

# CURRICULUM VITAE

Iain Spencer Duff

## 1 Current Positions

- STFC Honorary Scientist. Computational Mathematics Group, Scientific Computing Department, Rutherford Appleton Laboratory, Oxfordshire, England.
- Scientific Advisor. CERFACS, Toulouse, France
- Visiting Professor. Department of Mathematics and Statistics, University of Strathclyde

## 2 Education and Qualifications

D. Phil. Oxford (1972).

Thesis title: Analysis of sparse systems.

Diploma in Advanced Mathematics. Oxford (1970).

Thesis title: Network Analysis and Graph Theory.

B.Sc. (1st class honours Mathematics and Natural Philosophy) Glasgow (1969).

## 3 Prizes and Awards

Distinguished lectureship at Purdue University, Lafayette, Indiana, USA, 2012.

Selected as a Fellow of SIAM, 2010.

Elected as a Fellow of the Royal Society of Edinburgh, 2006.

Fellow IMA, 1984.

British Council Distinguished Visitor Grant to visit Caracas, Venezuela, 1980.

Swedish Natural Science Research Council and Swedish Atomic Research Council, visiting scientist grant, 1978.

Harkness Fellowship, 1972-73.

Carnegie Scholarship, 1969-72.

Russell Bursary (for Distinction in Honours Mathematics Examination), 1969.

Mackay Smith Prize (for most distinguished candidate in Natural Philosophy), 1969.

IBM UK Scholarship, 1965-69.

Glasgow University McCrie Fellowship (bursary for undergraduate studies), 1965-69.

## 4 Employment

- 1990–2019.** Computational Mathematics (formerly Numerical Analysis) Group, Rutherford Appleton Laboratory, Oxfordshire (part time since 2007). Group leader 1990-2006. Band 1 (later termed Senior Fellow) 1996-2019.
- 2010.** Senior researcher in ADTAO Project of RTRA-STAE in Toulouse, France.
- 1987–2020.** CERFACS, Toulouse, France.
- 1987–2020.** Visiting Professor of Mathematics at University of Strathclyde.
- 1984–1985.** Visiting Staff Scientist at Mathematics and Computer Science Division, Argonne National Laboratory.
- 1984.** Visiting Scientist at Centre for Mathematical Analysis, ANU Canberra.
- 1982.** Visiting Scholar at Stanford University.
- 1980.** Visiting Associate Professor at University of Colorado at Boulder.
- 1978.** Visiting Scientist, University of Umeå, Sweden.
- 1975–1990.** Numerical Analysis Group, Computer Science and Systems Division, Harwell Laboratory, Oxfordshire, England. Group leader 1986-1990. Equivalent grade to PSO (1979-1986), SPSO (1986-1990).
- 1973–1975.** Computing Laboratory, University of Newcastle upon Tyne.
- 1972-1973.** Adjunct assistant professor at State University of New York at Stony Brook.
- 1969-1972.** Mathematics teaching and tutoring at Dragon preparatory school, Oxford.
- 1965-1969.** Vacation student with IBM in Glasgow, Birmingham, Toronto and Glasgow in respective summers. Duties included machine operating, programming and systems work with IBM customers.

## 5 SIAM/ACM Service and Activities

- Member of SIAM Canvassing Committee for SIAM Fellows, 2013-2015.
- Chair of SIAM Board of Trustees, 2005-2011.
- Member of SIAM Council, 2005-2011.
- Member of SIAM Compensation Committee, 2004-2011.
- Secretary of SIAM SIAG on Supercomputing, 2003–2005.
- Member of SIAM Board of Trustees, 2003-2004.
- Member of SIAM Nomination Committee, 2003-2004.
- Member of the organizing committee for the SIAM CSE 2005 Meeting, Orlando, Florida, 2005.

Member of the organising committee for the SIAM Conference on Parallel Processing for Scientific Computing, San Francisco, 2004.

Member of the organising committee for the SIAM Conference on Parallel Processing for Scientific Computing, San Antonio, Texas, 1999.

Member of the organising committee for the SIAM Conference on Sparse Matrices, Coeur d'Alene, 1996.

Member organizing committee for ACM Conference Supercomputing '90, New York, 1990.

