JONATHAN EVANS
Curriculum Vitae – September 2016

1. PERSONAL DETAILS

NAME   Dr. Jonathan David Evans.
CURRENT POSITION   Reader in Applied Mathematics.
DATE OF APPOINTMENT   1st Sept. 1999.
DEPARTMENT   Mathematical Sciences, University of Bath.

QUALIFICATIONS

UNIVERSITY   Merton College, Oxford University, Oxford, UK, 1984-1992.
DEGREES   Bachelor of Arts (B.A. Honours), Mathematics (first class) 1987.
                    Master of Arts (M.A.), Doctor of Philosophy (D.Phil.), Mathematics 1992.
PROFESSIONAL   Member of the Institute of Actuaries: Diploma in Actuarial Studies 2001, Certificate in Finance and Asset Management 2002, Certificate in Derivatives 2003.

CAREER

2008-present   Reader, Department of Mathematics, University of Bath, UK (current position).
2003- 2008   Senior Lecturer, Department of Mathematics, University of Bath, UK.
1999-2003   Mathematics Lecturer, Department of Mathematics, University of Bath, UK.
1997-1999   Mathematics Lecturer, Department of Mathematics and The Institute of Non-Newtonian Fluid Mechanics, University of Wales, Aberystwyth, UK.
1993-1996   Postdoctoral research position, Mathematical Institute, Oxford University, UK and the Department of Plasma Physics, Buenos Aires, Argentina.
1991-1993   Research Assistantship, Physiology Dept., Oxford University, UK.
1989-1997   Teaching Lectureship and College Tutor at Merton College, Oxford University, UK with a similar appointment held at St. Hilda's College, Oxford University in 1990-1991.
1987-1990   SERC CASE Studentship at the Mathematical Institute, Oxford University.
               Doctoral thesis: Control of stress fields in silicon device fabrication.
               Supervisor: Dr. A.B. Tayler (MBE)
1984-1987   Mathematics degree, Merton College, Oxford University.
               First class in Honour Moderations 1985, Postmaster scholarship prize 1985-1987 at Merton College, First class degree and college prize 1987.

2. RESEARCH PROGRAMME

Research Philosophy

(i)   Nature of my research: To undertake investigation into mathematical problems motivated by real world applications.
        The applications are usually physical problems associated with industrial processes within an engineering or financial setting. The mathematics involves formulating and analyzing appropriate mathematical models (primarily differential equations) to simulate and understand the processes under investigation. The mathematical analysis involves using both analytical and numerical techniques to obtain quantitative information.
(ii)   Reasons to pursue this research: Interest in mathematics, to further knowledge in mathematics and the applied sciences, and the fact that it is often of direct value and benefit to others (particularly other researchers, practitioners and end users). It also provides the opportunity to collaborate and engage with people with similar scientific interests.

(iii)   Key achievements:

- ResearcherID:
  Summary: 57 publications, 525 citations, h-index 13.

- Viscoelastic flows: Key benchmark problems in the field of rheology have been addressed in a series of articles (see Journal publications [24,25,26,28,33,34,36,39,40,41,42,47,48]). These address the determination of the singularity for certain nonlinear viscoelastic fluid models at sharp corners and more recently at the join of a solid and free surface. The article

  [47] Evans, J.D. (2013), "Stick-slip and slip-stick singularities of the Phan-Thien—Tanner fluid". J. Non-Newtonian Fluid Mechanics, 199, pp. 12-19. [192 Journal downloads in first four months of publication]

  is the first to address the stick-slip problem and builds upon the author's previous article contributions in the complex fluid field. In particular to solving another important benchmark problem of the re-entrant corner singularity addressed in:

  [41] Evans, J.D. (2010) "Re-entrant corner flow of PTT fluids with a solvent viscosity''. J. Non-Newtonian Fluid Mechanics, 165, pp 527-537. [3 citations]
  [25] Evans, J.D. (2005) "Re-entrant corner flows of Oldroyd-B fluids". Proc. Roy. Soc. A, 461, 2573-2603. [8 citations]
  [24] Evans, J.D. (2005) "Re-entrant corner flows of Upper convected Maxwell fluids". Proc. Roy. Soc. A, 461, 117-142. [13 citations].

