorology, Melbourne, 5-9 December 2016
Co-organizer	*Advances in Ergodic Theory, Hyperbolic Dynamics, and Statistical Laws*, Canberra, 28 November - 2 December 2016
Co-organizer	*SDG workshop: Multiscale Dynamical Systems - Theory and Application*, Blackheath, Blue Mountains, 2-5 November 2015
Co-organizer	*Methods of Chaos Detection and Predictability: Theory and Applications*, Max Planck Institute Dresden, 2013
Co-organizer	International Workshop on *Set-Oriented Numerics (SON Sydney 2012)*, UNSW, Sydney, 3-7 September 2012
Organizer	AustMS, 5 minisymposia (*Integrable Systems*, *Biomathematics*, *Stochastic Aspects of Dynamical Systems*, *Fluid Mechanics* and *Nanotechnology*), Wollongong, 2011
Organizer	Dynamic Days Asia-Pacific 6 (DDAP6), minisymposium on *Stochastic Aspects of Dynamical Systems*, UNSW, 2010
Chair	*Sydney Dynamics Group*, University of Sydney and UNSW, 2007–
Co-organizer	*5th ICE-EM/AMSI Summer School*, University of Sydney, 2006

Editorial work, Reviewing (papers and grants)

2018	Editor for *Chaos* Focus Issue on *"Linear Response Theory: Theory and Applications"*
2018-	Editorial Advisory Board for *Chaos*
2015	Editor for *Springer Lecture Notes in Physics* on *"Chaos Prediction Methods and Predictability"*
2014	Editor for *Chaos* Focus Issue on *"Chaos Prediction Methods and Predictability"*
2013 -	Associate Editor for *Geophysical and Astrophysical Fluid Dynamics*
2008	Guest editor for *Journal of Nonlinear Sciences*, Springer
Ongoing	Assessing grant applications and final reports for the ARC, EPSRC, EU, NRF
Ongoing	Refereeing for international journals (approximately 25 papers per year)

Publications

Journal articles (refereed)