## 6 Significant other Professional Service

### 6.1 Editorial work for learned journals

Editor in Chief, *IMA Journal of Numerical Analysis*, 1989–2006.

Associate Editor of the *IMA Journal of Numerical Analysis*, 2006–2016.

Associate Editor of *Vietnam Journal of Mathematics*, 2014– .

Associate Editor of *Indian Journal of Industrial and Applied Mathematics*, 2011– .

Associate Editor of *Numerical Algebra, Control and Optimization*, 2010– .

Associate Editor of *Communications in Numerical Methods in Engineering*, 2000–2010.

Associate Editor of *Numerical Linear Algebra and Applications*, 1996–2011.

Associate Editor of *BIT*, 1997–2011.

Associate Editor of *International Journal of High Performance Computing Applications (formerly International Journal of High Speed Computing)*, 1994– .

Chief Editor of *International Journal of High Performance Computing Applications*, 1994–2005.

Associate Editor of *ETNA Electronic Transactions in Numerical Analysis*, 1993–2010.

Associate Editor of *Linear Algebra and its Applications*, 1991–1999.

Specialist Editor of *Computer Physics Communications*, 1987–2003.

### 6.2 Institute of Mathematics and its Applications

I have not included the very many IMA conferences for which I was on the organizing committee.

Chair of the IMA Journal Board of Management, 2012–

Member of the Research Committee of the IMA, 2007–

Member of IMA Council, 2005–2011, 1996–2001, 1985–1988.

IMA Vice-President (Learned Society), 2004–2005.

Honorary Secretary of IMA, 1996-2001.

Chair of IMA Programme Committee, 1996-2001.

Chair UK steering committee bidding for ICIAM '99, 1992-1993.

Member of the IMA Programme Committee, 1986-2001.

Editor of the IMA Newsletter in Numerical Analysis, 1976-2006.

### **6.3 Work for research funding agencies**

Co-organiser of EPSRC Workshops on NA/HPC, 2008.

Member of Panel for Applied Mathematics (F-21) for UK Research Assessment Exercise (RAE) 2008, 2004-2009.

Member of Mathematics College of EPSRC, 1997-

Chair of Benchmark Working Group for ABRC supercomputer procurement, 1993.

Member of Scientific Working Group on High Performance Computing and Networking for Rubbia report to European Commission, 1991-1992.

Member of Technical Options Group of Joint Policy Committee (on National Facilities) for Advanced Research Computing and Vice-chair of TOG A, 1987-1994.

Member of Numerical Analysis Panel of SERC, 1983.

### **6.4 Selected work on prize committees**

Member of interview committee for RSE-STFC Enterprise Fellowships, 2015- .

Member of Adjudicating Committee for Leslie Fox Prize, 1994-1999.

Chair of Adjudicating Committee for Leslie Fox Prize, 1997-1999.

Member of Prize Committee for the "Applied Numerical Linear Algebra Prize". Awarded by the Chinese Academy of Sciences to young Chinese scientists, 2006- .

### **6.5 International panels and committees**

Member of international panel to review Mathematics Department (CMUP) at University of Porto, Portugal, 2004.

Member of international panel to review Helmholtz Gemeinschaft, Germany, 2004.

Member of international panel to report to funding agencies in Netherlands on the future of supercomputing in the Netherlands, 2001.

Advisory Committee for EuroPar series of conferences, 1999- 2010.

Member of the organising committee for the Copper Mountain Conference on Iterative Methods, 1998-2018.

International expert to Swedish Council for High-Performance Computing to evaluate proposals for a Swedish Center for High-Performance Computing, 1995.

Member of Scientific Council of CRIHAN (Centre de Ressources Informatiques de Haute Normandie), 1994-1997.

Academic Assessor at USM Malaysia, Penang, 1993.

Member of Committee for International Conferences on Industrial and Applied Mathematics (CICIAM). 1992- Treasurer from 1992-1995.

Expert consultant for review of need for supercomputing for Government of Hong Kong, 1989-1990.

Assessor for Chair in Numerical Analysis in Umea, Sweden, 1989.

## 6.6 Selected list as co-organiser or chair for the conferences

This represents a small subset of the conferences for which I have been chair or co-chair.

