

Mark F. Adams

Applied Physics and Applied Mathematics Department
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EDUCATION

Ph.D. in Civil Engineering, December 1998
University of California, Berkeley
Dissertation: “Multigrid Equation Solvers for Large Scale Nonlinear Finite Element Simulations”
Co-chairs: Prof. R.L. Taylor and Prof. James Demmel.
Minors: Applied Mathematics and Computer Science.

B.A. in Architecture, June 1983
University of California, Berkeley

ACADEMIC AWARDS & HONORS

Gordon Bell Prize, special category, SuperComputing 2004.
John von Neumann research fellowship in Computer Science, Sandia National Laboratories.
Carl Benz Award for the best industrial application at Mannheim Supercomputer '99 Conference
Best Student Paper Award, 5th Copper Mountain Conference on Iterative Methods, 1998

PUBLICATIONS

“The micromechanics of cortical shell removal in the human vertebral body”, *Comp. Meth. Appl. Mech. Engrg.* 196, pp 3025-3032.

“Performance of particle in cell methods on highly concurrent computational architectures”. *Journal of Physics: Conference Series*(2007)

“Ultrascaleable implicit finite element analyses in solid mechanics with over a half a billion degrees of freedom”, (with H.H. Bayraktar, P. Papadopoulos and T.M. Keaveny), Submitted ACM/IEEE Proceedings of SC2004: High Performance Networking and Computing, 2004 (Finalist in Gordon Bell competition).

“Algebraic multigrid methods for constrained linear systems with applications to contact problems in solid mechanics”, *Numerical Linear Algebra with Applications*, 2004.

“Applications of Algebraic Multigrid to Large-Scale Finite Element Analysis of Whole Bone Micro-Mechanics on the IBM SP”, (with H.H. Bayraktar, P. Papadopoulos and T.M. Keaveny), ACM/IEEE Proceedings of SC2003: High Performance Networking and Computing, 2003.

- “Parallel Multigrid Smoothing: Polynomial Versus Gauss-Seidel”, (with M. Brezina, J. J. Hu and R. S. Tuminaro), *J. Comp. Phys.*, 2003,
- “Evaluation of Three Unstructured Multigrid Methods on 3D Finite Element Problems in Solid Mechanics”, *International Journal for Numerical Methods in Engineering*, 2002.
- “A Distributed Memory Unstructured Gauss-Seidel Algorithm for Multigrid Smoothers”, *ACM/IEEE Proceedings of SC2001: High Performance Networking and Computing*, 2001.
- “Parallel Multigrid Solvers for 3D Unstructured Finite Element Problems in Large Deformation Elasticity and Plasticity”, *International Journal for Numerical Methods in Engineering*, 2000.
- “Parallel Multigrid Solver Algorithms and Implementations for 3D Unstructured Finite Element Problem”, *ACM/IEEE Proceedings of SC99: High Performance Networking and Computing*, 1999.
- “Multigrid Equation Solvers for Large Scale Nonlinear Finite Element Simulations”, Ph.D. dissertation, U.C. Berkeley. U.C. Berkeley, Technical Report UCB//CSD-99-1033.
- “A Parallel Maximal Independent Set Algorithm”, (winner of 1998 5th Copper Mountain Conference on Iterative Methods Best Student Paper Award). U.C. Berkeley, Technical Report UCB//CSD-98-993.

PROFESSIONAL EXPERIENCE

- | | |
|---|----------------|
| Research Scientist | 2004 - present |
| Applied Physics and Applied Mathematics Department, Columbia University | |
| Technical Staff | 2002 - 2004 |
| Computational Sciences, Computer Sciences and Mathematics Center, Sandia National Laboratories. | |
| John von Neumann research fellow | 2000 - 2002 |
| Computational Sciences, Computer Sciences and Mathematics Center, Sandia National Laboratories. | |
| Postdoc | 1998 - 2000 |
| Computer Science Division, U.C. Berkeley | |
| Graduate Student Researcher | 1996 - 1998 |
| Computer Science Division, U.C. Berkeley | |
| Summer intern | Summer 1998 |
| Center for Applied Scientific Computing, Lawrence Livermore National Laboratory | |
| Graduate Student Instructor | 1993 - 1996 |
| Department of Civil Engineering and Computer Science Division, U.C. Berkeley | |
| Graduate Student Researcher | 1992 - 1994 |
| Department of Civil Engineering, U.C. Berkeley | |
| Developing a graphic user interface and elements for an FEM program to analyzing reinforced concrete bridges, with Filip C. Filippou. | |