- Free boundary problems: Journal publications [8-10,17-20,23,27,29-32,35,43-46,49] contain contributions to solving moving interface problems arising in a variety of engineering applications. Publications [19,38] are contributions to such problems in the field of finance. Main articles:

  [31] Evans, J.D., Galaktionov, V.A. and King, J.R. (2007) "Blow-up for the unstable sixth-order thin film equation". Nonlinearity, 20, 1799-1841. [citations 30 – named as a High Profile Journal Article]
  [30] Evans, J.D., Galaktionov, V.A. and King, J.R. (2007) "Source-type solutions of the unstable fourth-order thin film equation". EJAM, 18, 273-321. [citations 27]
  [27] Evans, J.D., Galaktionov, V.A. and Williams, J.F. (2006) "Blow-up and global asymptotics of the unstable Cahn-Hilliard equation with a homogeneous nonlinearity". SIAM J. Math. Anal., 38 (1), 64--102. [citations 25]
  [23] King, J.R. and Evans, J.D. (2005) "Regularization by kinetic undercooling of blow-up in the ill-posed Stefan problem". SIAM J. Appl. Math., 65(5), 1677-1707. [citations 11]
  [19] Evans, J.D., Kuske, R.A. and Keller, J.B. (2002) "Behaviour near expiry of American options with dividends". J. Math. Finance, 12(3), pp. 219-237. [citations 53]
  [17] Evans, J.D. and King, J.R. (2000) "Asymptotic results of the Stefan problem with kinetic undercooling". Quart. J. Mech. Appl. Math., Vol. 53(3), pp. 449-473. [citations 31].

- Nerve cell modeling: Contribution to this field in physiology are contained in Book Chapters [2,3] and Journal publications [1-7,11,14,21,22]. This was a successful collaboration with physiologists Prof. Julian Jack (FRS) and Dr Guy Major, trying to construct accurate models of individual nerve cells. Main article:

  [3] Major, G., Evans, J.D. and Jack, J. (1993) "Solutions for transients in arbitrarily branching cables: I. Voltage recording with a somatic shunt". Biophys. J., Vol. 65, pp. 423-449. [citations 58].

  Publications [2,3] are accompanied by an editor invited introductory article written by W. Rall (who first proposed the simplified model to account for dendritic branching in neurones).

- Geodesy: Articles [12,13] represented collaboration with Earth Scientist Prof Will Featherstone on geoid computation. Main article:

  [12] Featherstone, W.E., Evans, J.D. and Olliver, J.G. (1998) "A Meisll-modified Vanicek and Kleusberg kernel to reduce truncation error in geometric geoid computations". J. Geodesy, Vol. 72, pp. 154-160. [cited 37].

Industrial Contacts

Current:

1. Brian Crombie, SunChemcial, Rochdale UK. ICASE PhD sponsorship (2016-2019) on simulation of complex fluids.
2. GE Wellstream Oil & Gas, Newcastle, UK. Draw and free surface flows of complex polymeric fluids for pipeline coatings. Joint with Prof. Mike Webster, School of Engineering, Swansea University.
3. Dr David Worthington and Dr Jan Stene, DNVGL, London. MSc projects (2015, 2016) on Pool Fire Modelling.
4. Paul Childs, Emerson, Oxford, UK. MSc project (2016) on Reservoir Modelling.
5. Dr Dr S. Benbow, Quintessa (consultancy software firm), Henley-on-Thames. MSc projects (2004, 2007) on Groundwater flows and CO2 storage.
6. Dr. A. Nejim, Silvaco International, Silvaco Technology Centre, St. Ives, Cambridge, UK. MSc project (2009) on development of a viscoelastic silicon oxidation model for TCAD software.
7. Dr Nick Rayner, Met Office, Exeter, UK. MSc project (2016) on Modelling Sea Ice (arising from Industrial Think Tank with Industry event at Bath in Jan. 2016).

Past:

8. Dr J. Smith, CEH Dorset, Winfrith Technology Centre, Dorchester, UK. MSc project (2004) on Pollutant Dispersal.
9. Prof. C. Hill and Dr. S. Jones, Marconi Materials Technology Limited, Caswell, Towcester, Northamptonshire, UK. Silicon technology process modelling.
10. Andrew Smith, HBOS plc (Halifax and Bank of Scotland). Actuarial contact and MSc project (2004) on Derivatives.
11. Dr. R.R. Poznanski, Advanced Research Laboratory Hitachi Ltd., Hatoyama, Saitama, Japan. Nerve cell modelling.