Franco-Scottish Seminar – Linear Algebra and Parallel Computing at the Heart of Scientific Computing. RSE, Edinburgh. 2016.

RTRA Workshop on Optimization and Control, ENSIACET, Labege, Toulouse, 2010.

Second International Conference on Numerical Algebra and Scientific Computing (NASCO8), Nanjing, China, 2008.

Euro-Par'99, Toulouse, France, 1999.

Sparse Days at CERFACS conferences, 1996– .

Sparse Days at St Girons conferences, 1994, 2003, 2015.

International Linear Algebra Year, CERFACS, France, 1995-96.

IBM Europe Seminar on Sparse Matrices, Oberlech, 1990.

International Conference on Vector and Parallel Computing, Tromso, Norway, 1988.

International Conference on Vector and Parallel Computing, Loen, Norway, 1986.

Vector and Parallel Processing in Computational Science III (VAPP III), Oxford, 1984.

Sparse Matrices and their Uses, Reading, 1980.

Conjugate Gradient Day at Harwell, Harwell, 1979.

## 7 Selected Invited and Keynote Presentations

### 7.1 Selected keynote or plenary talks before 2000

**1999.** Eighth International Colloquium on Numerical Analysis and Computer Science with Applications, Plovdiv, Bulgaria.

Householder Symposium, Whistler, Canada.

Computational Cattle Breeding '99, Helsinki, Finland.

- 1998.** PARA 98, Conference and Workshop on Parallel Scientific Computing, Umea, Sweden.  
International Symposium on Theory and Algorithms for Large-Scale Matrix Problems, Dalian, China.
- 1997.** AspenWorld 97, Boston, USA.
- 1996.** VECPAR II, Porto, Portugal.  
PARA96, Lyngby, Denmark.  
Householder Meeting, Pontresina, Switzerland.  
State of the Art in Numerical Analysis, York, England.
- 1995.** Computing Techniques in Physics, Skalsky dvur, Czech Republic.  
Least squares: theory, algorithms and applications. Linkoping, Sweden.
- 1994.** Massively Parallel Computing in Plasma Physics, St Malo, France.  
PARA94, Conference and Workshop on Parallel Scientific Computing, Lyngby, Denmark.  
PCG'94. Conference on Matrix Analysis and Parallel Computing. Keio University, Japan.  
Conference on Massively Parallel Scientific Computing. Monte Verita, Ascona, Switzerland.
- 1993.** First International Meeting on Vector and Parallel Processing. Porto, Portugal.  
15th Biennial Conference on Numerical Analysis, Dundee, Scotland.  
1993 International High-Performance Computing Conference and Exhibition, National Centre for High-Performance Computing, Hsinchu, Taiwan.  
Panamerican Workshop in Applied and Computational Mathematics. Caracas, Venezuela.
- 1992.** 6th IIMAS Workshop on Numerical Analysis. Oaxaca, Mexico.
- 1991.** International Symposium on Supercomputing. ISS'91. Fukuoka, Japan.  
International Symposium on: Break-throughs in Computational Science. Utrecht, Netherlands.
- 1990.** International Conference on Supercomputing in Nuclear Applications (SNA '90), Mito City, Japan.  
NATO ASI on Computer Algorithms for Solving Linear Algebraic Systems, Il Ciocco, Italy.
- 1989.** Fourth International Symposium on Computer and Information Systems (ISCIS IV). Cesme, Turkey.
- 1988.** International Meeting on Parallel Computing. Verona, Italy.  
Fourth International Symposium on Biological and Artificial Intelligence Systems. Trento, Italy.  
Annual Meeting of GAMM, Vienna, Austria.
- 1987.** Gatlinburg X Symposium, Tennessee, USA.  
Advances in Reliable Numerical Computation, NPL Teddington, UK.

