Alison Ramage: Summary Curriculum Vitae

Department of Mathematics and Statistics
University of Strathclyde
Glasgow, G1 1XH

Phone: (+44) 141 548 3801
Email: A.Ramage@strath.ac.uk
URL: http://personal.strath.ac.uk/a.ramage/

Education

Ph.D. University of Bristol, Mathematics (1991)
B.Sc. Honours (First Class) University of St Andrews, Mathematics (1987) (5 Class Medals)
Alva Academy, Alva (Dux Medal 1982)

Professional Experience

Department of Mathematics and Statistics, University of Strathclyde, Glasgow, Scotland
- Reader in Industrial and Computational Mathematics (2007-Present)
- Senior Lecturer in Industrial and Computational Mathematics (2003-2007)
- Lecturer in Industrial and Computational Mathematics (1993-2003)

Department of Mathematics, University of Bristol, Bristol, England
- Research Assistant funded by the UK Science and Engineering Research Council and Nuclear Electric (1990-1993)

Awards and Honours

Leverhulme Trust Research Fellowship, *Preconditioning for Novel Data Assimilation Problems* (2017-2018)
Fellow of the Institute of Mathematics and its Applications (2008)
Engineering and Physical Sciences Research Council Springboard Fellowship (with Hewlett-Packard), *Adaptive Methods for Liquid Crystal Device Modelling* (2005-2006)
Leverhulme Trust Visiting Fellowship, *Iterative Methods for Flow Problems*, Dept of Computer Science, University of Maryland (1999-2000)
Visiting Professorship, Department of Information Technology, Uppsala University, Sweden (1998-2016)

Summary of Research Grants and Contracts

Over £1.5M of funding as principal/co-investigator for research, travel and knowledge exchange since 1993, including 13 grants from the UK Engineering and Physical Sciences Research Council (£1.1M); two personal Fellowships from the Leverhulme Trust (£60K), and international grants from the Swedish Research Council for Engineering Sciences, NATO and the British/German Academic Exchange Service (£18K).

Editorial Activities

Associate Editor, SIAM Journal of Matrix Analysis and Applications (2018 - present)
Associate Editor, Research Spotlights, SIAM Review (2016 - present)

Membership of Professional Societies

Society for Industrial and Applied Mathematics (since 1989)
Edinburgh Mathematical Society (since 1993)
Institute of Mathematics and its Applications (Fellow since 2008)
European Women in Mathematics (since 2010)
International Linear Algebra Society (since 2020)

Service to Professional Societies

Edinburgh Mathematical Society (since 1993)
- Member of General Committee (2001-2004)

International Linear Algebra Society (since 2020)
- Member of Nominating Committee (2020)

Society for Industrial and Applied Mathematics (since 1989)
- Member, Board of Trustees Executive Committee (2021 - present)
- Member, Finance Committee (2021 - present)
- Elected Member, Board of Trustees (2019 - present)
- Elected Vice Chair of the Activity Group on Linear Algebra (2016 - 2018)
- Member, Committee on Programs and Conferences (2106 - 2018)
- Member, Gene Golub Summer School Committee (2015 - 2018)
- Co-founder and Faculty Adviser, Strathclyde Student Chapter (2011 - 2016)
- Elected Member, Council (2007-2009)
- Elected Secretary/Treasurer, UK and Eire Section (2002 - 2004)

Selected Invited Plenary Talks

Householder Meeting on Numerical Linear Algebra, Fasano, Italy, 2022

Hong Kong Baptist University Faculty of Science 60th Anniversary, online, 2021

Optimization and low-rank solvers for discretized PDEs, Bologna, Italy, 2020

Numerical Linear Algebra for PDEs and Large Scale Optimization, Padua, Italy, 2020

GAMM Workshop on Applied and Numerical Linear Algebra, Chemnitz, Germany, 2019

6th IMA Conference on Numerical Linear Algebra and Optimization, Birmingham, UK, 2018

International Conference On Preconditioning Techniques For Scientific And Industrial Applications, Vancouver, 2017

International Conference on Numerical Algebra and Scientific Computing, Shanghai, P.R. China, 2014

South African Symposium on Numerical and Applied Mathematics, Stellenbosch, 2008

Advances and Perspectives on Numerical Methods for Saddle Point Problems, Banff International Research Station, Canada, 2008

Ferroelectric phenomena in soft matter systems, American Institute of Mathematics, Palo Alto, USA, 2008

Membership of Conference Scientific Programme Committees

Householder Committee (2022 - present)

International Conference on Preconditioning Techniques for Scientific and Industrial Applications, Chemnitz, Germany (2022)

11th International Conference on Advanced Mathematical and Computational Tools in Metrology and Testing, Glasgow (2017)

Sixth International Conference on Numerical Algebra and Scientific Computing, Zhejiang University, P.R. China (2016)

SIAM Conference on Applied Linear Algebra, Atlanta, USA (2015)

