

P. Aaron Lott

Curriculum Vitae

RESEARCH INTERESTS Scientific Computation, Mathematical Modeling, Fluid Dynamics, Preconditioners, Spectral Element Method, Domain Decomposition, Multi-phase Flows.

EDUCATION **Ph.D. Applied Mathematics & Scientific Computation** 2008
University of Maryland, College Park. Advisors: H.C. Elman & A.E. Deane
Dissertation: Fast Solvers for Models of Fluid Flow with Spectral Elements

B.S. Mathematics, Summa Cum Laude 2001
University of Southern Mississippi, Hattiesburg. Advisor: T.H. Fay
Thesis: Periodic Solutions to Duffing's Equation via the Homotopy Method

PROFESSIONAL EXPERIENCE **National Institute of Standards and Technology**
National Research Council Research Associate 2008-Present

University of Maryland, College Park
Research Assistant Department of Computer Science 2007-2008
Student Advisor Applied Mathematics & Scientific Computation 2006-2007
Teaching Assistant Department of Mathematics 2004-2006
Research Assistant Institute for Physical Science & Technology 2002-2004
Teaching Assistant Department of Mathematics 2001-2003

NASA Goddard Space Flight Center
Summer Intern Computational Technologies Project 2004
Student Summer School for High Performance Computational Earth & Space Sciences 2002

National Institutes of Health
PRE-IRTA Fellow Laboratory of Computational Biology 2002-2003

PUBLICATIONS P. A. Lott, H. Elman Fast Iterative Solver for Incompressible Navier-Stokes Equations with Spectral Elements. In preparation.

D. L. Cotrell, P. A. Lott and G. B. McFadden Boundary Slip Effects on the Stability of Spiral Poiseuille Flow. In preparation.

G. B. McFadden, S. R. Coriell and P. A. Lott Onset of Convection in Monotectic Liquid Layers. In Review.

P. A. Lott, H. Elman Fast Iterative Solver for Convection-Diffusion Systems with Spectral Elements. Numerical Methods in Partial Differential Equations. Accepted.

T. H. Fay, P. A Lott Using the homotopy method to find periodic solutions of forced nonlinear differential equations. International Journal of Mathematical Education in Science & Technology. Volume 33, Number 5/Sept. 01, 2002. 701 - 714.

**TECHNICAL
REPORTS**

Matrix-Free Preconditioner for the Steady Advection-Diffusion Equation with Spectral Element Discretization. H. C. Elman and P. A. Lott, Student Paper, 10th Copper Mountain Conference on Iterative Methods. Apr. 6-11, 2008.

Survival Guide for Graduate Students in Scientific Computation. D. Dunlavy, C. Danforth, P. A. Lott, and R. Shuttleworth, Technical Report, AMSC program, University of Maryland, 2004.

PRESENTATIONS

Fast Solvers for Models of Fluid Flow. UMD Spiral talk, NIST, June. 2009.

Fast Solvers for Models of Fluid Flow. MD-DC-VA MAA Spring Section Meeting, Apr. 2009.

Computing Steady Flow States using Fast Iterative Solvers. Sigma Xi Sixteenth Annual Post-Doctoral Poster Presentation, Feb. 2009.

Computing Steady Flow States using Fast Iterative Solvers. 5th Annual Symposium of the Burgers Program for Fluid Dynamics, Nov. 2008.

Fast Solvers for Models of Fluid Flow. Symposium on Fluid Science and Turbulence, May 2008.

Matrix-Free Preconditioner for the Steady Advection-Diffusion Equation with Spectral Element Discretization. 10th Copper Mountain Conference on Iterative Methods, Apr. 2008.

Efficient Numerical Simulation of Advection Diffusion Systems. NIST MCSD Seminar, Dec. 2007.

Fast Iterative Solvers for Fluid Flows. 4th Annual Symposium of the Burgers Program for Fluid Dynamics, Nov. 2007.

Simulating Fluids using Fast Diagonalization. 8th Annual Monroe Martin Graduate Research Conference. University of Maryland, Nov. 2007.

Solving linear systems in fluid dynamics. AMSC Student Seminar, Sept. 2007.

Introduction to Chaos via Dynamics of a Double Pendulum. Maryland Day, Apr. 2007.

Adaptive High-Order Methods for Fluid Flows. Inaugural Symposium of the Burgers Program for Fluid Dynamics, Nov. 2004.

Performance Analysis using Profiling and Cycle Analysis Tools. SC Student Seminar, Oct. 2004.

Finding Periodic Solutions to Nonlinear Differential Equations using the Homotopy Method MAA Louisiana MS 78th Annual Section Meeting. Mar. 2, 2001. 10th Annual USA/USM Mini conference in Undergraduate Research, Apr. 2001.

Using VisualDSolve to Analyze Nonlinear Differential Equations MAA Louisiana MS 77th Annual Section Meeting and Feb. 25, 2000. 9th Annual USA/USM Mini conference in Undergraduate Research, Feb. 2000.

The Harmonic Oscillator With Periodic Forcing 8th Annual USA/USM Mini Conference in Undergraduate Research, Feb. 1999.

P. Aaron Lott**Curriculum Vitae****HONORS &
AWARDS****University of Maryland, College Park**

SIAM Student Chapter Outstanding Service Award	2008
College of Computer Mathematical and Physical Sciences Dean's Fellow	2007
Goldhaber & VIGRE Travel Award	2007

University of Southern Mississippi, Hattiesburg

Wright W. Cross Senior Scholar	2000
USM NASA Space Grant Scholar	1999
Alton C. Grimes Scholar	1999
Wright W. Cross Scholar	1998

SERVICE

President	AMSC Student Council & UMD SIAM Student Chapter	2007-2008
Secretary	AMSC Student Council	2006-2007
Co-Founder	UMD Math Department Graduation Conference	2006-2008
Organizer	Spotlight on Graduate Research Competition	2005
Founder	Applied Math & Scientific Computation Student Seminar	2004-2007
President	USM section of the Kappa Mu Epsilon Mathematics Honor Society	2000-2001
Instructor	Boys and Girls Club of Seminary, MS	Summer 1998

MEMBERSHIP

SIAM, MAA, APS	2008-Present
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SKILLS

Fortran 90/95, C/C++, Matlab, Mathematica, \LaTeX , HTML