Curriculum Vitae
Nicholas Kevlahan

Academic address

Department of Mathematics and Statistics
McMaster University
Hamilton, Ontario L8S 4K1, Canada
tel: 90 55 25 91 40 ext. 23412
fax: 90 55 22 09 35
email: kevlahan@mcmaster.ca
web: www.math.mcmaster.ca/kevla

Research areas

Fluid dynamics, especially turbulence theory

Fluid–structure interaction

Nonlinear waves and shock waves

Numerical analysis and solution of partial differential equations

Wavelet analysis and wavelet-based methods for partial differential equations

---

Teaching areas

Partial and ordinary differential equations, asymptotic analysis, numerical analysis, mathematical physics, linear algebra, calculus, research methodology.

Education

1998-02-01 – 1998-07-31 Post-doctoral fellow at École Normale de Cachan with Jean-Michel Ghidaglia.

1996-02-01 – 1998-02-01 European Community 'Marie Curie Fellowship' (No. ERBFMBICT950365) in collaboration with Marie Farge at the Laboratoire de Météorologie Dynamique du CNRS, École Normale Supérieure, Paris, France.

1994-10-01 – 1995-12-31 Visiting Researcher in collaboration with Marie Farge at the Laboratoire de Météorologie Dynamique du CNRS, École Normale Supérieure, Paris, France.

1990-10-01 – 1994-06-30 Ph.D. in applied mathematics — DAMTP (Department of Applied Mathematics and Theoretical Physics) University of Cambridge, United Kingdom. Title of thesis: *Structure and shocks in turbulence*. Thesis supervisors: Prof. J. C. R. Hunt, FRS and Prof. H. K. Moffatt, FRS.

1985-09-01 – 1989-04-30 First class honours B.Sc. in Physics — Department of Physics, University of British Columbia, Vancouver, B.C., Canada.

Faculty positions

2008-07-01 – **Professor**, Department of Mathematics and Statistics, McMaster University and Associate member of the Departments of Chemical and Mechanical Engineering.

2002-07-01 – 2008-06-30 **Associate Professor**, Department of Mathematics and Statistics, McMaster University and Associate member of the Departments of Chemical and Mechanical Engineering.

1998-07-01 – 2002-06-30 **Assistant Professor**, Department of Mathematics and Statistics, McMaster University and Associate member Department of Chemical Engineering.

Visiting positions

2005-04-01 – 2005-06-30 Invited researcher at the Institut de Mathématiques Appliquées de Grenoble (IMAG), Université de Grenoble, France

2004-10-10 – 2005-03-31 Invited researcher at the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, United Kingdom

2004-09-07 – 2004-09-30 Invited professor at the Institut de Mathématiques, Université de Bordeaux I, France

2001-05-10 – 2001-07-28 Invited professor ('chercheur associé') at the CNRS, Laboratoire de Météorologie Dynamique, École Normale Supérieure, Paris.

Invited courses

2003-12-02 – 2003-12-09 Minicourse *Numerical solution of nonlinear differential equations* at Facultad de Ciencias Universidad Autonoma del Estado de Mexico, Toluca, Mexico.

Professional organizations

Canadian Mathematical Society

Canadian Applied and Industrial Mathematics Society

Scholarly and professional activities

Referee for the following journals:

Computers in Fluids

European Physics Letters

Journal of Computational Physics

Journal of Fluid Mechanics

Journal of Fluids and Structures

Physical Review E

Physical Review Letters

Physics of Fluids

Proceedings of the Royal Society A

Organizer of the monthly *Fields Symposium on the Mathematics of Transportation*, Fields Institute, Toronto, Canada (2008-02 – 2008-05).

External examiner for the *Habilitation à Diriger des Recherches* exam of Patrick Fischer at the Institut des Mathématiques, Université de Bordeaux I (2008-05-23).

External examiner for the PhD thesis of Marta de la LLave Plata at the University of Cambridge, Department of Engineering (2008-03-12).

Member of the program committee of the 22nd High Perfomance Computing Symposium (HPCS), Québec City, June 9-11, 2008.

Co-organizer (organizer of the turbulence day) of the "2006 Canadian Symposium on Fluid Dynamics" at the Joint CAIMS/MITACS Annual meeting (Toronto, Canada, 2006-06-17 – 2006-06-19).

Organizer of the mini-symposium "Vorticity Dynamics & Turbulence" at the Joint SIAM/CAIMS Annual meeting (Montréal, Canada, 2003-06-16 – 2003-06-20).

Co-organizer with Marie Farge of the conference "Statistics and dynamics of vortices in geophysical flows" (1996-10-26–1996-11-01) as part of the programme "Mathematics of Atmosphere and Ocean Dynamics of the Isaac Newton Institute for Mathematical Sciences", University of Cambridge, United Kingdom.

Co-organizer with Marie Farge of the "Colloquium de l'École Normale Supérieure" (1997–1998).

