

Vita and Bibliography

David J. Eyre

Birthdate: January 21, 1961

Birthplace: Logan, Utah

Academic Degrees:

B.S.	1985	University of Utah
M.S.	1990	University of Utah
Ph.D.	1992	University of Utah

Professional Experience:

1983-1986 Research Assistant, Environmental Studies Laboratory, University of Utah Research Institute, Salt Lake City, Utah

1987-1989 Teaching Assistant, Department of Mathematics, University of Utah, Salt Lake City, Utah

1989-1992 Teaching Fellow, Department of Mathematics, University of Utah, Salt Lake City, Utah

1992-1995 Postdoctoral Fellow, High Performance Computing Research Center, University of Minnesota, Minneapolis Minnesota

1995-2001 Research Assistant Professor of Mathematics, University of Utah, Salt Lake City, Utah

2001-present Director of Biomathematics and Software Engineering, Idaho Technology Inc., Salt Lake City, Utah

2001-present Adjunct Associate Professor of Mathematics, University of Utah, Salt Lake City, Utah

Significant publications:

1. Peter Alfeld, David J. Eyre, and Larry L. Schumaker, Machine-Aided Investigation of Multivariate Spline Spaces, in C.K. Chui, L.L. Schumaker, and J.D. Ward (eds), Approximation VI, Academic Press, 1989, 1-4.
2. P. Alfeld and D. J. Eyre, The exact analysis of general sparse rational linear systems, ACM Transactions on Mathematical Software, **17**, Dec. 1991, pp. 502-518.

3. P. Alfeld and D. J. Eyre, Algorithm 701: Goliath - A software system for exact analysis of rectangular rank-deficient sparse linear systems, *ACM Transactions on Mathematical Software*, **17**, Dec. 1991, pp. 519-532.
4. D. J. Eyre, Systems of Cahn-Hilliard Equations, *SIAM Journal of Applied Mathematics*, **53**, Dec. 1993, pp. 1686-1712.
5. Ternary alloy Cahn-Hilliard dynamics, in *Mathematics of Microstructure Evolution*, in Long-Qing Chen, Brent Fultz, John W. Cahn, John R. Manning, John E. Morral, and John Simmons (eds), *Mathematics of Microstructure Evolution*, SIAM Press, Philadelphia.
6. G. W. Milton, D. J. Eyre and J. V. Mantese, Finite frequency range Kramers Kronig relations: Bounds on the Dispersion, *Physical Review Letters*, **79**, 3062-3065.
7. D. Grunbaum, D. J. Eyre and A. F. Fogelson, Functional geometry of ciliated tentacular arrays in active suspension feeders, *The Journal of Experimental Biology* **201**, 2575-2589
8. D. J. Eyre, Unconditionally gradient stable time marching the Cahn-Hilliard equation, in *Computational and Mathematical Models of Microstructural Evolution*, Eds. J.W. Bullard, R. Kalia, M. Stoneham, L-Q. Chen, The Materials Research Society, 1998.
9. D. J. Eyre and G. W. Milton, A fast numerical scheme for computing the response of composites using grid refinement, *European Physical Journal Applied Physics* **6**, 41-47.
10. D. J. Eyre, R. S. Lakes and G. W. Milton, Bounds for interpolating complex effective moduli of viscoelastic materials from measured data, *Rheologica Acta*, 2001.
11. D. J. Eyre, J. W. Cahn, Cascades of spinodal decomposition, in preparation.
12. D. J. Eyre, A geometric method to find diffusive traveling waves in coupled systems, preprint.

Mathematical Software:

1. P. Alfeld and D. J. Eyre, GOLIATH, A software system for exact analysis of rectangular rank-deficient sparse linear systems, (1990).
2. D. J. Eyre and G. W. Milton, Finite frequency Kramers-Kronig relations, (1997)
3. D. J. Eyre and A. L. Fogelson, IBIS, Immersed boundary and interface software, (1998)

Patents:

1. D. J. Eyre, K. M. Ririe, R. P. Rasmussen, Variant Analysis of Fluorescent melting curves by Fast Fourier Transform Digital Processing, pending.