1. G.A. Gottwald, R. H. J. Grimshaw and B. Malomed (1997), '*Parametric envelope solitons in coupled Korteweg-de Vries equations*', Phys. Lett. A **227**, 47-54.
2. G.A. Gottwald, R. H. J. Grimshaw and B. Malomed (1998), '*Stable two-dimensional parametric solitons in hydrodynamic models*', Phys. Lett. A **248**, 208-218.
3. G.A. Gottwald and R.H.J. Grimshaw (1999), '*The formation of coherent structures in the context of blocking*', J. Atmos. Sci. **56**, 3640-3662.
4. G.A. Gottwald and R.H.J. Grimshaw (1999), '*The effect of topography on the dynamics of interacting solitary waves as an example for atmospheric blocking*', J. Atmos. Sci. **56**, 3663-3678.
5. G.A. Gottwald, L. Kramer, V. Krinsky, A. Pumir and V. Barelko (2000), '*Persistence of zero velocity fronts in reaction diffusion systems*', Chaos **10**, 731-737.
6. G.A. Gottwald, A. Pumir and V. Krinsky (2001), '*Spiral wave drift induced by stimulating wave trains*', Chaos **11**, 487-494.
7. H. Dullin, G.A. Gottwald and D. Holm (2001), '*An integrable shallow water system with linear and nonlinear dispersion*', Phys. Rev. Lett. **87** nr. 19, 4501-4504.
8. G.A. Gottwald and M. Nicol (2002), '*On the nature of Benford's Law*', Physica A **303**, 387-396.
9. R.H.J. Grimshaw, B. Malomed and G.A. Gottwald (2002), '*Singular and regular gap solitons between three dispersion curves*', Phys. Rev. E **65**, 66606.
10. J. Frank, G.A. Gottwald and S. Reich (2002), '*A Hamiltonian particle-mesh method for the rotating shallow-water equations*, Meshless Methods for Partial Differential Equations, Springer Lecture Notes in Computational Science and Engineering **26**, 131-142.
11. T. Bridges, G. Derks, G.A. Gottwald (2002), '*Stability and instability of solitary waves of the fifth-order KdV equation: a numerical framework*', Physica D **172**, 190-216.
12. H. Dullin, G.A. Gottwald and D. Holm (2003), '*Camassa-Holm, Korteweg-de Vries-5 and other asymptotically equivalent equations for shallow water waves*', Fluids Dynamics Research **33**, 73-95.
13. G.A. Gottwald and I. Melbourne (2004), '*A new test for chaos in deterministic systems*', Proc. Roy. Soc. Lond. **A 460**, 603-611.
14. H. Dullin, G.A. Gottwald and D. Holm (2004), '*On asymptotically equivalent shallow water wave equations* ', Physica **D 190**, 1-14.
15. G.A. Gottwald and L. Kramer (2004), '*Propagation failure in excitable media in 1 and 2 dimensions*', Chaos **14**, 855-863.
16. G. Derks and G.A. Gottwald (2005), '*A robust numerical method to study oscillatory instability of gap solitary waves*', SIAM J. Appl. Dyn. Systems **4**, 140-158.
17. G.A. Gottwald and I. Melbourne (2005), '*Testing for chaos in deterministic systems with noise*', Physica D **212**, 100-110.
18. S. Menon and G.A. Gottwald (2005), '*On bifurcations in reaction-diffusion systems in chaotic flows*', Phys. Rev. E **71**, 066201-066207.
19. R. Thuraisingham and G.A. Gottwald (2006), '*On multiscale entropy analysis for physiological data*', Physica A **366**, 323-332.
20. S. Cox and G.A. Gottwald (2006), '*A bistable reaction–diffusion system in a stretching flow*', Physica D **216**, 307-318.
21. G.A. Gottwald and L. Kramer (2006), '*A normalform for excitable media*', Chaos **16**, 013122.
22. I. Falconer, G.A. Gottwald, I. Melbourne and K. Wormnes (2007), '*Application of the 0-1 test for chaos to experimental data*', SIAM J. Appl. Dyn. **6**, 395-402.
23. G.A. Gottwald, M. Oliver and N. Tecu (2007), '*Long-time accuracy for approximate slow manifolds in a finite dimensional model of balance*', Journal of Nonlinear Science **17**, 383-407.
24. S. Menon and G.A. Gottwald (2007), '*Bifurcations of flame filaments in chaotically mixed combustion reactions*',