Joint SIAM/Royal Spanish Mathematical Society/Catalan Society of Mathematics/Spanish Society of Applied Mathematics Meeting on Emerging Topics in Dynamical Systems and Partial Differential Equations, Barcelona, Spain (2010)

Conference Organisation

Co-organiser, ICIAM Workshop on Industrial and Applied Mathematics, Glasgow (2022)

Co-organiser, Biennial Conference in Numerical Analysis conference series, Glasgow (2009-2019)

Co-organiser, International Centre for Mathematical Sciences Workshop on Mathematics for Measurement, Edinburgh (2017)

Co-organiser, Durham-London Mathematical Society Symposium, Durham (2008)

Local organiser, XVth Householder Symposium on Numerical Linear Algebra, Peebles (2002)

Service to National and International Review Bodies

Engineering and Physical Sciences Research Council (EPSRC), UK:
- Chair of Mathematical Sciences Prioritisation Panel (2011, 2012, 2015, 2022)
- Chair of Mathematical Sciences Fellowship Interview Panel (2021)
- Chair of Mathematical Sciences Fellowship Funding Panel (2019)
- Member of Mathematical Sciences Programme Grant Interview Panel (2016)
- Member of Mathematical Sciences Prioritisation Panel (2008)
- Member of Peer Review College (2007-present)

European Research Council: External Reviewer, Starting Grant call (2022)

Science Foundation Ireland: External Reviewer, Frontiers for the Future Programme (2022)

Carnegie Trust for the Universities of Scotland: Research Assessor (2014 - present)

NordForsk, Norway: Chair, Nordic eScience Globalisation Initiative Peer Review Panel (2014)

Natural Sciences and Engineering Research Council of Canada: External Reviewer (2006)

Summary of Teaching Activities

Lecturer and class co-ordinator on over 20 undergraduate and postgraduate modules at the University of Strathclyde since 1993, plus tutor on many others.

Invited short course lecturer: Rutherford-Appleton Labs (1994), UBC, Canada (2003), University of Glasgow (2005) and Durham University EPSRC Summer School (2006).

Supervisor of multiple undergraduate and postgraduate projects and dissertations.

Main supervisor of 8 PhD students and 7 Post-Doctoral Research Assistants.

Grants of ∼£6K from the Learning Spaces Working Group for Personal Response handsets and receivers (2013) and £5K from the Strathclyde Education Excellence Fund for workshop on writing skills for problem solving in mathematics (2012).

Participant in the Learning and Teaching Support Network MathsTEAM Project on Diagnostic Testing for Mathematics, ISBN 07044 23731 (2003).

Selected Administration Activities

Department of Mathematics and Statistics, University of Strathclyde
- Deputy Head of Department (2020-present)
- Research Director (2016-2020)
- Academic Director (2009-2012)
- Member of Executive Committee (2004-2007, 2009-2012)
- Member of Library Committee (1993-2005)
- Member of Equipment Committee (1993-1997)

Faculty of Science, University of Strathclyde
- Board of Study (2002-2005, 2012-2019)
- Resources & Planning Committee (2015-2019)
- Appeals Board (2005-2019)
- Academic Administration Committee (2009-2012)
- Nominations Panel (2009-2014)
- Job Matching Panels (2007)
- Departmental Review Panels (2006, 2016)
- Review Panel (2005-2008)
- Counsellors and Advisers of Study Committee (2001-2003)

University of Strathclyde
- Research Enhancement Group (2011-2012)
- Hardship Fund Panel (2005-2006)
- Senate Ordinance 16/4 Panels (2001-2007, 2015-2019)
- Senate Staff-Student Committee (2001-2007)
- Senate (2001-2007)

Selected Outreach and Public Engagement Activities

Mathematical Association, UK: Invited speaker, annual conference for school teachers (1997, 2008, 2009, 2015)

Scottish Mathematical Council: Member of Maths Challenge Committee and competition organiser for West of Scotland schools (2001-2010)

London Mathematical Society: Organiser of Popular Lectures for schoolchildren (1997-1998)

Institute of Mathematics and its Applications: Invited speaker, Information Days for Senior School Pupils (1993-2000)

Women Into Science and Technology: Organiser of Mathematics workshops for schoolchildren (1993-2000)

Software

MATLAB/Octave software package "IFISS: Incompressible Flow and Iterative Solver Software", with H.C. Elman & D.J. Silvester, version 3.6, 2019. `http://www.manchester.ac.uk/ifiss/`

Patent

"Bistable liquid crystal device", with N.J. Mottram, G. Kelly & A. Davidson, 2006 `https://patents.google.com/patent/WO2006059128A1/en`