Awards, grants and contracts:

1. Superior Graphical Presentation Award, Univ. of Minnesota, Supercomputing Center, 1994.
2. Visiting Fellow, Institute for Mathematics and its Applications, University of Minnesota, 1991
3. NSF Industrial Postdoctoral Fellowship, 1996-1999
4. General Motors Industrial Research, 1998.
5. Idaho Technologies Industrial Research, 1999, 2000
6. Visiting Scholar, Center for Computational and Theoretical Materials Science, National Institute of Standards and Technology, 1997-present.

Invited Colloquia and Seminar Talks

1. Seminar Speaker, "The dynamics of the Cahn-Hilliard Equation", IMA, December 1990.
2. Minisymposium Speaker, "Simulations of ternary alloy phase separation and coarsening with Cahn-Hilliard Equations", SIAM Conference on Mathematical and Computational Methods in Materials Science, Pittsburgh, March 1994.
3. Seminar Speaker, "Ternary alloy Cahn-Hilliard dynamics", Brigham Young University, Department of Mathematics, November 1994.
4. Seminar Speaker, "Dynamics of the ternary alloy Cahn-Hilliard equations", University of Tennessee, Department of Mathematics, November 1994.
5. Colloquium Speaker, "The theory of phase separation and coarsening in multicomponent alloys", Colorado School of Mines, Department of Mathematics, December 1994.
6. Seminar Speaker, "A proposed mechanism of secondary spinodal decomposition in a multicomponent alloy", National Institute of Standards and Technology, January 1995
7. Minisymposium Speaker, The Metals Society Annual Meeting, Cleveland OH, Fall 1995.

8. Colloquium Speaker, "Supercomputing applications in materials science", McMaster University, Department of Material Science, January 1995.
9. Minisymposium Speaker, "Finite frequency Kramers Kronig Relations", PIERS Annual Meeting, July 1997
10. Minisymposium Speaker, "Ternary alloy Cahn-Hilliard Equations", The Metals Society Annual Meeting, Indianapolis IN, Fall 1997.
11. Minisymposium Speaker, "Metastable pseudo binary solutions of the ternary alloy Cahn-Hilliard Equations", The Metals Society Annual Meeting, Indianapolis IN, Fall 1997.
12. Seminar Speaker, "Cascades of spinodal decomposition in multicomponent Cahn-Hilliard equations", National Institute of Standards and Technology, October 1997.
13. Seminar Speaker, "Unconditionally stable time marching schemes for gradient flows", National Institute of Standards and Technology, October 1997.
14. Seminar Speaker, "Cascades of spinodal decomposition in multicomponent Cahn-Hilliard equations", Carnegie Mellon University, October 1997.
15. Minisymposium Speaker, "Finite frequency Kramers Kronig Relations", AMS Meeting, Albuquerque, November 1997.
16. Minisymposium Speaker, "Finite frequency Kramers Kronig Relations", AMS Meeting, Albuquerque, November 1997.
17. Seminar Speaker, "Finite frequency Kramers Kronig Relations", CNRS Marseille, July 1998.
18. Minisymposium Speaker, "A fast numerical scheme for computing the response of composites using grid refinement", PIERS Annual Meeting, July 1998
19. Seminar Speaker, "A fast scheme for computing the effective properties of composites with grid refinement", Penn. St. University, Department of Mathematics, December 1998.
20. Colloquium Speaker, "Cascades of phase separation in multicomponent alloys", University of North Carolina, Department of Mathematics, December 1998.
21. Seminar Speaker, "Cascades of phase separation in multicomponent alloys", Brigham Young University, Department of Mathematics, June 2000.
22. Invited Speaker, "Unconstrained nucleation in in multicomponent alloys", MIT, Department of Materials Science, January 2001.

23. Invited Speaker, “Unconstrained nucleation in in multicomponent alloys”, Harvard University, Department of Materials Science, January 2001.