Phys. Rev. E **75**, 016209.
25. S. Balasuriya, G.A. Gottwald, J. Hornibrook and S. Lafortune (2007), '*High Lewis number combustion wavefronts: A perturbative Melnikov analysis*', SIAM J. Applied Math. **67**, 464-486.
26. G.A. Gottwald (2007), '*Dispersive regularizations and numerical discretizations for the inviscid Burgers*', J. Phys. A **40**, 14745-14758.
27. I. Melbourne and G.A. Gottwald (2008), '*Power spectra for deterministic chaotic dynamical systems*', Nonlinearity **21**, 179-189 (included in the *high-profile articles* of 2008).
28. G.A. Gottwald and I. Melbourne (2008), '*Comment on "Reliability of the 0-1 test for chaos"*', Phys. Rev. E. **77**, 028201.
29. G.A. Gottwald (2008), '*Bifurcation analysis of a normal form for excitable media: Are stable dynamical alternans on a ring possible?*', Chaos **18**, 013129.
30. D.G. Dritschel, R.K. Scott, C. Macaskill, G.A. Gottwald and C.V. Tran (2008), '*A unifying theory for vortex dynamics in two-dimensional turbulence*', Phys. Rev. Lett. **101**, 094501 (selected as an Editor's Suggestion).
31. G.A. Gottwald and I. Melbourne (2009), '*On the implementation of the* 0-1 *test for chaos*', *SIAM J. Appl. Dyn. Systems* **8**, 129-145.
32. S. Menon and G.A. Gottwald (2009), '*On bifurcations in a chaotically stirred excitable medium*', *Physica D* **238**, 461-475.
33. G.A. Gottwald and M. Oliver (2009), '*Boltzmann's dilemma – an introduction to statistical mechanics via the Kac ring*', *SIAM Review* **51**, 613-635.
34. G.A. Gottwald and I. Melbourne (2009), '*On the validity of the* 0-1 *test for chaos*', *Nonlinearity* **22**, 1367-1382.
35. K. Bergemann, G.A. Gottwald and S. Reich (2009), '*Ensemble propagation and continuous matrix factorization algorithms*', *Q.J.R.Meteorolog.Soc.* **135**, 1560-1572.
36. D.G. Dritschel, R.K. Scott, C. Macaskill, G.A. Gottwald and C.V. Tran (2009), '*Vortex self-similarity in unforced inviscid two-dimensional turbulence*', *Journal of Fluid Mechanics* **640**, 217-235.
37. S. Balasuriya and G.A. Gottwald (2010), '*Wavespeed in reaction-diffusion systems, with applications to chemotaxis and population pressure*', *J. Math. Biolog.* **61**, 377-399.
38. S. Hermann and G.A. Gottwald (2010), '*The large core limit of spiral waves in excitable media: A numerical approach*', *SIAM Journal on Applied Dynamical Systems* **9**, 536-567.
39. G.A. Gottwald (2010), '*On recent trends in climate dynamics*', *AMS Gazette* **37**, 319-326.
40. G.A. Gottwald, L. Mitchell and S. Reich (2011), '*Controlling overestimation of error covariance in ensemble Kalman filters with sparse observations: A variance limiting Kalman filter*', *Monthly Weather Review* **139**, 2650-2667.
41. D. Kelly and G.A. Gottwald (2011), '*On the topology of synchrony optimized networks of a Kuramoto-model with non-identical oscillators*', *Chaos* **21**, 025110.
42. J. Frank and G.A. Gottwald (2011), '*The Langevin equation limit of the Nosé-Hoover-Langevin thermostat*', *J. Stat. Phys.* **143**, 715-724.
43. L. Mitchell and G.A. Gottwald (2012), '*Data assimilation in slow-fast systems using homogenized climate models*', *J. Atmos. Sci.* **69**, 1359-1377.
44. L. Mitchell and G.A. Gottwald (2012), '*On finite size Lyapunov exponents in multiscale systems with slow and fast metastable states*', *Chaos* **22**, 023115.
45. L. Mitchell and G.A. Gottwald (2012), '*Controlling model error of underdamped forecast models in sparse observational networks using a variance limiting Kalman filter*', *Q.J.R. Meteorolog. Soc.* **139**, 212-225.
46. J. Frank and G.A. Gottwald (2013), '*Stochastic homogenization for an energy conserving multi-scale toy model of the atmosphere*', *Physica D* **254**, 45-65.
47. G.A. Gottwald and J. Harlim (2013), '*The role of additive and multiplicative noise in filtering complex dynamical systems*', *Proc. Roy. Soc. A* **469**, 20130096.
48. G.A. Gottwald and I. Melbourne (2013), '*A Huygens principle for diffusion and anomalous diffusion in spatially extended systems*', *Proc. Natl. Acad. Sci. USA* **110** (21), 8411-8416.
49. G.A. Gottwald and I. Melbourne (2013), '*Homogenization for deterministic maps and multiplicative noise*', *Proc.*

Roy. Soc. A **469**, 20130201.