Selected publications

1. "Using Partial Spectral Information for Block Diagonal Preconditioning of Saddle-Point Systems", with D. Ruiz, A. Sartenaer & C. Tannier, *Computational Optimization and Applications* 78(2):353-375, 2021. `https://doi.org/10.1007/s10589-020-00246-3`
2. "A Moving Mesh Method for Modelling Defects in Nematic Liquid Crystals", with C.S. MacDonald & J.A. Mackenzie, *J. of Computational Physics: X* 8:100065, 2020. `https://doi.org/10.1016/j.jcpx.2020.100065`
3. A Multilevel Approach for Computing the Limited-Memory Hessian and its Inverse in Variational Data Assimilation, with K.L Brown & I. Gejadze, *SIAM J. on Scientific Computing* 38(5):A2934-A2963, 2016. `https://doi.org/10.1137/15M1041407`
4. "Computational Fluid Dynamics for Nematic Liquid Crystals", with A.M. Sonnet, *BIT Numerical Mathematics* 56(2):573-586, 2016. `https://doi.org/10.1007/s10543-015-0586-5`
5. "Preconditioning for Radial Basis Function Partition of Unity Methods", with A. Heryudonu, E. Larsson & L. Von Sydow, *J. of Scientific Computing* 67(3):1089-1109, 2016. `https://doi.org/10.1007/s10915-015-0120-6`
6. "Efficient moving mesh methods for Q-tensor models of nematic liquid crystals", with C.S. MacDonald, J.A. Mackenzie & C.J.P. Newton, *SIAM J. on Scientific Computing* 37(2):B215-B238, 2015. `https://doi.org/10.1137/130923683`
7. "A Renormalized Newton Method for Liquid Crystal Director Modeling", with E.C. Gartland Jnr, *SIAM J. on Numerical Analysis* 53(1):251-278, 2015. `https://doi.org/10.1137/130942917`
8. "IFISS: A Computational Laboratory for Investigating Incompressible Flow Problems", with H.C. Elman & D.J. Silvester, *SIAM Review* 56(2):261-273, 2014. `https://doi.org/10.1137/120891393`
9. "A preconditioned nullspace method for liquid crystal director modelling", with E.C. Gartland Jnr, *SIAM J. on Scientific Computing*, 35(1):B226-B247, 2013. `https://doi.org/10.1137/120870219`
10. "A multigrid preconditioner for an adaptive Black-Scholes solver", with L. von Sydow, *BIT Numerical Mathematics* 51(1):217-233, 2011. `https://doi.org/10.1007/s10543-011-0316-6`
11. "IFISS, a Matlab Toolbox for Modelling Incompressible Flow", with H.C. Elman & D.J. Silvester, *ACM Trans. on Mathematical Software*, 33(2):14, 2007. `https://doi.org/10.1145/1236463.1236469`

12. "Adaptive Solution of a One-dimensional Order Reconstruction Problem in Q-Tensor Theory of Liquid Crystals", with C.J.P. Newton, *Liquid Crystals* 34(4):479-487, 2007. https://doi.org/10.1080/02678290701267571
13. "Element-based Preconditioners for Elasto-Plastic Problems", with C.E. Augarde & J. Staudacher, *International J. for Numerical Methods in Engineering* 71(7):757-882, 2007. https://doi.org/10.1002/nme.1947
14. "Preconditioned Implicit Solution of Linear Hyperbolic Equations with Adaptivity", with P. Lötstedt, L. von Sydow & S. Söderberg, *J. of Computational and Applied Mathematics* 170:269-289, 2004. https://doi.org/10.1016/j.cam.2004.01.041
15. "A Characterisation of Oscillations in the Discrete Two-Dimensional Convection-Diffusion Equation", with H.C. Elman, *Mathematics of Computation* 72:263-288, 2003. https://doi.org/10.1090/S0025-5718-01-01392-8
16. "Computational Solution of Two-Dimensional Unsteady PDEs using Moving Mesh Methods", with G. Beckett, J.A. Mackenzie & D.M. Sloan, *J. of Computational Physics* 182:478-495, 2002. https://doi.org/10.1006/jcph.2002.7179
17. "An Analysis of Smoothing Effects of Upwinding Strategies for the Convection-Diffusion Equation", with H.C. Elman, *SIAM J. of Numerical Analysis* 40:254-281, 2002. https://doi.org/10.1137/S0036142901374877
18. "A Multigrid Preconditioner for Stabilised Discretisations of Advection- Diffusion Problems", *J. of Computational and Applied Mathematics* 101:187-203, 1999. https://doi.org/10.1016/S0377-0427(99)00234-4
19. "On Parameter Choice and Iterative Convergence for Stabilised Discretisations of Advection-Diffusion Problems", with B. Fischer, D.J. Silvester & A.J. Wathen, *Computer Methods in Applied Mechanics and Engineering* 179:179-195, 1999. https://doi.org/10.1016/S0045-7825(99)00037-7
20. "Minimum Residual Methods for Augmented Systems", with B. Fischer, D.J. Silvester & A.J. Wathen, *BIT Numerical Mathematics*, 38:527-543, 1998. https://doi.org/10.1007/BF02510258
21. "On Preconditioning for Finite Element Equations on Irregular Grids", with A.J. Wathen, *SIAM J. on Matrix Analysis and Applications* 15:909-921, 1994. https://doi.org/10.1137/S0895479891223252