

CURRICULUM VITAE

FULL NAME John Macleod BALL.

DATE AND PLACE OF BIRTH 19 May 1948; Farnham, Surrey, U.K.

FAMILY SITUATION Married with 3 children.

EDUCATION AND POSITIONS HELD

1961-65 Mill Hill School, London NW7.

1966-69 St John's College, Cambridge.

1969-72 School of Applied Sciences, University of Sussex.

1972-74 Department of Mathematics, Heriot-Watt University and Lefschetz Center for Dynamical Systems, Brown University, Providence, R.I., USA (Science Research Council postdoctoral research fellowship).

1974-78 Heriot-Watt University, Lecturer in Mathematics.

1978-82 Heriot-Watt University, Reader in Mathematics.

1980-85 Science and Engineering Research Council Senior Fellow.

1982-96 Heriot-Watt University, Professor of Applied Analysis.

1996- Sedleian Professor of Natural Philosophy, University of Oxford, and Fellow of The Queen's College.

1998 - Honorary Professor, Heriot-Watt University

VISITING POSITIONS

1979-80 Visiting Professor, Department of Mathematics, University of California, Berkeley.

1987-88 Visiting Professor, Laboratoire d'Analyse Numérique, Université Pierre et Marie Curie, Paris.

1990 Ordway Visiting Professor, University of Minnesota.

1992 Visiting Professor, Université Paris Dauphine.

1993-94 Visiting Professor, Institute for Advanced Study, Princeton (organizer of year on Mathematics in Materials Science).

1994 Visiting Professor, Laboratoire d'Analyse Numérique, Université Pierre et Marie Curie, Paris.

1996 Ordway Visiting Professor, University of Minnesota.

2000 Visiting Professor, University of Crete.

2001 Visiting Professor, Tata Institute for Fundamental Research Bangalore.

2002-03 Member, Institute for Advanced Study, Princeton.

2003 Visiting Professor, Université Montpellier II.

2004 Visiting Professor, University of Chile, Santiago.

2009 Visiting Professor, Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie, Paris.

ACADEMIC QUALIFICATIONS

Open Exhibition in Mathematics to St John's College, Cambridge.

Honours Degree in Mathematics, Cambridge University.

D.Phil. in Mechanical Engineering (supervised by Professor D E Edmunds, Mathematics Division), University of Sussex.

OTHER EMPLOYMENT

A total of 1 year's experience (during 1965-67) systems analysis in the Mathematical Services Department, British Aircraft Corporation, Weybridge, Surrey.

AWARDS, FELLOWSHIPS

Fellow of Royal Society of Edinburgh (elected 1980).
Whittaker Prize of Edinburgh Mathematical Society 1981.
Junior Whitehead Prize of London Mathematical Society 1982.
Fellow of Royal Society of London (elected 1989).
Keith Prize, Royal Society of Edinburgh, 1990.
Honorary Degree, Ecole Polytechnique Fédérale de Lausanne, 1992.
Naylor Prize of London Mathematical Society, 1995.
Honorary D.Sc., Heriot-Watt University, 1998.
Theodore von Karman Prize of the Society for Industrial and Applied Mathematics, 1999.
Associé Etranger, Académie des Sciences, Paris, (elected 2000).
Honorary D.Sc. University of Sussex, 2000.
David Crighton Medal, jointly awarded by the Institute of Mathematics and its Applications and the London Mathematical Society, 2003.
Honorary D.Sc. Université Montpellier II, 2003.
Fellow, Institute of Mathematics and its Applications, 2003.
Honorary D.Sc. University of Edinburgh, 2005.
Foreign Member, Istituto Lombardo, 2005.
Knighthood, 2006.
Royal Medal, Royal Society of Edinburgh, 2006.
Foreign Member, Norwegian Academy of Science and Letters, 2007.
Honorary Member, Edinburgh Mathematical Society, 2008.
Member. Academia Europaea, 2008.