Future Research Plans (further details in attached document)

To pursue investigation in the areas stated below, to maintain existing contacts and to establish new contacts (particularly related to the field of viscoelasticity, where future research emphasis will be concentrated):

1. **Complex fluids with memory:** Asymptotic and numerical solution of viscoelastic fluid models on benchmark problems in confined and free-surface flows.
   Academic links**:**
   - Institute of Non-Newtonian Fluid Mechanics and members of Prof. K. Walters (FRS) group.
   - Prof. M. Webster at the Dept. Engineering, Swansea University.
   - Prof. J. Cuminato's complex fluid group, including Professors Tome, Oishi and Sanchez de Paulo, University of Sao Paulo, Brazil.
   Industrial links:
   - SunChemical, Rochdale, UK.
   - GE Wellstream Oil & Gas, Newcastle, UK.

2. **Free boundary problems** arising in industrial applications. The following areas in particular:

   - **Engineering applications**: heat and mass transfer problems, semiconductor fabrication, concrete carbonation, structural composite modelling.
     Academic links:
     - Prof. J.R. King, Department of Theoretical Mechanics, University of Nottingham, UK.
     - Dr A. Muntean, University of Eindhoven, Netherlands.
     - Prof. Ragnar Larrson (Department Chair), Chalmers University, Sweden.

Industrial links:
- Dr A. Nejim, Silvaco, Cambridge, UK.
- Past contact with Prof. C. Hill and Dr. S. Jones, GEC-Marconi Materials Technology Limited, Caswell, Towcester, Northamptonshire, UK.

- **Finance**: Application of free boundary problems in models for pricing options and other derivative securities.
  Academic links:
    - Prof. R.A. Kuske, Department of Mathematics, University of British Columbia, Canada and Prof. J.B. Keller, Department of Mathematics, Stanford University, USA.
    - Prof. D. Hobson, Dept. of Math., University of Warwick and Prof. L.C.G. Rogers, Statistical Laboratory, Cambridge University.
  Past Industrial link:
    - Andrew Smith, HBOS plc.

3. **High order nonlinear evolutionary PDEs:** Fourth, sixth, eight and tenth order Cahn-Hilliard and thin-film type equations.
   Academic links**:**
   - Prof. V. Galaktionov, University of Bath.
   - Dr P Alvarez-Caudevilla, University of Carlos III, Madrid (current holder of a prestigious Cajal & Ramon Fellowship).

4. **Multi-level homogenization:** Applications of homogenization techniques in numerical computation of multilevel deterministic and stochastic problems.
   Academic link**:**
   - Prof. Rachel Kuske, University of British Columbia.

Past Research Interests

1. **Channel fluid flows**: Specifically the effect of temperature-dependent viscosity on fluid flows in channels with permeable walls. In collaboration with Dr. G. Gnavi and Dr. F. Gratton at the Department of Plasma Physics, University of Buenos Aires, Argentina.

2. **Exponential asymptotics**. Collaboration with Prof. J.R. King, Dr. G. Kember, Dept. of Applied Math., Dalhousie University, Canada and Prof. A. Fowler, Stokes Professor, University of Limerick, Ireland).

3. **Nerve cell modelling**: Specifically passive cable models for nerve cells. Academic collaboration with Prof. J.J.B. Jack (FRS) and his group at the Department of Physiology, Oxford University.

4. **Geodesy**: Geoid computation and modified kernel analysis. In collaboration with
   - Prof. W. Featherstone at the Faculty of Engineering, Curtin University, Perth, Western Australia.
   - Dr. J. Oliver at the Department of Earth Sciences, Oxford University, UK.
   - Prof. Petr Vanicek of the Department of Geodesy at the University of New Brunswick, Canada.

Publications

See attached list: 3 book chapters, 50 journal papers published, 8 refereed conferences.