50. G.A. Gottwald and A. Majda (2013), '*A mechanism for catastrophic filter divergence in data assimilation for sparse observation networks*', *Nonlin. Processes Geophys.* **20**, 705-712.
51. J. Maclean and G.A. Gottwald (2014), '*On convergence of the projective integration method for stiff ordinary differential equations*', *Comm. Math. Sci.* **12** (2), 235-255.
52. G.A. Gottwald (2014), '*Controlling balance in an Ensemble Kalman filter*', *Nonlin. Processes Geophys.* **21**, 417-426.
53. G.A. Gottwald and I. Melbourne (2014), '*A test for a conjecture on the nature of attractors for smooth dynamical system*', *Chaos* **24**, 024403.
54. G.A. Gottwald and M. Oliver (2014), '*Slow dynamics via degenerate variational asymptotics*', *Proc. Roy. Soc. A* **470**, 20140460.
55. G. Froyland, G.A. Gottwald and A. Hammerlindl (2014), '*A computational method to extract macroscopic variables and their dynamics in multiscale systems*', *SIAM Journal on Applied Dynamical Systems* **13**, 1816-1846.
56. J. Maclean and G.A. Gottwald (2015), '*On convergence of higher order schemes for the projective integration method for stiff ordinary differential equations*', *Journal of Computational and Applied Mathematics* **288**, 44-69.
57. G.A. Gottwald (2015), '*Model reduction for networks of coupled oscillators*', *Chaos* **25**, 053111.
58. G.A. Gottwald, K. Peters and L. Davies (2016), '*A data-driven method for the stochastic parametrisation of subgrid-scale tropical convective area fraction*', *Q.J.R. Meteorolog. Soc.* **142**, 349–359.
59. G.A. Gottwald and I. Melbourne (2016), '*Broadband nature of power spectra for intermittent maps with summable and nonsummable decay of correlations*', *Journal of Physics A* **49**, 174003.
60. G. Froyland, G.A. Gottwald and A. Hammerlindl (2016), '*A trajectory-free framework for analysing multiscale systems*', *Physica D* **238–239**, 34–43.
61. G.A. Gottwald, J. Wormell and J. Wouters (2016), '*On spurious detection of linear response and misuse of the fluctuation-dissipation theorem in finite time series*', *Physica D* **331**, 89–101.
62. G.A. Gottwald and I. Melbourne (2016), '*Central limit theorems and suppression of anomalous diffusion for systems with symmetry*', *Nonlinearity* **29**, 2941-2960.
63. G.A. Gottwald and I. Melbourne (2016), '*On the detection of superdiffusive behaviour in time series*', *J. Stat. Mech.* **2016** (12), 123205.
64. D.G. Dritschel, G.A. Gottwald and M. Oliver (2017), '*Comparison of variational balance models for the rotating shallow water equations*', *Journal of Fluid Mechanics* **822**, 689-716.
65. G.A. Gottwald, H. Mohamad and M. Oliver (2017), '*Optimal balance via adiabatic invariance of approximate slow manifolds*', *SIAM MMS* **15**(4), 1404–1422.
66. C.J. Cotter, G.A. Gottwald, D.D. Holm (2017), '*Stochastic partial differential fluid equations as a diffusive limit of deterministic Lagrangian multi-time dynamics*', *Proc. Roy. Soc. A* **473**, 20170388.
67. G.A. Gottwald (2017), '*Finite-size effects in a stochastic Kuramoto model*', *Chaos* **27**, 101103.
68. J. Frank and G.A. Gottwald (2018), '*A note on statistical consistency of numerical integrators for multi-scale dynamics*', *SIAM MMS* **16**(2), 1017–1033.
69. C. Wormell and G.A. Gottwald (2018), '*On the validity of linear response theory in high-dimensional deterministic dynamical systems*', *J. Stat. Phys.* **172**(6), 1479–1498.
70. E.J. Hancock and G.A. Gottwald (2018), '*Model reduction for Kuramoto models with complex topologies*', *Phys. Rev. E* **98**, 012307.
71. S. Balasuriya and G.A. Gottwald (2018), '*On estimating stochastic stable and unstable sets and their role as transport barriers in stochastic flows* ', *Phys. Rev. E* **98**, 013106.
72. G.A. Gottwald and D.E. Pelinovsky (2018), '*On the impossibility of solitary Rossby waves in meridionally unbounded domains*', *Phys. Fluids* **30***(11), 116601.*
73. G. Giggins and G.A. Gottwald (2018), 'Stochastically perturbed bred vectors in multi-scale systems', accepted in *Q.J.R. Meteorolog. Soc.*