CURRENT EDITORIAL POSITIONS

Chief Editor (with R.D. James), Archive for Rational Mechanics and Analysis
Member of Editorial Boards of: *Analyse Nonlinéaire* (Institut Henri Poincaré); *Annali di Matematica Pura ed Applicata*; *Applicable Analysis*; *Calculus of Variations and Partial Differential Equations*; *Control, Optimization and Calculus of Variations*; *Dynamics and Differential Equations*; *Journal of Differential Equations*; *Mathematics in Action*; *Journal de Mathématiques Pures et Appliquées*; *Mathematical Methods and Models in Applied Science*; *Tbilisi Mathematical Journal*.
Editor, Oxford Mathematical Monographs, Oxford Lecture Series in Mathematics and its Applications (Oxford University Press).
Consulting Editor, World Scientific Series in Applied Analysis.
Editorial Board, *Unione Matematica Italiana Lecture Notes Series*.

PAST EDITORIAL POSITIONS

Executive editor, Proceedings A, Royal Society of Edinburgh, 1987-92.
Member of Editorial Boards: *Archive for Rational Mechanics and Analysis*, *Interfaces and Free Boundary Problems*, *Journal of Elasticity*, *Mathematical Modelling and Numerical Analysis*, *Differential Equations and Applications*, *Physica D*, *Proceedings Royal Society of London*.
Consulting Editor, Birkhauser series on Progress in Nonlinear Differential Equations and their Applications, 1989-94.

CURRENT PROFESSIONAL ACTIVITIES

National and International

Member of Executive Committee and Past-President of International Mathematical Union (IMU), 2007-10.
Chair, IMU Committee on Electronic Information and Communication (CEIC)
Programme Committee, International Centre for Mathematical Sciences, Edinburgh, 1991-.
Member, Board of Governors and Scientific and Academic Advisory Committee, Weizmann Institute, Rehovot, Israel, 1998-.
Council, Weizmann Institute Foundation, 2000-.
Conseil de Recherche et de l'Enseignement, École Polytechnique, Palaiseau, 2001-
Chair, Scientific Steering Committee (and Member of Management Committee, National Advisory Board), Isaac Newton Institute, 2006-
Member, EPSRC College.
Trustee of MARM (Mentoring African Research in Mathematics project (of IMU, LMS, AMMSI, funded by Nuffield Foundation and Leverhulme Trust).

Oxford

Vice-Chairman, Mathematical Institute.
Director, Oxford Centre for Nonlinear PDE.
Mathematical Institute Executive Committee
Mathematical Institute Development Committee
Mathematical Institute Building Committee
Member, Divisional Board MPLS.

PAST PROFESSIONAL ACTIVITIES

National and International

U.K. Delegation to General Assembly of International Mathematical Union, 1986, 1994, Chief Delegate 1998.
President, Edinburgh Mathematical Society, 1989-90
Sectional Committee 1, Royal Society, 1990-93.
Steering Committee, International Centre for Mathematical Sciences, Edinburgh, 1991-96.
Scientific Advisory Board, Isaac Newton Institute, Cambridge, 1991-95.
Council of London Mathematical Society, 1992-93, 1995-96.
Partial Differential Equations Sectional Panel for International Congress of Mathematicians, 1994.
Council, Engineering and Physical Sciences Research Council, 1994-99.
Scientific Board, Basic Research Institute in the Mathematical Sciences (Hewlett-Packard), 1994-2001.
Jury Senior de l'Institut Universitaire de France, 1996.
Applied Nonlinear Systems Panel, EPSRC, 1996-97.
President of London Mathematical Society, 1996-98.
Conseil Scientifique, l'Institut Henri Poincaré, 1996-2000.
Scientific Committee, CNRS UMR, Lyon, 1997.
Member, 1998 Fields Medal Committee of the International Mathematical Union.
President 1998-99, Mathematics Section, British Association for the Advancement of Science.
Chair of Nominating Committee, London Mathematical Society, 1999.
Evaluation Panel for Department of Mathematics, Ecole Polytechnique Fédérale de Lausanne, 1999.
Nominating Committee of London Mathematical Society, 1999-2001.
Chair of Review Panel, Isaac Newton Institute, 1999.
Chair, Mathematics Advanced Fellowships Panel of EPSRC, 2000-01.
Science Steering Committee, National Institute for Environmental eScience, Cambridge, 2001-2.
Member, CNRS Review Panel, Mathematical Institute of Toulouse, 2002.
Program Committee, International Congress of Mathematicians, Beijing, 2002.
Member, Peter Gruber Foundation Cosmology Prize Committee (IMU representative), 2002-04.
Member of first Abel Prize Committee, 2002-03.