Grants

1. EPSRC (2016): £40,473 Water Treatment Units for Rural Communities using 3-D Printing, Mathematical Modelling. Joint 9 month project with Chemical and Civil Engineering Departments at the University of Bath.
2. CASE PhD studentship (2016): £78,265 Asymptotic and numerical simulation of industrial flows of complex ink fluids. Industrial partner SunChemical (£43,750 contribution over 3.5 years).
3. Bath International Research Accelerator Scheme (2016): £15,000 Bath-Brazil Mathematical Sciences Partnership. Funding for a Rio 2017 Workshop for collaboration between the Institute de Matematica Pura e Applicada (IMPA, Rio), University of Sao Paulo (USP) and University of Bath.
4. Newton Fund, Royal Society (2015): £12,000 for 2 year international collaboration on complex fluids with Prof. Cuminato's group at the University of Sao Paulo, Brazil.
5. SPRINT FAPESP (2015/50094-7): £20,000 for 2 year international collaboration on Asymptotic and Simulation of Complex Fluids with the University of Sao Paulo, Brazil.
6. Bath International Funding Scheme (2015): £5000 travel to collaborate with Prof. Cuminato's complex fluids group in Sao Paulo, Brazil.
7. Spanish Ministry of Science (2012): 5000 euros for travel & consumables on the project "Higher order equations of parabolic and elliptic type". Administered by P. Alvarez-Caudevilla, Universidad Carlos III de Madrid, Spain.
8. LMS Postgraduate Conference (2012): £3000 for a 1 day postgraduate conference June 6 2012 on "Techniques for Multiscale Analysis". Organised as part of the ICMS workshop on "Scale transitions in Biology and Chemistry".
9. International Centre for Mathematical Sciences (ICMS) (January 2011): £25,000 for a workshop in June 2012 on "Scale transitions in Biology and Chemistry", joint with JR King (Nottingham), M Peletier and A Muntean (Eindhoven).
10. Royal Soc. Travel Grant (September 2010): £1683 for ICNAAM 2010 conference in Rhodes.
11. Nuffield Undergraduate Research Bursary (2010): £1400 for T. Begley on "The elastic limit of interpolated Maxwell models for fluids with memory".
12. Spanish Ministry of Science (2007): 20,000 euros for 1 year Post-Doc for P. Alvarez-Caudevilla, under grant no. CGL2006-00524/BOS.
13. SIAM travel grant (2007): £500 for attendance at the SIAM-SEAS meeting, University of Memphis, USA (May 2007).
14. Royal Society travel grant (2006): £1100 for attendance at the ICNAAM conference, Crete (Sept. 2006).
15. Member of the organizing committee for the 56th European Study Group with Industry, University of Bath (April 2006): £40,000 along with financial support from EPSRC and Smith Institute.
16. Member of the bid committee for EPSRC Masters Training Package (2001-2006) (bid leader Prof. CJ Budd): £500,000 (10 studentships over 5 year period) for the MSc in Modern Applications of Mathematics
17. The Nuffield Foundation, Lecturers Grant (1999): £4000 "Mathematical modelling in semiconductor manufacture".
18. The British Council in Australia, travel grant award for collaborative excellence (1998): £3000 "Generalized modification of Stokesian integration kernels in geoid computations".
19. Visiting Research Fellowship, Dalhousie University, Canada (1998): £4000.
20. Visiting Research Fellowship, Curtin University, Perth, Australia (1998): £3500.
21. College Research Fund, University of Wales, Aberystwyth (1998): £1600 "Generalized modification of Stokesian integration kernels in geoid computations".

Current submission:
1. Advanced Newton Fellowship (£110,000 over 3 years) for Prof. Cassio Oishi, Sao Paulo State University (submitted March 2016).

Past submissions:
2. Application with V Galaktionov as P.I. for a Royal Soc. Newton Fellowship (submitted Feb 2010) and ERC Marie Currie Fellowship (submitted in Aug. 2010) for research funding for P. Alvarez-Caudevilla.

3. Application in 2007 with P. Grindrod (Oxford) for EPSRC funding "Mathematical models for the injection, migration, and fate of carbon dioxide sequestered within geological formations".

Academic visitor

1. Department of Mathematics and Statistics (ICMC), University of Sao Paulo, Brazil (July 2016, Sept. 2015).
2. The Lorentz Center, Leiden University, Holland (Nov. 2008).
3. Department of Mathematical Sciences, University of Memphis, USA (May 2007).
4. Isaac Newton Institute, Cambridge, "Developments in Quantitative Finance" (July, 2005).
5. Visiting Research Fellow, Applied Math. Dept., Dalhousie University, Canada. (Jan-Feb. and July-Sept. 1998).
6. Visiting Research Fellow, Department of Spatial Sciences, Curtin University and Department of Geophysics, University of Western Australia, Perth, Australia (March-May 1998).
7. Instituto de Fisica del Plasma - CONICET, Universidad de Buenos Aires, Argentina (March – Nov. 1994   and Oct. 1995 - June 1996).
8. Department of Engineering Mathematics, Dalhousie University, Canada (Dec. 1993, May 1994, Dec. 1994).

