

Curriculum Vitae

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EDUCATION:

Ph.D.: Department of Mathematics, Faculty of Science, Australian National University, Canberra, ACT, Australia (1980-1983).

Supervisors: Drs R.S. Anderssen and F.R. de Hoog, *Area:* Computational Applied Mathematics/ Numerical Analysis.

B.Sc.(Hons): Department of Mathematics, University of Canterbury, Christchurch, New Zealand. (First Class Honours.)

PROFESSIONAL EXPERIENCE:

- Associate Professor, Dept of Mathematics, Brigham Young University, Jan 1998–present.
- Senior System Analyst, SOS Computer Systems, Inc., 1995– Dec 1997.
- Visiting Ass. Professor, Dept of Mathematics, University of Texas of the Permian Basin, 1994– 1995.
- Visiting Ass. Professor, Dept of Mathematics, University of Colorado at Denver, 1993–94.
- Senior Lecturer, Dept of Mathematics, City University of Hong Kong, 1990–92.
- Assistant Professor, Department of Mathematics, University of Wyoming, 1985–90.
- Postdoctoral Fellow/Research Engineer, Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin, 1983–85. Also, Lecturer, Mathematics and Aerospace Departments of UT-Austin, 1984– 85.
- Visiting Fellow, Centre for Mathematical Analysis, Australian National University Canberra, ACT, Australia, Aug 90, Jan to Mar 88 and May to June 83.

REFERENCES:

- Professor Graham F. Carey, Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin, Austin, Texas, 78712. Phone: (512)471-4207. Fax: (512)471-3788. E-mail: carey@cfdlab.ae.utexas.edu.

- Professor Raytcho D. Lazarov, Department of Mathematics, Texas A & M University, College Station, Texas 77843-3261. Phone: (979) 845-7578. Fax: (979) 862-4190. E-mail: lazarov@math.tamu.edu.
- Professor Richard E. Ewing, Texas A & M University, College Station, Texas 77843. Phone: (979) 862-2716. Fax: (979) 845-5827. E-mail: ewing@tamu.edu.
- Dr Robert S. Anderssen, CSIRO Mathematical and Information Sciences, PO Box 664, Canberra City, ACT 2601, Australia. E-mail: bob.anderssen@cmis.csiro.au.

OTHERS:

- Referee for Communications in Applied Numerical Methods, Computing and SIAM Journal for Numerical Analysis. (1985-present).
- ICES fellow at U. of Texas at Austin in March 2003.
- Organized special session in AMS sectional meeting in October 2003 with Joe Koebbe of Utah State Univ.
- Earmarked Research Grant, University and Polytechnic Grants Committee, Hong Kong Government, 1990, "Scientific Computation in Contaminant Transport Modeling.
- Member of the Institute for Scientific Computation and the Enhanced Oil Recovery Institute at the University of Wyoming (1985-1990.)
- Selected participant in the Colloquium on Excellence in Teaching at the University of Wyoming (May 1986.)
- Associated with the Center for Enhanced Oil and Gas Recovery Research and the Texas Institute of Computational Mechanics, University of Texas at Austin (1983-85.)
- Holder of an Australian National University Ph.D. Scholarship (1980-83.)

CURRENT RESEARCH TOPICS

1. Theoretical and computational analysis of divergence free finite elements based on the Powell-Sabin-Heindl elements. Collaborator: Professor G.F. Carey (U. of Texas at Austin).
2. Finite element solution of a glaciology problem. Collaborators: Professor G.F. Carey, Dr M.L. Anderson (U. of Texas at Austin).
3. Theoretical and computational analysis of finite element solutions of generalized Newtonian fluids. Collaborators: Professor G.F. Carey and W. Barth (U. of Texas at Austin).
4. Solution of singularly perturbed reaction-diffusion problems . Collaborator: Professor S. -D. Shih (U. of Wyoming).