Conference Proceedings

74. G.A. Gottwald, L. Kramer, V. Krinsky, A. Pumir and V. Barelko (2001), '*Co-existence of stable states in reaction diffusion systems*', In: Proceedings of "La 3ème Rencontre du Non-linèaire 2000", 154-158, Orsay, edited by Y. Pomeau and R. Ribotta.
75. R.H.J. Grimshaw and G.A. Gottwald (2001),'*Models for instability in geophysical flows*', In: Proceedings of IUTAM Symposium on Advances in Mathematical Modelling of Atmosphere and Ocean Dynamics Kluwer Academic Publishers, 153-161, edited by P.F. Hodnett.
76. R.H.J. Grimshaw, B. Malomed and G.A. Gottwald (2002), '*Cuspons and peakons vis-a-vis regular solitons and collapse in a three-wave system*', Proceedings of the AMS-IMS-SIAM Conference "The Legacy of Inverse Scattering Theory in Nonlinear Wave Propagation" CONM (Contemporary Math) AMS series, edited by J. Bona, R. Choudhury and D. Kaup.
77. G.A. Gottwald and L. Kramer (2005), '*On a normalform for excitable media*', Oberwolfach Reports, Volume 2, Issue 2, 1941-1942.
78. D.G. Dritschel, R.K. Scott, C. Macaskill, G.A. Gottwald and C.V. Tran (2009), '*Vortex self-similarity and the evolution of unforced inviscid two-dimensional turbulence*', Advances in Turbulence XII, Springer Proceedings in Physics Volume 132, 461-464.
79. G.A. Gottwald and Ch. Skokos (2014), '*Preface to the Focus Issue: Chaos Detection Methods and Predictability*', Chaos, Volume 24, 024201.

Book Chapters

80. G.A. Gottwald and I. Melbourne (2016), '*The* 0-1 *test for chaos: A review*', In: Chaos Detection and Predictability, Springer Lecture Notes in Physics 915 (C. Skokos and G.A. Gottwald, eds.)
81. G.A. Gottwald, D. Crommelin and C. Franzke (2017), '*Stochastic climate theory*', In: Nonlinear and Stochastic Climate Dynamics, Cambridge University Press (C. Franzke and T. O'Kane, eds.)

