

David J. Silvester

Department of Mathematics, University of Manchester

Date of Birth: 26–12–58

Birthplace: Dumfries, Scotland

Education and Qualifications

Ysgol Ardudwy, Harlech, Gwynedd.

1971–1977 : Five A–levels (All Grade A) : Eleven O–Levels.

University of Manchester Institute of Science and Technology (UMIST).

1977–1980 : B.Sc Mathematics, First Class Honours.

1980–1983 : Ph.D Numerical Analysis.

A complete academic ancestry is recorded on the Mathematics Genealogy Project, see

<http://genealogy.math.ndsu.nodak.edu/id.php?id=197169>

Employment

January 1984 – August 1984 : Higher Scientific Officer,
AERE Harwell, Oxfordshire, United Kingdom.

September 1984 – September 2003 : Lecturer/Senior Lecturer/Reader,
Mathematics Department, UMIST, United Kingdom

October 2003 – Present : Professor of Numerical Analysis,
UMIST → University of Manchester, United Kingdom

International Appointments

January 1991 – September 1991 : Visiting Assistant Professor,
Computer Science Department, Stanford University, USA.

March 1994 – June 1994 : Visiting Research Fellow,
Computer Science Department, University of Maryland, College Park, USA.

March 1999 – June 1999 : Visiting Associate Professor,
Computer Science Department, Stanford University, USA.

October 2019 – November 2019 : Romberg Visiting Scholar,
HGS MathComp, Heidelberg University, Germany.

Recent Research Grants

Principal Investigator on collaborative project “Uncertainty Quantification in Computer Simulations of Groundwater Flow Problems with Emphasis on Contaminant Transport”, British Council British–German grant ARC 1279, July 2006–June 2008 (value £2700).

Investigator on project “Analysis of Numerical Methods for Partial Differential Equations with Random Data”, August 2010–August 2013 (£344,000), EPSRC grant EP/H021205/1.

Investigator on project “Network: Numerical Algorithms and High Performance Computing”, May 2011–May 2014 (£134,000), EPSRC grant EP/I03112X/1.

Lead academic on KTP project with NAG plc, June 2012–December 2013 (£108,000), KTP award KTP008772.

Principal Investigator on project “Numerical Analysis of Adaptive UQ Algorithms for PDEs with Random Inputs”, April 2017–March 2020 (£381,000), EPSRC grant GR/P013317/1

Professional Affiliations

Member of the Society for Industrial and Applied Mathematics (SIAM) (1991–present).
Member of the EPSRC Peer Review College (2000–present).
Fellow of the Institute for Mathematics and Applications (IMA) (2010–present).

Selected Publications (Google Scholar citations 31-7-2019)

Arbaz Khan, Catherine Powell and David Silvester, Robust preconditioning for stochastic Galerkin formulations of parameter-dependent nearly incompressible linear elasticity equations, *SIAM J. Scientific Computing*, **41**, A402–A421, 2019. (1 citation)

Howard Elman and David Silvester, Collocation methods for exploring perturbations in linear stability analysis, *SIAM J. Scientific Computing*, **40**, A2667–A2693, 2018. (1 citation)

John Pearson, Jennifer Pestana and David Silvester, Refined saddle-point preconditioners for discretized Stokes problems, *Numerische Mathematik*, **138**, 331–363, 2018. (2 citations)

Catherine Powell, David Silvester and Valeria Simoncini, An efficient reduced basis solver for stochastic Galerkin matrix equations, *SIAM J. Scientific Computing*, **39**, A141–A163, 2017. (22 citations)

Alex Bespalov and David Silvester, Efficient adaptive stochastic Galerkin methods for parametric operator equations, *SIAM J. Scientific Computing*, **38**, A2118–A2140, 2016. (15 citations)

David F. Griffiths, John W. Dold, David J. Silvester. *Essential Partial Differential Equations*, Springer, Heidelberg, 2015. xi+368 pp. ISBN: 978-3-319-22568-5. (Undergraduate textbook.)

Howard Elman, David Silvester, Andy Wathen. *Finite Elements and Fast Iterative Solvers: with applications in incompressible fluid dynamics*, Second Edition, Oxford University Press, Oxford, 2014. xiv+479 pp. ISBN: 978-0-19-967879-2. (1650 citations since first edition in 2005)

Howard Elman, Alison Ramage and David Silvester, IFISS: A computational laboratory for investigating incompressible flow problems, *SIAM Review*, **56**, 261–273, 2014. (59 citations)

Alex Bespalov, Catherine Powell and David Silvester, A priori error analysis of stochastic Galerkin mixed approximations of elliptic PDEs with random data, *SIAM J. Numerical Analysis*, **50**, 2039–2063, 2012. (18 citations)

David Kay, Phil Gresho, David Griffiths and David Silvester, Adaptive time-stepping for incompressible flow; part II: Navier–Stokes equations, *SIAM J. Scientific Computing*, **32**, 111–128, 2010. (62 citations)

I have over 5400 citations on Google Scholar, see
<http://scholar.google.co.uk/citations?user=-7jBp94AAAAAJ>.
My Google Scholar h-index is 30. My i10-index is 47.