Honours

Postdoctoral

1996-02-01 – 1998-02-01 Marie Curie Fellowship (European Community).

Postgraduate

J. T. Knight Prize (University of Cambridge).

Industrial sponsorship by British Gas plc.

Overseas Research Scholarship (UK Government).

Courses taught

Math 745 (CES 715/716) "Mathematical and Computational Fluid Dynamics" , Fall 2006, Fall 2007.

Math 744 "Asymptotic analysis", Fall 2001, Winter 2003.

Math 4Q03 "Numerical methods for ordinary and partial differential equations", Winter 1999, Winter 2000.

Math 3C03 "Mathematical physics I", Fall 1998, Fall 1999, Fall 2000, Fall 2001, Fall 2002, Fall 2005.

Math 3D03 "Mathematical physics II", Winter 1999, Winter 2000, Winter 2001, Winter 2004.

Math 2T03 "Numerical Analysis I", Winter 2004 (Coordinator), Winter 2006.

Science 1SC3 "Science Inquiry I", Fall and Winter 2005/2006, Fall and Winter 2007/2008.

Math 1AA3 "Calculus II", Winter 2001, Winter 2003 (Coordinator).

Research supervision

Post-Doctoral

2005-07-01 – 2007-07-01 M. Mehra (Assistant Professor, IIT Delhi, India)

2002-07-01 – 2004-07-01 V. Vougalter

2001-07-01 – 2002-07-01 H. Kalish

1999-01-01 – 2001-06-30 A. Cherhabili

PhD

2003-01-01 – 2006-11-01 J. Alam (Assistant Professor, Memorial University, Canada)

MSc

2007-04-30 – 2008-04-30 A. Holdsworth (PhD student, University of Alberta)

1999-05-01 – 2000-08-30 D. Hender (Engineer, Schlumberger, USA)

Internships

2007-06-30 – 2007-09-30 G. Baurin (École MatMéca, Université de Bordeaux I, France)

2007-06-30 – 2007-09-30 M. Pomarede (École MatMéca, Université de Bordeaux I, France)

2003-02-17 – 2003-08-15 A. Jay (École MatMéca, Université de Bordeaux I, France)

2003-06-30 – 2003-09-30 E.-L. Guillebault (École MatMéca, Université de Bordeaux I, France)

2002-06-30 – 2002-09-30 J. Simon (École MatMéca, Université de Bordeaux I, France)

2002-06-30 – 2002-09-30 N. Tonnet (École MatMéca, Université de Bordeaux I, France)

Supervisory committees

2008– J. Gustafsson (PhD), Computational Engineering & Science.

2006–2007 C. MacNally (MSc), Physics & Astronomy.

2006– J. Zhu (PhD), Computational Engineering & Science.

2004–2006 D. He (PhD), Mathematics & Statistics.

2004–2007 M. Chugunova (PhD), Mathematics & Statistics.

2003–2004 C. Rogers (PhD), Physics & Astronomy.

2003–2007 I. Polik (PhD), Mathematics & Statistics.

2003–2006 N. Gao (PhD), Mechanical Engineering.

2002–2005 D. Tilley (PhD), Physics & Astronomy.

2001–2005 J. Hall (PhD), Mechanical Engineering.

2000–2003 X. Yu (PhD), Mathematics & Statistics.

2000–2002 J. Garcia-Aleman (PhD), Chemical Engineering.

Examination committees

2007-10 I. Polik (PhD), Mathematics & Statistics.

2007-09 J. Gustafsson (MSc), Computational Engineering & Science.

2006-10 X. Qin (PhD), Chemical Engineering.

2006-08 K. Ghobadi (MSc), Computing & Software.

2002-09 J. Garcia-Aleman (PhD), Chemical Engineering.

2002-07 S. Somasundaram (MSc), Mathematics & Statistics.

2002-06 H. Sun (PhD), Mechanical Engineering.

2000-12 M. Hassan (PhD), Mechanical Engineering.

2000-09 D. Williams (MSc), Mathematics & Statistics.

Administrative responsabilities

Faculty of Science representative, search committee for Director for the School of Computational Engineering and Science 2008

Associate Chair, Graduate (Departmental) 2007–

Member of the scholarships committee of graduate council 2006–

Curriculum Reform of Engineering Mathematics Committee (Faculties of Science and Engineering) (member) 2006–.

McMaster Site Leader, SHARCNET Supercomputer Institute 2001–2004.

Redman lecture committee (Faculty of Science) (member) 1999–2004.

Colloquium Chair (Mathematics & Statistics) 2003-2004.

Appointments Committee (Mathematics & Statistics), 2001–2003, 2006–.

Chair Search Committee (Mathematics & Statistics) (member) 1999-2000.

Hamilton Hall Committee (Mathematics & Statistics) (member) 2000–2003.

Publicity & Liaison Committee (Mathematics & Statistics) (member) 2000–2002.

Library Committee (Mathematics & Statistics) (member) 2000–2004.