5. Numerical solution of Ginsburg-Landau type problems. Collaborators: Professors V. Villamizar, J. Dallon, K. Lu (BYU)

RECENT CONFERENCE PRESENTATIONS/PAPERS

1. The 7th US National Congress on Computational Mechanics, Large Scale Finite Element Simulation of a Class of Incompressible Non-Newtonian Fluids with Application to Convection Flows, W. BARTH, G.F. Carey, S.-S. Chow, Albuquerque, New Mexico, July 2003.
2. International Congress on Industrial and Applied Mathematics 2003, Numerical Solution of Generalized Newtonian Fluid Flows using Powell-Sabin-Heindl Elements, S.-S. CHOW, G.F. Carey, Sydney, Australia, July 2003.
3. ICIAM 2003, Finite Element Simulation of a Class of Non-Newtonian Fluids with Applications to Industrial Fluids and Blood Flow, W. BARTH, G.F. Carey, S.-S. Chow, Sydney, Australia, July 2003.
4. Finite Elements in Fluids 2003, Simulation of Coupled Flow and Transport, G.F. CAREY, W. Barth, S.-S. Chow, B. Kirk, J. Woods and M. Anderson, Nagoya City, Japan, April 2003. (Carey's invited keynote talk.)
5. SIAM Conference on Mathematical and Computational Issues in the Geosciences, Finite Element Solutions of a Glaciology Problem, S.-S. CHOW, G.F. Carey, Austin, Texas, March 2003 (Invited Talk.)
6. Scientific Computing, an International Congress of Mathematicians 2002 satellite meeting, Numerical Approximations of Generalized Newtonian Fluids using Heindl Elements, S.-S. CHOW and G.F. Carey, Xi'an, China, Aug 2002 (Invited Talk.)
7. American Mathematical Society sectional meeting, Numerical Solution of a Glaciology Problem, S.-S. CHOW, Salt Lake City, Utah, October 2002.
8. Finite Element Rodeo 2002, Numerical Solution of Non-Newtonian Fluid Flows using Heindl Elements, S.-S. CHOW, College Station, Texas, March 2002.

LIST OF PUBLICATIONS:

Refereed Publications:

1. Modeling Error and Constitutive Relations in Simulation of Flow and Transport, G.F. Carey, W. Barth, J.A. Woods, B. Kirk, M.L. Anderson, S.-S. Chow and W. Bangerth, submitted to International Journal of Numerical Methods in Fluids.
2. Finite element approximations of a glaciology problem, S.-S. Chow, G.F. Carey, M.L. Anderson, submitted to Mathematical Modelling and Numerical Analysis (M²AN).
3. A Power Series in Small Energy for the Period of the Lotka-Volterra System. S.D. Shih and S.-S. Chow, to appear in Taiwanese Journal of Mathematics.
4. Numerical Approximations of Degenerate Extended Williamson Fluids using Powell-Sabin-Heindl Elements, S.S. Chow, G.F. Carey, to appear in *Current Trends in Scientific Computing*, ed. Z. Chen, R. Glowinski and K. Li, AMS Contemporary Mathematics book series, 2003.
5. Numerical Approximation of Generalized Newtonian Fluids using Powell-Sabin-Heindl Elements: I. Theoretical estimates, S.-S. Chow, G.F. Carey, to appear in International Journal of Numerical Methods in Fluids.
6. Equivalence of n -point Gauss-Chebyshev rule and $4n$ -point midpoint rule in computing the period of a Lotka-Volterra system, S.-D. Shih and S.-S. Chow, submitted to Advances in Computational Mathematics, all reviews positive but require minor revisions.
7. V.M. Miklyukov, S.-S. Chow, V.P. Solovjov, s-Zones of ideal flows in capillary bands, submitted.
8. W. Barth, G. Carey, S. Chow, B. Kirk, Finite Element Modeling of Generalised Newtonian Flows, to appear in the Proceedings of the Fourteenth Australasian Fluid Mechanics Conference to be held in Adelaide, Australia in Dec 9-14, 2001.
9. S-S. Chow, Finite Element Approximations in Saturated Groundwater Flows, in *Finite Element Modeling of Environmental Problems*, ed. G.F. Carey, Wiley, 1995.
10. S.-S. Chow and G.F. Carey, Superconvergence Phenomena for Nonlinear Two Point Boundary Value Problems, *Numerical Methods for Partial Differential Equations*, Vol. 9, n 5, pg 561, Sept 1993.
11. S.-S. Chow and R.S. Anderssen, Determination of the Transmissivity Zonation using a Linear Functional Strategy, *Inverse Problems*, Vol. 7, n. 6, pg 841, Dec 1992.