Invited seminars & Colloquia

1. Workshop: Brazilian Mathematical Modelling Camp, July 4 – 9 2016, University of Sao Paulo. 33 PhD and Post-Doc students attended. FAPESP funded. Course Website: people.bath.ac.uk/masjde/teaching
2. Department of Mathematics and Statistics, University of Sao Paulo, Brazil (September 2015). Two talks:
   (i) The stick-slip singularity for Phan-Thien--Tanner and Giesekus fluids
   (ii) Modelling concrete carbonation.
3. Invited Teaching Session, Department of Management, Swansea University (April 2015). Topic: Mathematical modelling in Finance.
4. 10th American Institute of Mathematical Sciences Conference, Madrid (July 2014). Invited speaker to Special Session 32 on Applied Analysis and Dynamics in Engineering and Sciences. "Two-scale sharp interface models for concrete carbonation".
5. INNFM (Institute of Non-Newtonian Fluid Mechanics), Lake Vyrnwy Meeting (April 2014). Presentation on "Stick-slip singularity for Phan-Thien—Tanner fluids". Invited speaker at the session on Theoretical Rheology, celebrating the 80th birthday of Prof. K. Walters (FRS).
6. INNFM (Institute of Non-Newtonian Fluid Mechanics), Kavli Meeting at the Royal Society, Chicheley Hall (March 2013). Presentation on "Corner flows of some common viscoelastic fluids". Invited speaker at the session on Theoretical Rheology, celebrating the retirement of Prof. A.R. Davies.
7. ICNAAM, Kos, Greece (Sept. 2012). Presentation with A Fernandez on "Sharp-interface models for concrete carbonation". In minisymposium on "Multiscale methods and their application to the problems arising in complex system's modeling".
8. BAMC (British Applied Mathematics Colloquium), UCL (March 2012). Presentation with A Fernandez on "Single- and two-scale sharp-interface models for concrete".
9. ITN FIRST Network, Univ. of Bath, UK. "2m-th order thin-film equations'' Mid-term meeting (Dec 2011)
10. ICNAAM, Rhodes, Greece. Presentation on "Re-entrant corner singularity of the Phan-Thien-Tanner fluid". In minisymposium sessions 45 & 80 on "Modeling and Simulation in Food Processing & Non-Newtonian Fluid Flows" (Sept. 2010).
11. ICNAAM, Rhodes, Greece. Presentation on "The asymptotic behaviour at a re-entrant corner for a PTT fluid in the limit of small k". In minisymposium sessions 45 & 80 on "Modeling and Simulation in Food Processing & Non-Newtonian Fluid Flows" (Sept. 2010).
12. ICNAAM, Crete, Greece. "Re-entrant corner singularity of the Giesekus fluid" (Sept. 2009).
13. Annual European Rheology Conference, Cardiff. "Re-entrant corner behaviour of the Giesekus fluid with a solvent viscosity" (April 2009).
14. Department of Mathematics, Birmingham University. "Re-entrant corner singularity of viscoelastic fluids" (Feb. 2009).
15. Department of Mathematics, Cardiff University. "Re-entrant corner behaviour of some common viscoelastic fluids" (Dec. 2008).

16. Lorentz Center Workshop on PDE Approximations in Fast Reaction – Slow Diffusion Scenarios, Leiden University, Holland. "On the derivation of heterogeneous reaction kinetics from a homogeneous reaction model"(Nov. 2008).
17. 7th American Institute of Mathematical Sciences Conference, Arlington, Texas, USA (May 2008). Special Session 23 on Applied Analysis and PDEs in Engineering and Science Applications. "Corner flows of Phan-Thien—Tanner fluids".
18. International Conference of Industrial and Applied Mathematics, Zurich, Switzerland. "Re-entrant corner flow of Phan-Thien-Tanner fluids" (Aug. 2007).
19. 31st SIAM-SEAS Meeting, University of Memphis, USA. "Similarity solutions of the fourth and sixth-order unstable thin film equation" (May 2007).
20. International Conference on Numerical Analysis and Applied Mathematics, Crete, Greece. "Re-entrant corner flows of UCM fluids using the natural stress basis" (Sept. 2006).
21. International Conference of Applied Mathematics, Plovdiv, Bulgaria. "Re-entrant corner flows of UCM fluids using the Cartesian stress basis" (Aug. 2006).
22. Deutsche Bank, London. "Behaviour near expiry of American options" (Dec. 1999).
23. Department of Mathematical Sciences, University of Bath. "The Stefan problem with kinetic undercooling" (Oct. 1999).
24. Department of Theoretical Mechanics, University of Nottingham, UK. "Thin viscoelastic films" (March 1999)
25. Universities of Wales, Applied Mathematics Colloquium, Gregynog Hall, Wales. "The Stefan problem and kinetic undercooling" (May 1998).
26. Dept. of Mathematics, Aberystwyth University. "Free boundary problems arising in silicon oxidation" (Sept. 1997).
27. University of Buenos Aires: April 1995, a series of three seminars was presented outlining current research problems in the area of material science at OCIAM (Oxford Centre for Industrial and Applied Mathematics), Mathematical Institute, Oxford University, UK.
28. Mathematics Dept., University of Southampton, UK. "Passive cable modelling in nerve cells" (May 1993).
29. Applied Mathematics Dept., Dalhousie University, Nova Scotia, Canada. "Free boundary problems in semiconductor fabrication" (Dec. 1993).

