Christopher Siefert

Curriculum Vitæ

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Research Interests

Linear Algebra, Krylov Methods, Preconditioners, KKT Systems, Algebraic Multigrid, Scalable Computing, Simulation, Optimization and Spatial Statistics.

Education

2000–2006	University of Illinois at Urbana-Champaign Ph.D. in Computer Science with Computational Science and Engineering Option (GPA 3.93/4.0). Advisor: Eric de Sturler.
1996–2000	College of William and Mary B.S. in Computer Science and Mathematics, May 2000. Highest Honors in Computer Science (GPA 3.95/4.0).

Employment

2008–present	Senior Member of the Technical Staff, Computational Shock and Multiphysics Group, Sandia National Laboratories.
2006–2008	Limited Term Technical Staff, Scalable Algorithms Group, Sandia National Laboratories.
2005–2006	Research Assistant, Department of Computer Science (UIUC).
2003–2005	Research Assistant, Center for Simulation of Advanced Rockets (UIUC).
2000–2003	National Science Foundation Graduate Fellow, Department of Computer Science (UIUC).
Summer 2001	Summer Research Intern, Computational Sciences and Mathematical Research (Sandia Livermore National Laboratory).
Summer 2000	Summer Research Student, Department of Computer Science (College of William and Mary) and Computational Sciences and Mathematical Research (Sandia Livermore National Laboratory).
1999–2000	Head Grader, Department of Computer Science (College of William and Mary).
Summer 1999	Summer Research Student, Department of Computer Science (College of William and Mary).

Awards and Honors

2000–2003	National Science Foundation Fellow.
2000	Winner of the Lord Botetourt Medal (One issued each year).

Publications and Reports

[1] P. Bochev, C. Siefert, R. Tuminaro, J. Xu and Y. Zhu. Compatible Gauge Approaches for H(div) Equations. Technical Report, SAND 2007-5384P, Sandia National Laboratories, August 2007.

[2] P. Bochev, J. Hu, C. Siefert and R. Tuminaro. An Algebraic Multigrid Approach Based on a Compatible Gauge Reformulation of Maxwell's Equations. *SIAM Journal on Scientific Computing* Volume 31, Issue 1, pp. 557–583, 2008.

[3] M. Gee, C. Siefert, J. Hu, R. Tuminaro and M. Sala. ML 5.0 Smoothed Aggregation Users Guide. SAND2006-2649, Sandia National Laboratories, May 2006.

[4] C. Siefert and E. de Sturler. Probing Methods for Saddle-Point Problems. *Electronic Transactions in Numerical Analysis (ETNA)*, Special Volume on Saddle Point Problems: Numerical Solution and Applications, Volume 22, pp. 163–183, April 2006.

[5] C. Siefert and E. de Sturler. Preconditioners for Generalized Saddle-Point Problems. *SIAM Journal on Numerical Analysis*, Volume 44, Number 3, pp. 1275–1296, 2006.

[6] C. Siefert. Preconditioners for Generalized Saddle-Point Problems. PhD Thesis. 2006.

[7] J. Liesen, E. de Sturler, A. Sheffer, Y. Aydin, and C. Siefert. Efficient Computation of Planar triangulations. *Proceedings of the 10th International Meshing Roundtable*, 2001.

[8] C. Siefert, V. Torczon and M.W. Trosset. Model-Assisted Pattern Search Methods for Optimizing Expensive Computer Simulations. *ASA Proceedings of the Joint Statistical Meeting*, 2002. pp. 3236-3241.

[9] C. Siefert. Model-Assisted Pattern Search. Honors Thesis. Accepted with Highest Honors. 2000.

Technical Presentations

[10] "Partitioning for Multigrid Solvers" — Invited Talk at the Workshop on Combinatorial Scientific Computing and Petascale Simulations (CSCAPES) 2008.

[11] "Recent Algorithmic (and Practical) Developments in ML" — Talk at the 10th Copper Mountain Conference on Iterative Methods, April 2008.

[12] "Introduction to Multilevel Solvers for the Physical Sciences" — Invited CSUMS Lecture, College of William and Mary, December 2007.

[13] "Algebraic Multigrid and a Compatible Gauge Reformulation of Maxwell's Equations" — Invited Computer Science Seminar, College of William and Mary, November 2007.

[14] "What's New in ML? New Features in Trilinos 8.0" — Trilinos Users Group Meeting 2007, November 2007.

[15] "Algebraic Multigrid and Algebraic Reformulations of the Eddy Current Equations, Part II" — Talk at the 13th Copper Mountain Conference on Multigrid Methods, March 2007.

[16] "Algebraic Multigrid and Algebraic Reformulations of the Eddy Current Equations" — Invited Talk for CSE 2007, February 2007.

[17] "What's New in ML? New Features in Trilinos 7.0" — Trilinos Users Group Meeting 2006, November 2006.

[18] "AMG and a Discrete Reformulation for Maxwell's Equations" — Computer Science Research Institute Seminar at Sandia National Laboratory, October 2006.

[19] "Probing Methods for Generalized Saddle-Point Problems" — Contributed Talk for Preconditioning 2005, May 2005.

[20] "Generalized Saddle-Point Preconditioners and Approximate Schur Complements" — Invited Talk for CSE 2005, February 2005.

[21] "Preconditioners for Generalized Saddle-Point Problems" — Talk for Midwest Numerical Analysis Day, April 2004.

[22] "Preconditioners for Generalized, Stabilized Saddle-Point Problems" — Contributed Talk for Preconditioning 2003 Conference, October 2003.

[23] "Model-Assisted Pattern Search Methods for Optimizing Expensive Computer Simulations" — Topic Contributed/Invited Talk at Joint Statistics Meeting, August 2002.

[24] "MAPS: An algorithm for non-parametric Response Surface Methodology" — Poster Session at the 2000 SRCOS/ASA Conference.

[25] "Model-Assisted Pattern Search" — Talk at Sandia National Laboratory, August 2000.

[26] "Model-Assisted Pattern Search" — Invited Talk for the Board of Visitors of the College of William and Mary, Spring 2000.

Professional Societies and Service

Societies	SIAM, ACM.
Service	UIUC Computer Science Graduate Student Organization Coordinator 2002-2003.