Computer committee (Mathematics & Statistics) (chair) 2000–.

Computer committee (Mathematics & Statistics) (member) 1999–2000.

Institute memberships

Origins Institute (McMaster University).

Graduate School of Computational Engineering and Science (McMaster University).

Department of Chemical Engineering (Associate Member).

Department of Mechanical Engineering (Associate Member).

Research funding

2008 – 2013 NSERC (Discovery Grants Program - Individual) $25 000 per year "Turbulence theory and applications: an adaptive wavelet approach."

2003-09-01 – 2005-12-31 SHARCNET (Graduate Research Fellowship) $13 860 per year "Simultaneous space–time discretization of the Navier–Stokes equations".

2003 – 2008 NSERC (Discovery Grants Program - Individual) $19 000 per year "A multi-purpose adaptive wavelet method for turbulent flows in three dimensions".

2002-05-10 SHARCNET (Undergraduate Research Fellowship) $5 000 "Parallelization and Evaluation of a Three-dimensional Pseudo-Spectral Code for Fluid-Structure Interaction".

2000-05-22 NSERC (Equipment Grants - Equipment) $46 755 (Principal Investigator) "Computing cluster for research and graduate students".

1999 – 2003 NSERC (Research Grants Program - Individual) $18 900 per year "From coherent vortices to a statistical theory of turbulence".

Lifetime publications

Publications in refereed journals

1. Mehra, M. & Kevlahan, N.K.-R. 2008 An adaptive wavelet collocation method for the solution of partial differential equations on the sphere. *J. Comput. Phys.* **227**, 5610–5632.

2. Vasilyev, O.V., de Stefano, G., Goldstein, D. & Kevlahan, N.K.-R. 2008 Lagrangian dynamic SGS model for Stochastic Coherent Adaptive Large Eddy Simulation *J. Turbulence* **9**, Art. No. N11

3. Kevlahan, N.K.-R. 2007 Three-dimensional Floquet stability analysis of the wake in cylinder arrays. *J. Fluid Mech.* **592**, 79–88.

4. Kevlahan, N.K.-R., Alam, J. & Vasilyev, O. V. 2007 Scaling of space–time modes with Reynolds number in two-dimensional turbulence. *J. Fluid Mech.* **570**, 217–226.

5. Alam, J., Kevlahan, N.-K.-R. & Vasilyev, O.V. 2006 Simultaneous space-time adaptive wavelet solution of nonlinear partial differential equations. *J. Comput. Phys.* **214**, 829–857.

6. Goldstein, D., Vasilyev, O.V. & Kevlahan, N.K.-R. 2005 CVS and SCALES simulation of 3D isotropic turbulence. *J. Turbulence* **6**(37) (20 pp.)

7. Kevlahan, N.K.-R. 2005 Stochastic differential equation models of vortex merging and reconnection. *Phys. Fluids.* **17**, 064107 (16 pp).

8. Kevlahan, N.K.-R. & Vasilyev, O.V. 2005 An adaptive wavelet collocation method for fluid–structure interaction at high Reynolds numbers. SIAM *J. Sci. Comput.* **26**(6), 1894–1915.

9. Kevlahan, N.K.R. & Wadsley, J. 2005 Suppression of three-dimensional flow instabilities in tube bundles. *J. Fluids Structures* **20**(4), 611–620.

10. Vasilyev, O.V. & Kevlahan, N.K.-R. 2005 An adaptive multilevel wavelet collocation method for elliptic problems. *J. Comput. Phys.* **206**, 412–431.

11. Vasilyev, O.V. & Kevlahan, N.K.-R. 2002 Hybrid wavelet collocation-Brinkman penalization method for complex geometry flows. *Int. J. Num. Meth. Fluids* **30**, 531–538.

12. Dubrulle, B., Laval, J.-P. & Nazarenko, S. & Kevlahan, N. 2001 Derivation of equilibrium profiles in plane parallel flows from a dynamical subgrid Model. *Phys. Fluids* **13**, 2045–2064.

13. Kevlahan, N. K.-R. & Ghidaglia, J.-M. 2001 Computation of turbulent flow past an array of cylinders using a spectral method with Brinkman penalization. *Eur. J. Mech.* B **20**, 333–350.

14. Nazarenko, S. Kevlahan, N.-K.R. & Dubrulle, B. 2000 Nonlinear RDT theory of near-wall turbulence. *Physica* D **139**, 158–176.

15. Farge, M., Schneider, K. & Kevlahan, N. 1999 Non-Gaussianity and coherent vortex simulation for two-dimensional turbulence using an adaptive orthogonal wavelet basis. *Phys. Fluids* **11**, 2187-2201.

16. Nazarenko, S., Kevlahan, N. K.-R. & Dubrulle, B. 1999 WKB theory for rapid distortion of inhomogeneous turbulence, *J. Fluid Mech.* **390**, 325–348

17. Protas, B., Babiano, A. & Kevlahan, N. K.-R. 1999 On geometrical alignment properties of two-dimensional forced turbulence. *Physica* D, **128**, 169–179.