Study Groups with Industry

- Second Brasilian Study Group with Industry, University of Sao Paulo, Brasil, July 2016.
- First Brasilian Study Group with Industry, University of Sao Paulo, Brasil, Sept. 2015.
- European Study Group with Industry, University of East Anglia, April 2012.
- European Study Group with Industry, University of Bath, April 2006.

External Professional Activities

- Elected in October 2015 Associate Member of the Institute of Non-Newtonian Fluid Mechanics.
- Member of the EPSRC Peer Review College 2005-2010.
- Member of the Institute of Actuaries. Actuarial Diploma 2001, Certificate in Finance and Asset Management 2002, Certificate in Derivatives 2003.
- Member of the Industrial Advisory Board for the MSc in Modern Applications of Mathematics– A board consisting of academic members and representatives from industrial firms.
- Referee for the following journals/publishers:

Proc. Royal Soc. A	Journal of Non-Newtonian Fluid Mechanics
SIAM J. Applied Mathematics	Journal of Stochastics and Finance
Journal of Engineering Mathematics	Biophysical Journal
European Journal of Applied Mathematics	Journal of Geodesy
Mathematical Reviews	Rocky Mountain J Math
IMA J Appl Math	Oxford University Press
Journal of Fluid Mechanics	AMS Mathematical Reviews
Fluid Dynamics Research	Journal of Mathematical Neuroscience
Discrete and Cont. Dynamical Systems--B	Applied Math. & Computation

- External PhD examiner:
  1. Mike Hsieh, School of Mathematical Sciences, Queensland University of Technology, Australia. "Mathematical modeling of controlled drug release from polymer micro-spheres: incorporating the effects of swelling, diffusion and dissolution via moving boundary problems" (Aug. 2012)
  2. Yilei Ren, Dept. of Mathematics, University of Nottingham. "Mathematical modelling of voltage-gated Ion Channels" (March 2010)
  3. Robert Jenkins, Dept. of Mathematics, University of Nottingham. "Deterministic and Stochastic Modelling of Chemical and Biochemical Reaction Kinetics" (Oct. 2008)
- Referee for tenure and promotions to Associate and Full Professorship (at the University of Memphis, USA).

Scholarship

- Mathematics degree prizes: 1985 and 1987 (Merton College, Oxford University)
- Postmaster scholarship prize 1985-1987 (Merton College, Oxford University)
- Visiting Research Fellowships: Applied Mathematics Dept., Dalhousie University, Canada. (Jan-Feb. and July-Sept. 1998) and Dept. of Spatial Sciences, Curtin University and Department of Geophysics, University of Western Australia, Perth, Australia (March-May 1998)
- International conferences session chair:
  - ICMS Workshop (2012) Multiscale Modelling in Chemistry and Biology. Organizer and chair during morning sessions on Wed, Thurs and Fri June 6-8.
  - ICNAAM Crete (2009): Session on Modelling of Materials and Simulation of Flows in Polymer Process Engineering
  - 31st SIAM-SEAS Conference, Memphis, USA (2007): Session on "PDE applications"
  - International Conference on Numerical Analysis and Applied Mathematics (ICNAAM), Crete (2006): Session on Asymptotic Methods.

3. TEACHING DUTIES

Teaching loads 2013-2016

Semester 2:
- (a) Lecture course: MA30059 Mathematical Methods 2 (and level 4 and 5 versions).
  Final year course in Mathematics.
  24 lectures, 10 problem classes, 110 students.
- (b) Lecture course: MA50176 Mathematical Modelling and Industrial Mathematics.
  MSc course, 24 lectures, 12 problem classes, 10 students, 2 assessed assignments.
- (c) MMath project.
- (d) MSc summer project supervision.