- Supercomputers and Artificial Intelligence, Umea, Sweden.
- 1986.** International Conference on Vector and Parallel Computing, Loen, Norway.  
State of the Art in Numerical Analysis, Birmingham.
- 1985.** Annual Meeting of Brazilian Applied Mathematics Society, Florianapolis, Brazil.
- 1984.** Gordon Conference on Flow in Permeable Media, Andover, NH, USA.
- 1983.** 6th International Colloquium on Computing Methods in Applied Science and Engineering, Versailles, France.  
Annual Conference on Numerical Analysis, Woudschoten, the Netherlands.
- 1982.** Inter-American Conference on Numerical Analysis, Caracas, Venezuela.
- 1981.** Conference on Multigrid Methods, Koln-Porz, Germany.  
Gatlinburg VIII Symposium, Oxford.  
9th Dundee Biennial Conference on Numerical Analysis, Dundee.  
3rd Workshop on Numerical Analysis, Cocoyoc, Mexico.
- 1980.** Sparse Matrices and their Uses, Reading.  
Conference on Numerical Analysis, Caracas, Venezuela.
- 1979.** 4th International Colloquium on Computing Methods in Applied Science and Engineering, Versailles, France.
- 1978.** International Congress on Numerical Methods for Engineering, Paris, France.
- 1977.** Gatlinburg VII Symposium, Asilomar, California, USA.

## 7.2 Keynote plenary talks from 2000

I have not included several after-dinner talks at major conferences and plenary invited talks of a tutorial nature.

- 2020.** The Fifth International Conference on Numerical Analysis and Optimization. Sultan Qaboos University, Muscat, Oman.
- 2019.** 3rd Workshop on Power-Aware Computing - PACO2019, Magdeburg, Germany.
- 2017.** PARNUM 2017 Workshop, Waischenfeld, Germany.  
The Fourth International Conference on Numerical Analysis and Optimization. Sultan Qaboos University, Muscat, Oman.
- 2016.** SIAM Conference on Parallel Programming. Paris, France.  
Eleventh Workshop on Mathematical Modeling of Environmental and Life Sciences Problems, Constanta, Romania.  
The Sixth International Conference on Numerical Algebra and Scientific Computing, Zhejiang University, Hangzhou, China.
- 2014.** The Third International Conference on Numerical Analysis and Optimization. Sultan Qaboos University, Muscat, Oman.

- The SVG Meeting, Stanford University, California, USA.  
4th IMA Conference on Numerical Linear Algebra and Optimisation Birmingham, UK.
- 2013.** 2013 NCTS Workshop on Numerical Linear Algebra and High Performance Computing in Hsinchu, Taiwan.
- 2012.** 7th International Workshop on Parallel Matrix Algorithms and Applications (PMAA'12). NASC 2012, Numerical Algebra and Scientific Computing, Dalian, China.
- 2011.** The Second International Conference on Numerical analysis and Optimization. Sultan Qaboos University, Muscat, Oman.  
Symposium on Eigenvalues, Model Order Reduction and Trust Regions in celebration of Danny Sorensen's 65th birthday, Reno, Nevada, USA.  
Final Conference of Europaen Exascale Software Initiative (EESI), Barcelona, Spain.
- 2010.** SANUM 2010, the 34th Annual South African Symposium on Numerical and Applied Mathematics, Stellenbosch, South Africa.  
III Workshop G-HPC 2010: High Performance Computing Applications, Vigo, Spain.  
CNMAC 2010, the XXXIII Congresso Nacional de Matematica Aplicada e Computacional, Aguas de Lindoia, SP, Brazil.
- 2009.** Fourth International Conference on High Performance Scientific Computing. Modeling, Simulation and Optimization of Complex Processes, Hanoi, Vietnam.  
The 2nd International Conference on Mathematical Modelling and Computation and the 5th East Asia SIAM Conference, Universiti Brunei Darussalam, Brunei.  
The 8th International Conference on Parallel Processing and Applied Mathematics (PPAM 2009), Wroclaw, Poland.
- 2008.** International Workshop on Numerical Analysis and Scientific Computing (NASCom08), Rostov-on-Don, Russia.  
Second International Conference on Numerical Algebra and Scientific Computing (NASC08), Nanjing, China.
- 2007** SIAM Workshop on Combinatorial Scientific Computing (CSC07), Cost Mesa, California, USA.  
Stanford 50: State of the Art & Future Directions of Computational Mathematics & Numerical Computing.  
International Conference on Applied Mathematics and Interdisciplinary Research, Lijiang, Yunnan Province, China.  
Sixth International Conference on Computer Science and Information Technologies (CSIT'2007). Yerevan, Armenia.
- 2006** ICCG, BICGSTAB, and Jacobi-Davidson. A meeting in honour of Henk van der Vorst. Utrecht, Netherlands.  
First International Conference on Numerical Algebra and Scientific Computing (NASC06), Beijing, China.