18. Bonnet, J. P., Delville, J., Glauser, M. N., Antonia, R. A., Bisset, D. K., Cole, D. R., Fiedler, H. E., Garem, J. H., Hilberg, D., Jeong, J., Kevlahan, N. K.-R., Ukeiley, L. S. & Vincondeau, E. 1998 Collaborative testing of eddy structure identification methods in free turbulent shear flows. *Experiments in Fluids* **25**, 197–225.

19. Petitjeans, P., Robres, J. H., Wesfreid, J. E. & Kevlahan, N. 1998 Experimental evidence for a new type of stretched vortex. *Eur. J. Mech. B/Fluids* **17**, 549–560.

20. Kevlahan, N. K.-R. & Farge, M. 1997 Vorticity filaments in two-dimensional turbulence: creation, stability and effect. *J. Fluid Mech.* **346**, 49–76.

21. Kevlahan, N. K.-R. 1997 The vorticity jump across a shock in a non-uniform flow. *J. Fluid Mech.* **341**, 371–384.

22. Kevlahan, N. K.-R. & Hunt, J. C. R. 1997 Nonlinear interactions in turbulence with strong irrotational straining. *J. Fluid Mech.* **337**, 333–364.

23. Schneider, K., Kevlahan, N. K.-R. & Farge, M. 1997 Comparison of an adaptive wavelet method and nonlinearly filtered pseudo-spectral methods for two-dimensional turbulence. *Theoret. Comput. Fluid Dynamics* **9**, 191–206.

24. Farge, M., Kevlahan, N., Perrier, V. & Goirand, E. 1996 Wavelets and turbulence. *Proc. IEEE* **84**(4), 639–669.

25. Kevlahan, N. K.-R. 1996 The propagation of weak shocks in non-uniform flows. *J. Fluid Mech.* **337**, 161–197.

26. Kevlahan, N. K.-R., Hunt, J. C. R. & Vassilicos, J. C. 1994 A comparison of different analytical techniques for identifying structures in turbulence. *Appl. Sci. Res.* **53**, 339–355.

27. Kevlahan, N. K.-R. & Vassilicos, J. C. 1994 The space and scale dependencies of the self-similar structure of turbulence. *Proc. R. Soc. Lond.* A. **447**, 341–363.

28. Kevlahan, N. 1993 Rapid distortion of turbulent structures. *Appl. Sci. Res.* **51**, 411–415.

29. Ahlborn, B., Kevlahan, N. & Lefrançois, M. 1991 Coherence energies of turbulent-flow. *Physics Essays* **4**(3), 406–416.

Publications in conference proceedings

1. Kevlahan, N.K.-R. 2005 Topology change of vortices using stochastic differential equations In *Proceedings of third MIT conferences on computational fluid and solid mechanics*, (ed. K.J. Bathe), pp. 698–700. Elsevier.

2. Kevlahan, N., Vasilyev, O.V., Goldstein, D. & Jay, A. 2004 A three-dimensional adaptive wavelet method for fluid–structure interaction. In *Direct and Large-Eddy Simulation V*, (ed. B. J. Geurts, R. Friedrich & O. Métais). 147–154. Kluwer.

3. Goldstein, D., Vasilyev, O. & Kevlahan, N.K.-R. 2004 Adaptive LES of 3D decaying isotropic turbulence. In *Studying turbulence using numerical simulation databases - X, Proceedings of the 2004 summer program.* (ed. P. Moin, N. Mansour & P. Bradshaw), 14 pp. Stanford: CTR.

4. Kevlahan, N.K.-R., Simon, J., Tonnet, N. & Wadsley, J. 2004 Suppression of 3D flow instabilities in tightly packed tube bundles. *Proceedings of Flow-Induced Vibration 2004.* (eds. E. de Langre & F. Axisa), 6 pp.

5. Goldstein, D.E., Vasilyev, O.V., and Kevlahan, N.K.-R. 2003 Feasibility Study of an Adaptive Large Eddy Simulation Method. *16th AIAA Computational Fluid Dynamics Conference Paper* 2003–3551.

6. Kevlahan, N. & Vasilyev, O. 2001 An adaptive wavelet method for fluid–structure interaction. In *Direct and Large-Eddy Simulation Workshop 4: University of Twente*, (ed. B. J. Geurts, R. Friedrich & O. Métais), 142–145.

7. Vasilyev, O. & Kevlahan, N. K.-R. 2001 Hybrid wavelet collocation – Brinkman penalization method for complex geometry flows. In *7th ICFD Conference 2001 Proceedings, Oxford - March 26-29.* (ed. M.J. Baines), 509-515.

8. Kevlahan, N. K.-R., Vasilyev, O. & Cherhabili, A. 2000 An adaptive wavelet method for turbulence in complex geometries. In *16th Imacs World Congress 2000, Proceedings, Lausanne - August 21-25, 2000*, (ed. Michel Deville & Robert Owens), published by IMACS, 411-39.