12. A.I. Pehlivanov, R.D. Lazarov, G.F. Carey, and S.-S. Chow, Superconvergence Analysis of Approximate Boundary- Flux Calculations, *Numerische Mathematik*, Vol. 63, n. 4, pg 483, 1992.
13. S.-S. Chow, Finite Element Error Estimates for a Blast Furnace Gas Flow Problem, *SIAM Journal of Numerical Analysis*, Vol. 29, n 3, pg 769, June 1992.
14. S.-S. Chow, G.F. Carey and R.D. Lazarov, Natural and Postprocessed Superconvergence in Semilinear Problems, *Numerical Solution of Partial Differential Equations*, Vol. 7, n. 3, pg 245, Fall 1991.
15. R.S. Anderssen and S.-S. Chow, Resolving the Transmissivity Zonation in a confined Aquifer, *Proceedings of Mini-conference on Inverse Problems, Aug. 1990*, Centre for Math. Analysis, Australian National University, ed. R.S. Anderssen and A. Pani, 1991.
16. S.-S. Chow, Finite Element Error Estimates for Nonlinear Elliptic Equations of Monotone Type, *Numerische Mathematik*, Vol. 54, n. 4, pp 373-393, 1989.
17. S.-S. Chow and R.D. Lazarov, Superconvergence Analysis of Flux Computations for Nonlinear Two Point Boundary Value Problems, *Bulletin of the Australian Mathematical Society*, Vol. 40, n. 3, pg 465, Dec 1989.
18. G.F. Carey and S.-S. Chow, Well Singularities in Reservoir Simulation, *Society of Petroleum Engin. Reservoir Engineering*, pp 713-719, Nov. 1987.
19. S.-S. Chow, A Note on Quasi-Monotone Operators, *International Journal of Mathematics and Mathematical Sciences*, Vol. 10, No. 1, pp 203-204, 1987.
20. S.-S. Chow and G.F. Carey, Error Estimates of Galerkin Approximations of Subsonic Flows, *Journal of the Australian Mathematics Society, Series B, Applied Math.*, Vol. 29, pp 88-102, 1987.
21. G.F. Carey, S.-S. Chow, and M. Seager, Approximate Boundary Flux Calculations, *Computer Methods in Applied Mechanics and Engineering*, Vol. 50, pp 107-120, 1985.
22. S.-S. Chow, Finite Element Approximations of Unidirectional Nonlinear Seepage Flows, in *Computational Techniques and Applications: CTAC-83*, ed. J. Noye and C. Fletcher, North-Holland, Amsterdam, pp 577-590, 1984.
23. S.-S. Chow, Finite Element Error Estimates for Nonlinear Elliptic Problems of Monotone Type, *Ph.D. Thesis*, Department of Mathematics, Faculty of Science, Australia National University, April, 1983.

24. S.-S. Chow, R.S. Anderssen and F.R. de Hoog, The Application of the Finite Element Method to Fluid Flow in Packed Bed Reactors, in *Proceedings of the Fourth International Conference in Australia on Finite Element Methods*, ed. P.J. Hoadley and L.K. Stevens, University of Melbourne, Australia, August 1982, pp 54-58.

Non-Refereed Publications:

1. S.-S. Chow, Error Estimates for the Galerkin Approximations of Stream Functions in Nonlinear Flows, *Research Report MA-92-03*, Dept of Mathematics, City Polytechnic of Hong Kong, 1992.
2. S.-S. Chow and R.S. Anderssen, Determination of the Transmissivity Zonation using a Linear Functional Strategy, *Report CMA-R-91*, Centre for Math. Analysis, Australian National University.
3. S.-S. Chow and G.F. Carey, Superconvergence Phenomena for Nonlinear Two Point Boundary Value Problems, *Enhanced Oil Recovery Institute Preprint # 1989*, Univ. of Wyoming, Laramie, WY.
4. R.D. Lazarov, A.I. Pehlivanov, S.-S. Chow and G.F. Carey, Superconvergence Analysis of the Approximate Boundary- Flux Calculations, *Enhanced Oil Recovery Institute Preprint # 1989-08*, Univ. of Wyoming, Laramie, WY.
5. S.-S. Chow and R.D. Lazarov, Superconvergence Analysis of Flux Computations for Nonlinear Two Point Boundary Value Problems, *Report CMA-R09-88*, Centre for Math. Analysis, A.N.U., Canberra, Australia, March 1988.
6. S.-S. Chow and G.F. Carey, Error Estimates of Galerkin Approximations of Subsonic Flows, *TICOM report 85-12*, Univ. of Texas at Austin, September 1985.
7. S.-S. Chow, A Nonlinear Spherically Symmetric Seepage Flow Problem, in *Proceedings of the Fifth International Symposium on Finite Element Methods in Flow Problems*, University of Texas at Austin, Austin, Texas, January, 1984.
8. S.-S. Chow, Finite Element Analysis of a Three Dimensional Magneto-static Field Distribution Problem, *Report CMA-R29-83*, Centre for Mathematical Analysis, A.N.U., Canberra, Australia, August, 1983.
9. S.-S. Chow, Some Aspects of Finite Element Approximation Theory for Strongly Nonlinear Problems, *Report CMA-R25-83*, Centre for Mathematical Analysis, A.N.U., Canberra, Australia, May, 1983.
10. S.-S. Chow, Finite Element Error Estimation for Nonlinear Elliptic Problems: I. Equations of Monotone Type, *Report CMA-R24-83*, Centre for Mathematical Analysis, A.N.U., Canberra, Australia, May, 1983.
11. S.-S. Chow, Singular Value Decomposition and its Applications, *Research Report No. 15*, Dept. of Mathematics, Univ. of Canterbury, Christchurch, New Zealand, October, 1980.

Non-Mathematical Publications:

1. D. Mueller and S.-S. Chow, The Centryx Strategy: What, How and Why, technical white paper, SOS Computer Systems, Inc., 1996.
2. S.-S. Chow, The emergence of the other ATM: Asynchronous Transfer Mode, Credit Union Journal, May 21, 1997.