Member, Selection Committee for position at ICTP, Trieste, 2004.
President, CNRS Evaluation Committee, Centre de Mathématiques Appliquées, Ecole Polytechnique, 2004.
International Council for Science, 2003-06
President, International Mathematical Union 2003-06.
Chair, Fields Medal Committee, 2006.
Chair, Review Committee, Department of Mathematics, Politecnico di Milano, December 2007
Programme Committee, 2008 European Congress of Mathematics.
Chair, AERES Evaluation Committee, for the mathematics laboratories of the Universities Paris 6 and 7, at Chevaleret, 2008.
Member, Evaluation Committee for School of Mathematics, Institute for Advanced Study, Princeton, 2008.
Member of various Chair Selection Committees, e.g. at Cambridge, Loughborough, St Andrews, Dundee, Kent, Sussex, Warwick, ETH Zurich.

Oxford

Electoral Board for Chair in Numerical Analysis 1996-97
Selection Panel for University Lectureship in Applied Mathematics 1997.
Selection Panel for Praelectorship in Applied Analysis, Lincoln College 1997.
Selection Panel for Hardy Junior Research Fellowship, New College, 1998.
Selection Panel Junior Lectureship in Mathematics 1998.
Electoral Board, Chair in Mathematics and its Applications
Electoral Board, Wallis Chair.
Selection Panel GCHQ Research Fellowship, Merton College, 2000.
Committee of Management, Glasstone Benefaction 1997-2001.
Selection Panel for University Lectureship in Nonlinear Analysis, 2002.
Convener, Mathematical Institute Colloquium, 1998-2002.
Delegate, Oxford University Press 1998-2008.
Chair, Research Committee of Mathematical Institute 2000-2008

MAJOR CONFERENCE ORGANIZATION

Systems of Nonlinear Partial Differential Equations, NATO ASI, Oxford, 1982.
The Mathematics of Nonlinear Systems (co-organiser J.F. Toland), Bath, 1991.
Mathematical Problems in Materials Science, International Centre for Mathematical Sciences special year, 1991-92.
Mathematical Continuum Mechanics (co-organisers R.D. James, A. Mielke), Oberwolfach 1997.
Euroconference, New Mathematical Methods in Continuum Mechanics (co-organiser S. Müller), Anogia, Crete, 2000.
Mathematical Continuum Mechanics (co-organisers R.D. James, S. Müller), Oberwolfach 2000.
Instructional Conference on Nonlinear Partial Differential Equations, ICMS 2001 (co-organisers M.J. Esteban, J.F. Toland)
Progress in Partial Differential Equations, ICMS 2001, (co-organisers A. Grigoryan, S. Kuksin)
Conference on Nonlinear Partial Differential Equations in Continuum Physics (in honour of 60th birthday of C.M. Dafermos), Heidelberg, 3-6 December 2001.
Quasiconvexity and its applications, Princeton, 14-16 November 2002 (co-organisers Weinan E., R.V. Kohn, S. Müller).
PDE and Materials, Oberwolfach, 7-13 September 2003 (co-organisers: R.D. James, S. Müller).
PDE and Materials, Oberwolfach, 24-30 September 2006 (co-organisers: R.D. James, S. Müller).