Teaching loads 2011-2013

Semester 1:
- (b) Lecture course: MA20220 Ordinary Differential Equations and Control.
  Second year course in Mathematics.
  24 lectures, 10 problem classes, 287 students.
- (b) Lecture course: MA40065 Viscous Fluid Mechanics.
  Final year course (MSc, third and fourth year students) in Mathematics/Mathematics and Physics.
  24 lectures, 8 problem classes, approx.. 90 students.

Semester 2:
- (a) Lecture course: MA50176 Mathematical Modelling and Industrial Mathematics.

MSc course, 24 lectures, 12 problem classes, 10 students, 2 assessed assignments.
(c) MSc summer project supervision.

Teaching Philosophy

To explain in simple and clear terms key concepts and core material. To help others to understand and encourage active participation and questioning. To motivate, encourage and communicate knowledge to others. To be approachable, friendly, understanding and listen to the concerns/difficulties of others. To cultivate an atmosphere that makes the learning process enjoyable. To always be open to new ideas, methods and suggestions of others. To always be professional and continue to improve.

Indication of achieving these aims is obtained through student feedback (questionnaires, comments), to an extent exam results and their subsequent continuation to higher degrees (MSc or PhD) or gaining relevant employment.

Teaching evaluation

Consistently good teaching reviews from students. Special commendations by the Staff/Student Liason Committee for good teaching results: documented in the minutes of the Courses Committee 2016-2009, 2005, 2004 as well as previous years. Student evaluation results are available at http://people.bath.ac.uk/masjde/cv

Postgraduate research supervision

(A) Postdoctoral Researcher:
- P Alvarez-Caudevilla (2007-2008) "On dipole solutions of unstable thin film equations". Funded under grant no. CGL2006-00524/BOS (Spanish Government research funding) and jointly supervised with Prof. V.A. Galaktionov (Dept. of Math. Sci.). Currently holds a prestigious Cajal and Ramon Fellowship Award in Spain (being ranked first in the 2015 mathematics submissions).

(B) Doctoral Research Students (Dept. of Math. Sci, University of Bath unless otherwise stated):
- Ben Boyle (Oct. 2012 - present) "Instabilities in Cahn-Hilliard and thin film flows".
- A. Fernandez (2009-2013) "Sharp interface models from homogeneous reaction-diffusion systems''.
- D.N. Sibley (2006-2009) "Viscoelastic flows of Phan-Thien-Tanner fluids". Currently lecturer in mathematics, Loughborough University after a Post-Doc at Imperial University.
- A. O'Byrne (2006-2010) "Re-entrant corner flows of Oldroyd-B fluids".
- J. Cook (2005-2009) "Asymptotic analysis of American-Style Options".
- D. Harwin (2003-2007) "Flows in Porous Channels".
- S. Holmes (1998-2002) "Synthetic gravity fields", Dept. of Spatial Sciences, Curtin University, Perth, Western Australia. Main supervisor Prof. W. Featherstone. Supervision was supportive giving mathematical guidance, during collaborative visits and remotely by email.
- S. Ferro (1994-1997) "Thermo-viscous fluid movement in channels with porous walls", Dept. of Plasma Physics, University of Buenos Aires. Principle supervisor Dr. G. Gnavi.

(C) Masters Research students (Dept. of Math. Sci, University of Bath unless otherwise stated):
- U. Ugwu (2015) "Modelling Pool Fires" (with company DNVGL).
- A.C. Harris (2009) "Viscoelastic models for silicon dioxide" (with company Silvaco).
- S. Jennings (2008) "Viscoelastic wedge flow of PTT fluids".
- J. Campbell (2007) "Modelling the injection of CO_2 into deep saline aquifiers" (with company Quintessa).
- D. Sibley (2006) "Viscoelastic flows of PTT fluids around sharp corners".
- E. Mann (2005) "Priciples of derivatives" (with company HBOS).
- S. Amer (2005) "Stochastic modeling of protein motions within cell membranes".
- J. Fairbairn (2004) "The diffusion of chemical ions in groundwater flow" (with company Quintessa).
- R. Fair (2004) "A two-dimensional model for pollutant dispersion in natural rivers" (with CEH Dorset).
- D. Harwin (2002) "Viscoelastic flows around a corner".