- 2004** ICCS 04 Conference, Krakow, Poland.  
 PARA04 Conference, Copenhagen, Denmark.  
 International Conference of Numerical Analysis and Applied Mathematics 2004 (IC-NAAM 2004), Chalkis, Greece.  
 International Conference on Industrial and Applied Mathematics, New Delhi, India.
- 2003** Quatrieme seminaire sur l'algorithmique appliquee aux problemes industriels, Calais, France.
- 2002** Computational Linear Algebra with Applications, Milovy, Czech Republic.  
 2nd International Workshop on Parallel Matrix Algorithms and Applications (PMAA'02), Neuchatel, Switzerland.  
 Householder Symposium XV, Peebles, Scotland.
- 2001** Seventh US-Mexico Workshop in Numerical Analysis, Merida, Yucatan, Mexico.  
 Algèbre Linéaire et Arithmétique Calcul Numérique et Parallèle, Rabat, Morocco.  
 Recent Developments in Large Scale Scientific Computing. Porto, Portugal,
- 2000** Commemoration of Pete Stewart's 60th Birthday, University of Maryland, Washington DC, USA.

### 7.3 Invited presentations since 2000

All the many invited talks given at minisymposia are excluded.

- 2019.** Parallel Solution Methods for Systems Arising from PDEs. Workshop in CIRM, Luminy.
- 2018.** ICIAM Workshop on Applied and Industrial Mathematics. Philadelphia, USA.
- 2017.** Householder Symposium. Blacksburgh, Virginia, USA.
- 2016.** Workshop on Numerical Software and Scientific Computing, Oxford.
- 2015.** Leslie Fox Prize Meeting, University of Strathclyde, Glasgow.
- 2014.** ICIAM Workshop on Applied and Industrial Mathematics. Columbus, Ohio, USA.  
 Bath-RAL Numerical Analysis Day, Rutherford Appleton Laboratory.  
 Householder XIX Symposium, Spa, Belgium.
- 2013.** EASC2013, Exascale Applications and Software Conference 2013, Edinburgh, UK.
- 2012.** NKN 70, Reading, UK.  
 The 6th de Brun Workshop. Linear Algebra and Matrix Theory: connections, applications and computations, Galway, Ireland.  
 Bath-RAL Numerical Analysis Day, Rutherford Appleton Laboratory.

- 2011.** HPSS 2011 at EuroPar 2011, Bordeaux.  
Householder Symposium XVIII, Lake Tahoe, California, USA.
- 2009.** Complex Networks across the Natural and Technological Sciences, University of Strathclyde, Glasgow.  
Dagstuhl Seminar on Combinatorial Scientific Computing, Dagstuhl Castle, Germany.  
Bath-RAL Numerical Analysis Day, Rutherford Appleton Laboratory.
- 2008.** Householder Symposium XVII, Zeuthen, Germany.
- 2007.** Matrix Analysis and Applications. CIRM Luminy, Marseille, France.  
Scientific and Celebratory Conference in honour of Paul Durham, CCLC Daresbury Laboratory, UK.  
Berkeley Lab Scientific Computing Workshop, LBNL, USA.
- 2006** Shanghai Forum on Industrial and Applied Mathematics, Shanghai, China.  
Bath-RAL Numerical Analysis Day, University of Bath.
- 2005** Householder Symposium, Seven Springs, Pennsylvania, USA.
- 2003** Workshop on Contemporary Computational Mathematics, Australian National University, Canberra, Australia.  
Workshop on Numerical Linear Algebra, University of British Columbia, Vancouver, Canada.  
Bath-RAL Numerical Analysis Day, Rutherford Appleton Laboratory. England.
- 2002** NAG/Oxford University Computing Lab Workshop on Preconditioning, Oxford, England.
- 2001** Workshop Grands Systèmes Linéaire, INSA, Toulouse.
- 2000** Preconditioning Workshop, Oxford.