CURRENT MAJOR RESEARCH GRANTS

EU RTN Multimat Network MRTN-CT-2004-505226 2004-08, total for network 3.7 million euro.

Principal Investigator, New Frontiers in the Mathematics of Solids, EPSRC Critical Mass grant, £1.16 million, 2006-11.

Principal Investigator, Analysis of Nonlinear Partial Differential Equations, EPSRC Science and Innovation Grant, £2.78 million, 2007-13.

Principal Investigator, Equilibrium Liquid Crystal Configurations, EPSRC Standard Research Grant, £314K, 2006-10.

Ph.D STUDENTS

G.Andrews 1979, B.Dacorogna 1980, M.C.Calderer 1981, J.C.Currie 1983, J.Sivaloganathan 1984, N.C.Owen 1986, P.J.Davies 1987, S.Müller 1989, P.Lin 1990, G. Friesecke 1993, G.J. Ruddock 1994, A. Taheri 1998, Z. Iqbal 1999, A. Forclaz 2002, J.J. Bevan 2003, M. Jungen 2005

Current Ph.D. students: B. Muite, Y. Sengul, B. Tsering Xiao, D. Henao, K. Koumatos

SELECTED INVITED LECTURES IN LAST 5 YEARS

The regularity of minimizers in elasticity, DiPerna Memorial Lecture, Berkeley, 30 January 2003.

Compatibility, microgeometry and materials, Plenary lecture, 24th Brazilian Mathematical Colloquium, Rio de Janeiro, 30 July 2003

Mathematical models of martensitic microstructure, Plenary lecture, European Symposium on Martensitic Transformations, Cranfield University, 19 August 2003.

The regularity of energy minimizers in elasticity, Workshop on Geometry, Elasticity and Gravitation, Albert Einstein Institute, Golm, 9 October 2003.

Global attractors for semiflows without uniqueness, Workshop on Computational Modelling in Dynamical Systems, Budapest, 14 October 2003.

Incompatibility of gradients and quasiconvexity, Workshop on Nonlinear Analysis and Numerics, Bonn, 28 October 2003.

Incompatibility and quasiconvex functions, International Colloquium on Theoretical and Numerical Nonsmooth Mechanics, Montpellier, 19 November 2003.

Global attractors for semiflows without uniqueness, International Conference on Mechanics and PDEs - On the occasion of Marshall Slemrod's 60th Birthday, University of Wisconsin, Madison, 30 April 2004.

Compatibility and crystal microstructure, Fourth SIAM Conference on Mathematical Aspects of Materials Science, Los Angeles, 22 May 2004.

Quasiconvexity and compatibility, International Conference on Mathematics and its Applications (in honour of 60th birthday of Roderick Wong), City University, Hong Kong, 28-31 May 2004.

Nucleation of phases and local minimizers of energy IUTAM Symposium on Size Effects on Material and Structural Behavior at Micron- and Nano-scales, The Hong Kong University of Science and Technology, Hong Kong, 31 May - 4 June, 2004.

Compatibility and Crystal Microstructure, PACOM2004, Tunis, 1 September 2004.

Compatibility and phase nucleation, Trends in the Calculus of Variations, Parma, September 15 - 18, 2004.

Attractors for semiflows without uniqueness, and *Mathematical models of crystal microstructure*, Pathways Lecture Series, Keio University, 3-4 October 2004.

Microstructure Formation and Morphology in Crystals, GAMM Conference, Luxembourg 28 March - 1 April 2005.

Open problems in the calculus of variations and elasticity, Mathematics 2005, Liverpool, 4 April 2005.

Open problems in elasticity, Third M.I.T. Conference on Computational Fluid and Solid Mechanics, MIT, 14-17 June 2005.

Phase nucleation in solids, Global methods for nonlinear differential equations, in honour of 60th birthday of Charles Stuart, Lausanne, 22 June 2005.