I have 59 publications indexed by MathSciNet in the MR Citation Database, see
<http://www.ams.org/mathscinet/search/author.html?mrauthid=249706>.
These have been cited 1950 times by 1400 authors.

PhD Supervision

I have supervised **12** PhD students to completion.

For further details, including active links to the researchers, see
<http://www.maths.manchester.ac.uk/djs/phdz.html>

Teaching.

Current Undergraduate Teaching.

Approximation & Finite Element Analysis (2002–2010; 2013–present) lecs 30 hours : 30 students

Other Courses Taught at the University of Manchester.

Mathematics for Chemical Engineers (2015–present) lecs 24 hours : 200 students
(Third year core course for CEAS students.)

Partial Differential Equations (2006–2008) lecs 22 hours : 300 students
(Second year core course for mathematics students.) tuts 22 hours : 30 students

Mathematics for Engineers (2011–2012) lecs 11 hours : 250 students
(First year core course for CEAS students.) EBL 11 hours : 250 students

Essential Partial Differential Equations (2010–2013) lecs 22 hours : 50 students
(Third year option for mathematics students.) tuts 11 hours : 50 students

Other Courses Taught at UMIST.

First Year Calculus Service Course (1984–89) 30 hours : 70 students

First Year Programming in Fortran 77 (1984–92) 10 hours : 90 students

First Year Introduction to Numerical Analysis (1989, 1991–92) 30 hours : 90 students

Second Year Solution of PDE's (1984–89, 1992) 30 hours : 90 students

Second Year Numerical Linear Algebra (1986–88, 1993) 30 hours : 90 students

Second Year Mathematics for Engineers (1992–94) 30 hours : 90 students

Introduction to Computing using Matlab (1994–99) 11 hours : 90 students

Applied Analysis of Navier-Stokes Equations (Graduate, 1997) 15 hours : 05 students

Second Year Mathematics for Civil Engineers (1998) 10 hours : 15 students

Second Year Mathematics for Engineers (1998) 22 hours : 50 students

Topics in Numerical Analysis (1995–1997, 1998–2005) 22 hours : 40 students

Mathematical Software (1997–1998) 06 hours : 15 students

Other Courses Taught at Stanford University, USA.

Introduction to Numerical Analysis (1991,1992) 30 hours : 40 students

Finite Elements (Graduate course, 1991) 30 hours : 30 students

Publications Related to Teaching.

Silvester, D. Introduction to Numerical Analysis (16 video lectures),
Stanford University Television Network, 1992.

Silvester, D. Forward Euler for stiff ODEs (video snippet),
<http://www.youtube.com/watch?v=ykLi0XJqLK0&feature=youtu.be>

Administration.

Academic line manager in the Department of Mathematics (2019–present)

Head of Group: Applied Mathematics (2007–2013).

Member of School Leadership Team (2007–2013)

Senior mentor in the School of Mathematics (2015–2019)

Chair of the Mathematics School Board (2004–2006, 2008).

Chair of the Mathematics Staff-Student Liason Committees (UG and PG, 2005–2006, 2008).

Co-Director for MSc programme in Applied Numerical Computing (2000–2007).

Member of the EPS Skills Training and Development Steering Group (2006–2007).

Member of the University CRIS Project Academic Advisory Group (2015–2016)

Other Offices held at UMIST (selected)

Head of Group: Applied Mathematics (2004–2005).

Chairman of the Mathematics Teaching Quality Management Panel (1999–2004).

Director of Postgraduate Studies in the Mathematics Department (1995–1999).

Chairman of the UMIST Computer Users Sub-committee (1994–1996).

UMIST Academic Information Services Committee (Ex-officio member, 1994–1996).

International Appointments

I am a member of the international programme committee of a biennial conference series on “Iterative Methods in Scientific Computing”. The most recent meeting was held in Copper Mountain in Colorado in April 2018.

I was part of an international panel that evaluated a Special Research Programme on ‘Numerical and Symbolic Scientific Computing’ at the Johannes Kepler University in Linz, Austria. The evaluation took the form of a one-day hearing held in Linz in December 2000.

I was a member of an international panel that evaluated Mathematics proposals for the Research Council of Norway (2010–2012). These evaluations were completed during a two-day meeting held annually in Oslo.

I was a member of an international panel that evaluated research products (VQR 2004-2010) on behalf of ANVUR and the Italian Ministry of Education in Autumn 2012. This appointment was renewed in 2016 and in 2018.

I was a member of an international panel that evaluated Mathematics proposals for the Research Council of Sweden in 2014. I performed the same role in 2016 and in 2019.

I was part of an international panel that evaluated Mathematics proposals for the Portuguese Research Funding Council (FCT) in two meetings in Lisbon held in 2014. I performed the same role in 2016. I also chaired a specialist mathematics panel held in November 2017.

I was a member of an external panel that evaluated the funding for the Oberwolfach Research Institute for Mathematics (MFO) in Germany. The evaluation took the form of a one-day hearing held in Oberwolfach in May 2016.