## 8 Research Grants

As Principal Investigator

EPSRC Grant GR/M78502	October 1999 - September 2001	376K pounds
EU ESPRIT IV, LTR Project No. 20160	January 1996 - 1999	2.1 MECU
EPSRC Grant GR/S46427/01	June 2001 - September 2001	4,400 pounds
EPSRC Grant GR/R46441	October 2001 - September 2003	426K pounds
EPSRC Grant GR/S02969/01	November 2002 - August 2003	6,840 pounds
France-Berkeley Fund Grant	April 2008 - March 2009	10K USD
EPSRC Grant GR/S42170	October 2003 - September 2007	910K pounds
EPSRC Grant EP/E053351	October 2007 - September 2011	1.9M pounds
EU H2020-FETHPC 617633	November 2015 - April 2019	3.9M euros

## As Co-Investigator

EPSRC Grant GR/LR65550	April 1997 - March 1999	435K pounds
EPSRC Grant GR/L766175	August 1997 - August 1998	3,000 pounds
EPSRC Grant GR/M78342	April 1999 - September 1999	155K pounds
EPSRC Grant EP/F006535	October 2007 - March 2009	154K pounds
EPSRC Grant EP/I013067/1	October 2011 - September 2014	1.9M pounds
EU H2020-EINFRA 676629	October 2015 - September 2018	5.4M euros
EU H2020-INFRAEDI 824158	January 2019 - December 2021	8.3M euros

## 9 PhD Students and Postdocs Supervised

STFC-RAL does not award degrees, but I have co-supervised

Ph.D students in France:

Steven Murphy (2015), Mohammed Zenadi (2013), Mila Slavova (2009), Stephane Pralet (2004), Christof Voemel (2003), Bruno Carpentieri (2002), Jacko Koster (1997), Anthony Drummond (1995), Chira Puglisi (1993), Daniel Ruiz (1992), Patrick Amestoy (1991).

and two students in UK:

William Connolley (D. Phil. Oxford, 1990) and Brian P O'Byrne (M.Sc. Newcastle, 1975).

## 10 Publications

### 10.1 Books and Edited Proceedings

1. Iain S. Duff, Albert M. Erisman, and John K. Reid. *Direct Methods for Sparse Matrices. Second Edition.* Oxford University Press, Oxford, England, 2017.
2. Zhong-Zhi Bai, Iain S. Duff, Lothar Reichel, and Zhong-Ci Shi, editors. *Special Issue: Innovative methods and theories in numerical algebra*, volume 19 (6). Numerical Linear Algebra with Applications, 2012.
3. Zhong-Zhi Bai, Michele Benzi, Iain S. Duff, Andreas Frommer, and Zhong-Ci Shi, editors. *Special Issue Devoted to the 2nd NASC 08 Conference in Nanjing (NSC)*, volume 434. Linear Algebra and its Applications, 2011.
4. Ray Tuminaro, Michele Benzi, Xiao-Chuan Cai, Iain Duff, Howard Elman, Roland Freund, Kirk Jordan, Tim Kelley, David Keyes, Misha Kilmer, Sven Leyffer, Tom Manteuffel, Steve McCormick, David Silvester, Homer Walker, Carol Woodward, and Irad Yavneh, editors. *Special Section: 2010 Copper Mountain Conference*, volume 33 (5). SIAM J. Scientific Computing, 2011.
5. Henk van der Vorst, Iain Duff, Howard Elman, Roland Freund, Tim Kelley, Seymour Parter, Gerhard Starke, Nick Trefethen, Panayot Vassilevski, Homer Walker, and Olof