9. Nazarenko, S.V., Kevlahan, N. K.-R. & Dubrulle, B. 2000 Nonlinear RDT theory of near wall turbulence. In *Advances in Turbulence VIII, Proceedings of the Eighth European Turbulence Conference, Barcelona, Spain, 2000-06-27 – 2000-06-30*, (ed. C. Dopazo), 629–632.

10. Cherhabili, A. & Kevlahan, N. K.-R. 2000 Computation of turbulent flow around periodic obstacles using a Krylov-spectral method based on Brinkman penalization. In *Advances in Turbulence VIII, Proceedings of the Eigth European Turbulence Conference, Barcelona, Spain, 2000-06-27 – 2000-06-30*, (ed. C. Dopazo), 997.

11. Kevlahan, N. K.-R. 1999 Flow through cylinder arrays calculated using d'Arcy penalisation. In *Proceedings of 17th Canadian Congress of Applied Mechanics CANCAM 99* (ed. S. Ziada & D. S. Weaver), 101–102.

12. Farge, M., Kevlahan, N., Bardos, C. & Schneider, K. 1998 Combining deterministic and statistical approaches to compute two-dimensional turbulent flows with walls. In *Monte Verita Lectures on Turbulence* (ed. A. Gyr & A. Tsinober). Birkhauser.

13. Farge, M., Schneider, K. & Kevlahan, N. K.-R. 1998 Coherent structure eduction in wavelet-forced two-dimensional turbulent flows. In *Proceedings of IUTAM symposium on dynamics of slender vortices, Aachen* (ed. E. Kause), pp. 65–83. Kluwer.

14. Koster, F., Griebel, M., Kevlahan, N. K.-R., Farge, M. & Schneider, K. 1998 Towards an adaptive wavelet-based 3D Navier–Stokes solver. In *Numerical Flow Simulation I* (ed. E. H. Hirschel), pp. 339–363. Vieweg.

15. Schneider, K., Kevlahan, N. K.-R. & Farge, M. 1998 An adaptive wavelet method compared to non-linearly filtered pseudo-spectral methods for two-dimensional turbulence. In *Advances in Turbulence VII* (ed. U. Frisch), pp. 147–150.

16. Kevlahan, N. K.-R. & Hunt, J. C. R. 1996 Nonlinear interactions in turbulence with strong irrotational straining. In *Advances in Turbulence VI* (ed. S. Gavrilakis, L. Machiels & P. A. Monkewitz), pp. 239–242. Dordrecht: Kluwer.

17. Hunt, J. C. R., Kevlahan, N. K.-R., & Vassilicos, J. C. 1994 Turbulence: a state of nature or a collection of phenomena? In *Progress in turbulence research*, (ed. H. Branover & Y. Unger), pp. 1–18. Washington: American Institute of Aeronautics and Astronautics, Inc.

18. Hunt, J. C. R. & Kevlahan, N. K.-R. 1993 Rapid distortion theory and the structure of turbulence. In *Proceedings of the Monte Veritá colloquium on turbulence* (ed. T. Dracos & A. Tsinober) Basel: Birkhauser.

19. Kevlahan, N. K.-R., Hunt, J. C. R. & Vassilicos, J. C. 1993 A comparison of different analytical techniques for identifying structure in turbulence. In *Eddy Structure identification in free turbulent shear flows,* (ed. M. N. Glauser & J.-P. Bonnet), pp. 311–324. Dordrecht: Kluwer.

20. Hunt, J. C. R., Kevlahan, N., Vassilicos, J. C. & Farge, M. 1993 Wavelets, fractals and Fourier transforms: detection and analysis of structure. In *Wavelets, fractals and Fourier transforms,* (ed. M. Farge, J. C. R. Hunt & J. C. Vassilicos), pp. 1–38. Oxford: Clarendon Press.

21. Kevlahan, N., Krishnan, M., Lee, S. 1992 Evolution of the shock front and turbulence structures in the shock/turbulence interaction. In *Studying turbulence using numerical simulation databases - IV, Proceedings of the 1992 summer program.* (ed. P. Moin, W. Reynolds & J. Kim), pp. 277–292. Stanford: CTR.

Contributions to books

1. Kevlahan, N.K.-R. 2005 Geometric, Stochastic and Algebraic Vortices. In *Vortex Dominated Flows and Related Fields: a volume celebrating Lu Ting's eightieth birthday* (ed. D. Blackmore), pp. 99-115. New Jersey: World Scientific.

2. Schneider, K., Farge, M.& Kevlahan, N.K.-R. 2005 Spatial intermittency in turbulence: a wavelet approach. In *Woods Hole Mathematics: Perspectives in Mathematics and Physics.* (eds. N. Tongring and R.C. Penner), pp. 302–328. New Jersey: World Scientific.