- S. Chow (2002) "A cable model for neurons with dendro-dendritic coupling".
- I. Tassoula (2002) "The CEV model for the pricing of American options with dividends".
- M. Fitzsimmons (2002) "The pricing of exotic American options with dividends".
- S. Dasso (1995-1996) "Oxidation process modelling in semiconductor fabrication", Dept. of Plasma Physics, University of Buenos Aires.

(D) MMath Project students (Dept. of Math. Sci, University of Bath unless otherwise stated):
- J. Swift (2015) Case studies in mathematical modelling.
- Summer project supervisor for T. Begley (2010) "The elastic limit of interpolated Maxwell models for fluids with memory". Nuffield Foundation Science Bursary.
- A. Fernandez (2009) Case studies in Industrial Mathematics.
- L. Parnell (2004) Viscous fluid flows in wedges.
- C. Wren (2002) Distributions and their applications.
- D. Harwin (2001) Continuum models in the applied sciences.
- T. Kumar (2001) Mathematical modelling: Case studies.
- M. Farely (2000) Lubrication theory for thin viscous films.
- C. Harding (2000) Lubrication theory for thin viscoelastic films.

Previous Teaching Experience

1. Eight years lecturing and tutoring experience to undergraduates in applied mathematics at the University of Oxford. Subjects taught include: Differential and Integral Equations, Partial Differential Equations, Probability and Statistics, Classical Mechanics, Fluid Dynamics (including Viscous Flow), Numerical Analysis
2. Participation in the Oxford University undergraduate admissions process: interviewing and selecting candidates, marking of entrance examinations
3. Course lecturer for the Mathematical Modelling course and problem classes (1993-1994) on the MSc in Mathematical Modelling and Numerical Analysis at the Mathematical Institute, Oxford University.
4. University of Buenos Aires: Aug./Sept. 1994, a six week graduate seminar series was given on "Asymptotic Analysis"
5. 1997-1999: Lecturing and teaching of undergraduate courses at the Department of Mathematics, University of Wales, Aberystwyth. Conducted undergraduate interviews and Mathematics degree examiner
6. 1999-2011: Lecturing and teaching of undergraduate and graduate courses at the Department of Mathematical Sciences, University of Bath. Undergraduate courses taught include: final year Viscous Fluid Mechanics, final year Mathematical Biology 2, first and second year mathematics courses for Chemical Engineering. Graduate course includes Mathematical Modelling and Case Studies in Industrial Applied Mathematics

4. ACADEMIC MANAGEMENT AND ADMINISTRATIVE DUTIES

(i)   2008-2016 Director of Studies for Service Teaching. Duties involve all aspects connected with mathematics units taught by the Mathematical Sciences Department for other Departments in the University of Bath: examination paper checking, chairing examiners meetings, updating/modifying existing units, proposing new units, interviewing and selecting candidates for teaching fellowships.

(ii)   Mentor for new lecturers: 2008-2011 Dr N. Dirr, 2014-2016 Dr Z. Wang.

(iii)   2001-2007 Director of Studies for two new MSc degrees: the EPSRC funded MSc in Modern Applications of Mathematics (MAM) and initially the unfunded MSc in Mathematical Sciences (MMS).

Course numbers from 2001-2006: 59 students in total on the MSc in MAM.

Duties have involved: initial construction and implementation of the MSc in Modern Applications of Mathematics (as well as the MSc in Mathematical Sciences), presentations to prospective applicants and the Dean, preparing administrative and course documentation (letters, forms, prospectuses, programme specification), processing of applications and interviewing applicants, allocating personal

tutors, advising students on units, ensuring implementation of course specifics (syllabus, required unit choices, examination format, reading courses, projects, second examiners/checkers), examination board duties, MSc steering committee.

(iv)   2000-2006. Preprint editor of the department's mathematics preprint series.

(v)   Ph.D. internal examiner for I. Beardmore, A. Leger, A. Hill, S. Singh.

(vi)   Served on the Department's Courses Committee (2001-2007, 2008-2015).

(vii)   New initiatives in addition to (i): A new course "Advanced Mathematical Methods" was proposed to augment current units for both MSc degrees, the MMath degree and postgraduate courses. Syllabus details, aims and objectives were prepared in consultation with other members of staff. New advanced final year fluid mechanics course with modifications to existing course and syllabus is proposed for introduction in 2016/2017 academic year.

(viii)   Estimate of hours spent per annum on administrative duties: 300 hours.

5. REFEREES

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