- Widlund, editors. *Special Issue: 2000 Copper Mountain Conference*, volume 23 (2). SIAM J. Scientific Computing, 2001.
6. Y. Saad, O. Axelsson, I. Duff, W.-P. Tang, H. van der Vorst, and A. Wathen, editors. *Special Issue: Preconditioning Techniques for Large Sparse Matrix Problems in Industrial Applications, SPARSE'99*, volume 7. Numerical Linear Algebra with Applications, 2000.
  7. P. Amestoy, P. Berger, M. Daydé, I. Duff, V. Frayssé, L. Giraud, and D. Ruiz, editors. *EuroPar'99 Parallel Processing*, Lecture Notes in Computer Science, No. 1685. Springer-Verlag, 1999.
  8. I. S. Duff, N. I. M. Gould, C. C. Douglas, and L. Giraud, editors. *Direct methods, linear algebra in optimization, iterative methods. Proceedings from the International Linear Algebra Year Workshops. September 1995 - June 1996.*, volume 37 (3). BIT, 1997.
  9. A. Colbrook, I. Duff, T. Hey, K. Stüben, and C-A. Thole, editors. *EUROPORT Special Issue*, volume 11 (4). Int. J. Supercomputer Applications, 1997.
  10. Iain S. Duff and G. Alistair Watson, editors. *The State of the Art in Numerical Analysis*. Oxford University Press, 1997.
  11. Jack J. Dongarra, Iain S. Duff, Danny C. Sorensen, and Henk A. van der Vorst. *Solving Linear Systems on Vector and Shared Memory Computers*. SIAM Press, Philadelphia, 1991.
  12. Jack J. Dongarra, Iain S. Duff, Patrick W. Gaffney, and Sean StJ. McKee, editors. *Vector and Parallel Computing. Issues in Applied Research and Development*. Ellis Horwood Ltd., 1989.
  13. Françoise Chatelin, Jack Dongarra, and Iain Duff, editors. *Special Volume in Memory of James H. Wilkinson*, volume 88/89. Linear Algebra and its Applications, 1987.
  14. Iain S. Duff, Albert M. Erisman, and John K. Reid. *Direct Methods for Sparse Matrices*. Oxford University Press, Oxford, England, 1986.
  15. Iain S. Duff and John K. Reid, editors. *Vector and Parallel Processors in Computational Science II*. North Holland, 1985.
  16. Iain S. Duff, editor. *Sparse Matrices and Their Uses*. Academic Press, 1981.
  17. Iain S. Duff, editor. *Conjugate gradient methods and similar techniques*, AERE R9636. Her Majesty's Stationery Office, 1979.
  18. Iain S. Duff and G. W. Stewart, editors. *Sparse Matrix Proceedings, 1978*. SIAM, Press, 1979.

## 10.2 Refereed Journal Publications

1. Sébastien Cayrols, Iain S. Duff, and Florent Lopez. Parallelization of the solve phase in a task-based Cholesky solver using a sequential task flow model. *Int. J. of High Performance Computing Applications*, 34(3):340–356, 2020.
2. Timothy A. Davis, Iain S. Duff, and Stojce Nakov. Design and implementation of a parallel markowitz threshold algorithm. *SIAM J. Matrix Analysis and Applications*, 41(2):573–590, 2020.
3. Iain S. Duff, Jonathan Hogg, and Florent Lopez. A new sparse symmetric indefinite solver using a posteriori threshold pivoting. *SIAM J. Scientific Computing*, 42(2):C23–C42, 2020.
4. Iain S. Duff, Jonathan Hogg, and Florent Lopez. Experiments with sparse Cholesky using a sequential task-flow implementation. *Numerical Algebra, Control and Optimization*, 8:235–258, 2018.
5. Weifeng Liu, Ang Li, Jonathan Hogg, Iain S. Duff, and Brian Vinter. Fast synchronization-free algorithms for parallel sparse triangular solves. *Concurrency and Computation: Practice and Experience*, 29(21), 2017.
6. Patrick R. Amestoy, Iain S. Duff, Jean-Yves L’Excellent, and François-Henry Rouet. Parallel computation of entries of  $A^{-1}$ . *SIAM J. Scientific Computing*, 37(2):C268–C284, 2015.
7. M. Arioli and I. S. Duff. Preconditioning linear least-squares problems by identifying a basis matrix. *SIAM J. Scientific Computing*, 37(5):S544–S561, 2015.
8. L. A. Drummond, Iain S. Duff, Ronan Guivarch, Daniel Ruiz, and Mohamed Zenadi. Partitioning strategies for the block Cimmino algorithm. *J Engineering Mathematics*, 93(1):21–39, 2015.
9. Iain S. Duff, Ronan Guivarch, Daniel Ruiz, and Mohamed Zenadi. The augmented block Cimmino distributed method. *SIAM J. Scientific Computing*, 37(3):A1248–A1269, 2015.
10. Iain S. Duff and Kamer Kaya. Preconditioners based on strong subgraphs. *Electronic Transactions on Numerical Analysis*, 40:225–248, 2013.
11. Patrick R. Amestoy, Iain S. Duff, Jean-Yves L’Excellent, Yves Robert, François-Henry Rouet, and Bora Uçar. On computing inverse entries of a sparse matrix in an out-of-core environment. *SIAM J. Scientific Computing*, 34(4):A1975 – A1999, 2012.
12. I. S. Duff and D. Mijuca. On accurate and time efficient solution of primal-mixed finite-element equations in multiscale solid mechanics. *International Journal for Numerical Methods in Biomedical Engineering*, 27:95–112, 2011.