3. Farge, M., Kevlahan, N. K.-R., Perrier, V. & Schneider, K. 1999 Turbulence analysis, modelling and computing using wavelets. In *Wavelets and Physics.* (ed. H. van den Berg). Cambridge University Press.

Accepted for publication (in final form)

1. Mehra, M. & Kevlahan, N.K.-R. 2008 An adaptive multilevel wavelet solver for elliptic equations on an optimal spherical geodesic grid. To appear in *SIAM J. Sci. Comput.*

Submitted for publication
Other contributions

1. Kevlahan, N.K.-R. 2008 The Fields Symposium on the mathematics of transportation. *Fields Notes* **8**(3), 11.

Presentations at meetings

Invited conferences

1. "Second Canada–France Congress" (Montréal, Canada, 2008-06-01 – 2008-06-05). Two talks.

2. "Canadian Symposium on Fluid Dynamics" (Montréal, Canada, 2008-06-02 – 2008-06-04).

3. "ICIAM 2007 minisymposium: recent advances in vortex dynamics" (Zurich, Switzerland, 2007-07-16 – 2007-07-20).

4. "CAIMS 2007 Annual Meeting" (Banff, Alberta, Canada, 2007-05-20 – 2007-05-24). Two talks.

5. "Workshop on two-dimensional turbulence" (Lorentz Institute, Leiden, Netherlands, 2007-03-19 – 2007-03-23).

6. "Non-equilibrium statistical mechanics and turbulence" (Mathematics Research Centre, University of Warwick, UK, 2006-07-15 – 2006-07-21).

7. "Navier–Stokes and turbulence" (Wolfgang Pauli Institute, Vienna, Austria, 2006-04-09 – 2006-04-14) (declined).

8. "77th Annual Meeting of the Gesellschaft für Angewandte Mathematik und Mechanik e.V." (Berlin, Germany, 2006-03-27 – 2006-03-31).

9. "Canadian Mathematical Society Winter Meeting" (Victoria, Canada, 2005-12-10 – 2005-12-12).

10. "Third MIT conference on computational fluid and solid mechanics" (MIT, Cambridge, USA, 2005-06-14 – 2005-06-17).

11. "Informal turbulence day" (Isaac Newton Institute, Cambridge, UK, 2004-12-07).

12. "Wavelet and multiscale methods" (Oberwolfach, Germany, 2004-07-11 – 2004-07-17).

13. "16th Canadian Symposium on Fluid Dynamics" (Halifax, Canada, 2004-06-13 – 2004-06-15).

14. "Adaptive wavelet and multiscale methods for partial differential equations" (BIRS, Banff, Canada, 2004-06-03 – 2004-06-05). Given by my PhD student J. Alam on our joint work.

15. "Symposium on fluid Mechanics in the spirit of Tony Perry" (Kingston, Canada, 2004-05-05 – 2004-05-07).

16. "Euromech colloquium 454: LES, CVS & vortex methods" (CIRM, Luminy, France, 2004-04-14 – 2004-04-16).

17. "Immersed boundaries and penalization methods for vortex flows" (Grenoble, France, 2003-09-18 – 2003-09-20).

18. "SIAM/CAIMS Joint Meeting 2003" (Montréal, Canada, 2003-06-16 – 2003-06-20).

19. "Applicable Harmonic Analysis" (BIRS, Banff, Canada, 2003-06-04 – 2003-06-12).

20. "Southern Ontario Numerical Analysis Day (SONAD 2003)" (McMaster, Canada, 2003-05-02).

21. "CAIMS 2002" (Calgary, Canada, 2002-06-08 – 2002-06-10).

22. "1000 Island Fluids Meeting" (Gananoque, Canada, 2002-05-03 – 2002-05-05).

23. "New Trends in No-Slip Vortex Flows" (Eindhoven, Netherlands, 2001-09-17 – 2001-09-18).

24. "International conference on theoretical and numerical fluid mechanics II" (P1IMS, Vancouver, 2001-08-20 – 2001-08-24).

25. "Workshop on Partial Differential Equations in Mathematical Physics" (Fields Institute, Toronto, 2001-04-16 – 2001-04-20).

26. "American Mathematical Society Meeting: session on computational wavelet analysis" (Toronto, Canada, 2000-09-22 – 2000-09-24).

27. "Thousand Islands Fluid Dynamics Meeting" (Gananoque, Canada, 2000-05-05 – 2000-05-07).

28. "Workshop on nonlinear dynamics and group renormalisation group theory" (CRM, Université de Montréal, Canada, 1999-08-22 – 1999-08-27).

29. "Réunion de travail sur : Écoulements derrière un reseaux de cylindres" (École Normale Supérieure, Paris, France, 1999-06-18).

30. "Thousand Islands Fluid Dynamics Meeting" (Gananoque, Canada, 1999-05-01 – 1999-05-03).

31. "Fifth International Congress on Sound and Vibration" (University of Adelaide, Australia, 1997-12-15 – 1997-12-18).