Selected Addresses

Keynote Speaker	*National Colloquium on Data Assimilation*, Rennes, France, 2018.
Keynote Speaker	*NDNS+ workshop 2018*, Twente, The Netherlands, 2018.
Keynote Speaker	*Ergodic Theory, Algorithms and Rigorous Computations*, Warwick, UK, 2017.
Invited Speaker	*Transport in Unsteady Flows: from Deterministic Structures to Stochastic Models and Back Again*, Banff, Canada, 2017.
Keynote Speaker	*60th Annual Meeting of the Australian Mathematical Society*, Canberra, 2016.
Invited Speaker	*Mathematical and Algorithmic Aspects of Atmosphere-Ocean Data Assimilation*, Oberwolfach, Germany, 2016.
Invited Speaker	*5th Data Analysis and Modeling in Earth Science (DAMES) conference*, Hamburg, Germany, 2016.
Invited Speaker	*SON 2016 - 7th International Workshop on Set Oriented Numerics*, Berlin, Germany, 2016.
Invited Speaker	*Multiscale Interactions in Geophysical Fluids*, Oberwolfach, Germany, 2016.
Invited Lecturer	*Summer Research Program on Dynamics of Complex Systems*, ICTS, Bangalore, India, 2016.
Invited Speaker	*SciCADE 2015*, Potsdam, Germany, 2015.
Invited Speaker	*Averaging and Homogenization in Deterministic and Stochastic Systems*, Luminy, France, 2015.
Invited Speaker	*Random Dynamical Systems and Multiplicative Ergodic Theorems*, Banff, Canada, 2015.
Invited Speaker	*XXVII Marian Smoluchowski Symposium on Statistical Physics*, Zakopane, Poland, 2014
Invited Speaker	*International Symposium on Nonlinear Theory and its Applications (NOLTA2014)*, Luzern, Switzerland, 2014
Invited Speaker	*Methods of Chaos Detection and Predictability: Theory and Applications*, Max Planck Institute Dresden, 2013.
Invited Speaker	*European Geosciences Union General Assembly*, Vienna, Austria, 2013.
Invited Speaker	*Stochastic Modeling of the Oceans and Atmosphere*, Institute for Mathematics and its Applications (IMA), Minnesota, U.S.A., 2013.
Invited Speaker	*Mathematical and Algorithmic Aspects of Atmosphere-Ocean Data Assimilation*, Oberwolfach, Germany, 2012.
Invited Speaker	*Data Assimilation: Numerical methods for solving the filtering problem and high order methods for saving parabolic PDEs*, Oxford, UK, 2012.
Invited Speaker	*9th AIMS Conference on Dynamical Systems, Differential Equations and Applications* , Orlando, U.S.A., 2012.
Invited Speaker	*European Geosciences Union General Assembly*, Vienna, Austria, 2012.
Invited Speaker	*IMA Conference on Mathematics of the Climate System*, 2 talks, Reading, UK, 2011.
Invited Speaker	*LMS symposium on The Mathematics of Data Assimilation*, 2 talks, Durham, UK, 2011.
Invited Speaker	*European Geosciences Union General Assembly*, 2 talks, Vienna, Austria, 2011.
Plenary Speaker	*ANZIAM 2011*, Adelaide, 2011.
Invited Speaker	*Isaac Newton Institute programme Mathematical and Statistical Approaches to Climate Modelling and Prediction*, 2 talks, Cambridge, UK, 2010.
Invited Speaker	*SIAM Conference on Applications of Dynamical Systems*, Snowbird, U.S.A., 2009.
Invited Speaker	*SIAM Conference on mathematical and computational issues in the Geosciences*, Leipzig, Germany, 2009.
Invited Speaker	*Wave-flow interactions network meeting*, Edinburgh, UK, 2009.
Invited Speaker	*Geometric and stochastic methods in geophysical fluid dynamics*, Bremen, Germany, 2008
Invited Speaker	*Nonlinear Dynamics and Chaos: Advances and Perspectives*, Aberdeen, U.K., 2007.
Keynote address	*AMSI Workshop Symmetries and Stability*, Canberra, 2007.
Keynote address	*NZIMA Dynamical Systems and Numerical Analysis conference*, Hamilton, NZ, 2006.
Keynote address	*Geometry, Mechanics and Symmetry*, Lisbon, Portugal, 2001.

Besides these conference talks I gave numerous talks at national and international institutions, amongst those Imperial College, Cambridge University, University of Warwick, University of Surrey, Loughborough University, Universität Bayreuth, Universität Tübingen, Jacobs University Bremen, Universität Potsdam.

Recent visiting invitations

Utrecht University (2018, Jason Frank), Wuhan University (2017, Jinqiao Duan), ICTS, Bangalore (2016, Amit Apte), Warwick University (2016, Ian Melbourne), Imperial College (2012,2016, Colin Cotter, Darryl Holm), CWI, Amsterdam (2012, Daan Crommelin, Jason Frank), University of Surrey (2008,2009,2012, Ian Roulstone, Ian Melbourne), University of St. Andrews (2011, David Dritschel), Universität Potsdam (2008,2009,2010,2016 Sebastian Reich), Jacobs University Bremen (2008,2009,2010,2016 Marcel Oliver), Université Paul Sabatier, Toulouse (2009, Pierre-Henri Chavanis)

Personal

Nationality German.

Date of birth 21 February 1969.