13. Iain S. Duff, Kamer Kaya, and Bora Uçar. Design, implementation, and analysis of maximum transversal algorithms. *ACM Trans. Math. Softw.*, 38(2):13:1–13:31, 2011.
14. Xue-Ping Guo and Iain S. Duff. Semilocal and global convergence of the Newton-HSS method for systems of nonlinear equations. *Numerical Linear Algebra with Applications*, 29:299–315, 2011.
15. P. Amestoy, I.S. Duff, A. Guermouche, and Tz. Slavova. Analysis of the solution phase of a parallel multifrontal approach. *Parallel Computing*, 36(1):3–15, 2010.
16. Iain S. Duff and Bora Uçar. On the block triangular form of symmetric matrices. *SIAM Review*, 52(3):455–470, 2010.
17. Zhong-Zhi Bai, Iain S. Duff, and Jun-Feng Yin. Numerical study on incomplete orthogonal factorization preconditioners. *J. Computational and Applied Mathematics*, 226:22–41, 2009.
18. Iain S. Duff. The design and use of a sparse direct solver for skew symmetric matrices. *J. Computational and Applied Mathematics*, 226:50–54, 2009.
19. A. Trefethen, N. Higham, I. Duff, and P. V. Coveney. Developing a high-performance computing/numerical analysis roadmap. *Int. J. of High Performance Computing Applications*, 23(4):423–426, 2009.
20. Mario Arioli and Iain S. Duff. Using FGMRES to obtain backward stability in mixed precision. *Electronic Transactions on Numerical Analysis*, 33:31–44, 2008.
21. M. Arioli, I. S. Duff, S. Gratton, and S. Pralet. A note on GMRES preconditioned by a perturbed  $LDL^T$  decomposition with static pivoting. *SIAM J. Scientific Computing*, 29(5):2024–2044, 2007.
22. I. S. Duff, S. Gratton, X. Pinel, and X. Vasseur. Multigrid based preconditioners for the numerical solution of two-dimensional heterogeneous problems in geophysics. *International Journal of Computer Mathematics*, 84-88:1167–1181, 2007.
23. Iain S. Duff. Developments in matching and scaling algorithms. *Proceedings in Applied Mathematics and Mechanics*, 7(1):1010801–1010802, 2007.
24. Iain S. Duff. The use of hybrid techniques at CERFACS for the solution of large problems on parallel machines. *Proceedings in Applied Mathematics and Mechanics*, 7(1):1140501–1140502, 2007.
25. Iain S. Duff and Stéphane Pralet. Towards stable mixed pivoting strategies for the sequential and parallel solution of sparse symmetric indefinite systems. *SIAM J. Matrix Analysis and Applications*, 29(3):1007–1024, 2007.

26. Patrick R. Amestoy, Iain S. Duff, and Christof Vömel. Task scheduling in an asynchronous distributed memory multifrontal solver. *SIAM J. Matrix Analysis and Applications*, 26:544–565, 2005.
27. B. Carpentieri, I. S. Duff, L. Giraud, and G. Sylvand. Combining fast multipole techniques and an approximate inverse preconditioner for large electromagnetism calculations. *SIAM J. Scientific Computing*, 27(3):774–792, 2005.
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