Quasiconvexity, compatibility of gradients and phase transformations, 70th anniversary meeting of Chinese Mathematical Society, Weihai, China, 27 July 2005.

Analysis and computation of crystal microstructure, International Conference on High Performance Scientific Computing, Hanoi, 5 March 2006.

Energy Minimization and Singularities: A Guided Tour of the Calculus of Variations and Its Applications to Nonlinear Materials, William Benter Distinguished Lecture Series, City University of Hong Kong, 10 March 2006.

Energy minimization and singularities: a guided tour of the calculus of variations and its applications to nonlinear materials, Inaugural Lecture, International Symposium: Mathematics for the 21st Century, Madrid, 3 May 2006.

Energy minimization and singularities: a guided tour of the calculus of variations and its applications to nonlinear materials, Geometry and Mechanics, University of Surrey, 14 June 2006.

Singularities in nonlinear continuum mechanics, Plenary Lecture, DMV Annual Meeting, 22 September 2006.

Mathematical Problems of Liquid Crystals, Lecture Course, Fourth Summer School in Analysis and Applied Mathematics, Rome, June 11-15, 2007.

Open problems of nonlinear elasticity, Invited lectures, Course on Poly-, Quasi- and Rank-One Convexity in Applied Mechanics, CISM, Udine, September 24-28, 2007.

Orientability for liquid crystal director fields, Journées de mathématiques appliquées l'occasion du 60ème anniversaire de François Murat Paris, 4 October 2007.

Orientability of director fields for liquid crystals, Function Theory and Nonlinear Analysis, on the occasion of the 60th birthday of Tadeusz Iwaniec, Ischia, 12 October 2007.

Orientable and non-orientable director fields for liquid crystals, ICMC Summer meeting on Differential Equations, in honour of the 80th birthday of Jack Hale, São Carlos, Brazil, 31 January 2008.

Mathematical problems of liquid crystal theory, Hungarian Academy of Sciences mini-Conference, Budapest, 18 April 2008.

Poincaré, Perelman and Prizes and Mathematical problems of liquid crystal theory, Maseeh lectures, Portland State University, 15, 16 May 2008.

Poincaré, Perelman and Prizes and Mathematical problems of liquid crystal theory, Distinguished Lectures Series, Department of Mathematics, University of Athens, 30, 31 October 2008.

Interfaces and interfacial energy, Conference in honour of 70th birthday of Philippe G. Ciarlet, City University, Hong Kong, 5 December 2008.

SEMINARS

At the following universities:

Aberdeen, Academia Sinica (Taipei), Amsterdam, Antwerp, Australian National University, Bangalore, Bangor, Bath, Beijing (Peking, Tsing Hua, Academia Sinica), Berlin, Berkeley, Bonn, Bristol, Brown, Cambridge, Carnegie-Mellon, Chicago, Columbia, Courant Institute, Delft, Delhi, Duke, Dundee, Edinburgh, Essex, Florence, Glasgow, Grenoble, Guwahati, Heidelberg, Houston, Imperial College, Kent State, Kentucky, Kyoto, EPFL Lausanne, Leiden, Leipzig, Leningrad, Liverpool, Lyngby, Macquarie, Maryland, Minnesota, Modena, Monash, Moscow, Mumbai, Nancy, Naples, Newcastle, New Jersey Institute of Technology, New South Wales, Nottingham, Nottingham Trent, North Carolina State, Oregon State, Oxford, Paris (Collège de France, Dauphine, Paris 6, Orsay), Pavia, Pennsylvania, Penn State, Pisa, Princeton, Rome, Rutgers, St. Andrews, Santa Barbara, Shanghai (Fudan), Shillong, Stanford, Strathclyde, Stuttgart, Sussex, Swansea, Syracuse, Taiwan National University, Temple, Toulouse, University College, Warsaw, Warwick, Wisconsin, Yerevan, York, Xian (Jiaotong), ETH Zurich.