32. Euromech Colloquium 364 "Dynamics and Statistics of Concentrated Vortices in Turbulent Flows" (Carry-le-Rouet, France, 1997-06-24 –1997-06-27).

33. "Dynamical Systems and Statistical Mechanics Methods for Coherent Structures in Turbulent Flows" (Santa Barbara, California, United States, 1997-02-12 – 1997-02-13).

34. "Statistics and Dynamics of Vortices in Geophysical Flows" (Cambridge, United Kingdom, 1996-10-21 – 1996-11-01).

35. "Nonlinear Systems Workshop on the analysis of scaling phenomena with multifractals and wavelets" (Kaap Doorn, Holland, 1996-05-02 – 1996-05-03).

36. "Programme sur les fonctions splines et la théorie des ondelettes. L'utilisation des ondelettes en physique." (Montréal, Canada, 1996-03-25 – 1996-03-29).

37. "Astrophysics and Geophysics Fluids: The impact of data on turbulence theories" (Paris, France, 1995-11-13 – 1995-11-14.).

38. “Réunion Franco-Allemande: Des equations Cinétiques aux Modèles de Turbulence” (Château de Goutelas, France, 1995-10-27 – 1995-10-31).

39. “Journées du PSMN: Quelques progrès récents dans la modélisation et la simulation des écoulements” (Lyon, France, 1995-06-26 – 1995-06-27).

40. IMA conference on “Multiscale stochastic processes analyzed using multifractals and wavelets” (Cambridge, United Kingdom, 1993-03-29 – 1993-03-31).

41. “Center for Turbulence Research Summer Program” (Stanford, United States, 1992-07-12 – 1992-08-08).

Contributed conferences

1. “BBVIV5” (Costa do Sauipe, Brazil, 2007-12-12 – 2007-12-15).

2. “58th Annual Meeting of the American Physical Society Division of Fluid Mechanics” (Chicago, USA, 2005-11-20 – 2005-11-22).

3. “International Workshop on Differential Equations and Dynamical Systems” (Guelph, Canada, 2005-07-29 – 2005-07-31).

4. “Vortex dynamics and field interactions (Euromech 448)” (Paris, France, 2004-09-06 – 2004-09-10).

5. “FIV 2004: flow induced vibrations” (Paris, France, 2004-07-06 – 2004-07-09).

6. “Direct and Large-Eddy Simulation-5” (Münich, Germany, 2003-08-27 – 2003-08-29).

7. “55th Annual Meeting of the American Physical Society Division of Fluid Mechanics” (Dallas, USA, 2002-11-24 – 2002-11-26).

8. “Turbulence : Measurements and Signals” (Cargèse, France, 2002-05-13 – 2002-05-25).

9. “Direct and Large-Eddy Simulation Workshop 4” (University of Twente, Netherlands, 2001-07-18 – 2001-07-20).

10. “16th Imacs World Congress 2000” (Lausanne, Switzerland, 2000-08-21 – 2000-08-25).

11. “IUTAM Symposium: Advances in Mathematical Modelling of Atmosphere and Ocean Dynamics” (Limerick, Ireland, 2000-07-02 – 2000-07-07).

12. “European Turbulence Conference VIII” (Barcelona, Spain, 2000-06-27 – 2000-06-30).

13. “52nd Annual Meeting of the American Physical Society Division of Fluid Mechanics” (New Orleans, USA, 1999-11-21 – 1999-11-23).

14. “CANCAM 99” (McMaster University, Hamilton, Canada, 1999-30-05 – 1999-03-06).

15. “Workshop on direct and large-eddy simulation” (Isaac Newton Institute, Cambridge, United Kingdom, 1999-12-05 –1999-14-05).

16. “51st Annual Meeting of the American Physical Society Division of Fluid Mechanics” (Philadelphia, USA, 1998-11-22 – 1998-11-24).

17. “Sixth European Turbulence Conference” (Lausanne, Switzerland, 1996-02-07 –1996-05-07).

18. CNRS, ONREUR “Wavelet Techniques and Applications” (Bordeaux, France, 1993-27-09 – 1993-10-01).

19. IUTAM Symposium "Eddy Structure Identification in Free Turbulent Shear Flows" (Poitiers, France, 1992-12-10 – 1992-14-10).

20. "Fourth European Turbulence Conference" (Delft, Holland, 1992-06-30 – 1992-07-03).

21. Euromech 288 "Turbulent Flows Undergoing Rotation and Distortion" (Lyon, France, 1992-04-06 – 1992-04-08).

Invited Seminars — 1997-

1. Seminar, Department of Engineering, University of Cambridge, Cambridge, UK (2008-03-13).
2. Seminar, Department of Chemical Engineering, McMaster University, Hamilton, Canada (2007-09-20).
3. AIMS/PHIMAC Seminar, Department of Mathematics & Statistics, McMaster University, Hamilton, Canada (2006-09-26).
4. Colloquium, Department of Mathematics & Statistics, McMaster University, Hamilton, Canada (2005-12-02).
5. Department of Applied Mathematics, University of Waterloo, Waterloo, Canada (2005-11-04).
6. SHARCNET Scientific Computing Seminar Series, McMaster University, Hamilton, Canada (2005-10-19).
7. Laboratoire des Écoulements Géophysiques et Industriels, Université de Grenoble, Grenoble, France (2005-06-02).
8. Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France (2005-05-20).
9. Department of Applied Mathematics & Theoretical Physics, University of Cambridge, UK (2005-03-11).
10. Aeronautical Engineering, Imperial College, London, UK (2005-01-27).
11. Mechanical & Manufacturing Engineering, Trinity College, Dublin, Ireland (2004-11-19).
12. Department of Applied Mathematics & Theoretical Physics, University of Cambridge (2004-11-08).
13. Fluid Dynamics Research Centre, University of Warwick, UK (2004-11-03).
14. Institut de Mathématiques, Université de Bordeaux I, France (2004-09-16).
15. Laboratoire de météorologie dynamique, École Normale Supérieure, Paris, France (2003-09-11).
16. Institut de Mathématiques, Université de Bordeaux I, France (2003-09-05).
17. University of Tennessee Space Institute, USA (2003-02-13) (cancelled).
18. Department of Mathematics, University of Toronto, Canada (2002-12-13).
19. Mechanical & Aerospace Engineering, University of Colorado at Boulder, Boulder, USA (2002-11-21).
20. Mechanical & Aerospace Engineering, Arizona State University, Phoenix, USA (2002-11-01).
21. Department of Mathematics & Statistics, McMaster University, Canada (2002-10-01).
22. Laboratoire de Modélisation et Calcul - IMAG, Université de Grenoble (2002-06-06).
23. Department of Mathematics, University College London, UK (2001-07-11).
24. Institut de Mathématiques, Université de Bordeaux I, France (2001-06-28). Two seminars.
25. L3M, Université de Provence, France (2001-06-15).
26. CMLA, École Normale Supérieure de Cachan, France (2001-05-17).
27. Mathematics Department, University of Toronto, Canada (2001-03-21).

28. Sibley School of Mechanical and Aerospace Engineering, Cornell University, USA (2001-02-20).
29. Department of Mechanical Engineering, McMaster University, Canada (2001-01-26).
30. Department of Mathematics & Statistics, McMaster University, Canada (2000-09-22).
31. Department of Physics, University of Toronto, Canada (1999-11-08).
32. Department of Mechanical Engineering, McMaster University, Canada (1999-10-26).
33. Boundary Layer Wind tunnel, University of Western Ontario, Canada (1999-04-30).
34. Department of Chemical Engineering, McMaster University, Canada (1998-10-15).
35. Laboratoire de Modélisation en Mécanique, Université Paris 6, France (1998-04-24).
36. Laboratoire de Physique et Mécanique des Milieux Hétérogènes, ESPCI, Paris, France (1998-01-16).
37. LadHyX, École Polytechnique, Palaiseau, France (1998-01-14).
38. Département de Physique, École Normale de Lyon, Lyon, France (1998-01-08).
39. School of Mathematics, Queensland University of Technology, Brisbane, Australia (1997-12-03).
40. Laboratoire de Modélisation en Mécanique, Université Paris 6, France (1997-10-21).
41. Institut de Mécanique des Fluides, Institut National Polytechnique, Toulouse, France (1997-09-24).
42. Department of Earth and Ocean Sciences, University of Victoria, Canada (1997-08-26).
43. Institute of Applied Mathematics, University of British Columbia, Vancouver, Canada (1997-08-14).
44. Institute of Ocean Sciences, Sidney, BC, Canada (1997-08-05).
45. Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada (1997-07-25).
46. Department of Aerospace Engineering, University of Southern California, Los Angeles, USA (1997-02-18).

Industrial Consultation

1993–1994 Evaluation of various turbulence models for the British consultants FRED.

1992–1994 Development of a 'code to calculate the propagation of a shock in a turbulent flow' for British Gas plc.

Collaborations

Jean-Paul Bonnet, CEAT/LEA, Université de Poitiers (1992-1994)

Bérengère Dubrulle, CNRS URA 2052, CEA/DAPNIA/SAp (1997–)

Marie Farge, LMD-CNRS, Ecole Normale Supérieure (1994–)

Michael Griebel, IAM, Universität Bonn (1996–1998)

Julian Hunt, DAMTP, University of Cambridge (1990–)

Sangsan Lee, CTR, Stanford University (1992)

Krishnan Mahesh, CTR, Stanford University (1992)

Sergey Nazarenko, University of Arizona (1997–)

Philippe Petitjeans, LPMMH, ESPCI (1997–1998)

Kai Schneider, ICT, Universität Karlsruhe (1996–)

Oleg Vasilyev, Mech. Eng., University of Missouri (1999–)

Christos Vassilicos, DAMTP, University of Cambridge (1991–1994)
