

W. Kyle Anderson

Education

PhD, Aerospace Engineering, Mississippi State University, 1986
MS, Aerospace Engineering, Texas A&M University, 1982
BS, Aerospace Engineering, Texas A&M University, 1981

Employment

Professor, SimCenter: National Center for Computational Engineering, University of Tennessee at Chattanooga,
August 2003 to Present
Chief Architect, Symantec Corporation, April 2000 to July 2003
Senior Research Scientist, NASA Langley Research Center, January 1983 to April 2000
Research Assistant, Texas A&M University, August 1980 to December 1982

University Service

ENCM 731: Computational Design, Graduate-level course, Univ. of Tennessee at Chattanooga.
ENCM 710: Computational Fluid Dynamics II, Graduate-level course, Univ. of Tennessee at Chattanooga.
AOE 6146, Computational Fluid Dynamics II, Graduate-level course, Virginia Polytechnic Institute and State
University, Spring 1998 (adjunct).
Major thesis advisor for 3 Masters students and 5 Ph.D. students.

Academic Specialties

Computational Fluid Dynamics
Solution Algorithms for Structured and Unstructured Grids
Sensitivity Analysis and Computational Design

Honors and Awards

Univ. of Tennessee at Chattanooga Research Award (2007)
Gordon Bell Prize (Special Category), supercomputing '99, 1999
NASA Exceptional Achievement Medal, 1998
NASA Langley Richard T. Whitcomb Technology Transfer Award, 1998
AIAA Lawrence Sperry Award, 1994
Group Achievement Award for CFL3D Development Team, 1990
Outstanding Paper of the NASA Langley Aeronautics Directorate, 1989
Chairman of Computational Sciences Technical Committee, NASA Langley Research Center, 1999
National Aeronautics and Space Administration Certificates of Recognition (2007)

- CFL3D
- FUN3D-v8.0: Design Optimization Capability
- FUN3D-v7.0: Grid Deformation Capability
- FUN3D-v6.0: Sensitivity Analysis Capability
- FUN3D-v5.0: Adjoint Solver Capability

Professional Memberships and Service

Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA)
Registered Professional Engineer (Texas)
Registered Patent Agent, United States Patent and Trademark Office
National Association of Patent Practitioners
American Intellectual Property Law Association
AIAA Applied Aerodynamics Technical Committee (2008)
Associate Editor AIAA Journal

Recent Publications and Presentations

1. Elliott, L., Anderson, W. K., and Kapadia, S., "Solid Oxide Fuel Cell Design Optimization with Numerical Adjoint Techniques," *ASME J. of Fuel Cell Science and Technology*, Vol. 6, No. 4, November 2009.
2. Anderson, W. K., Burdyslaw, C., and Karman, S. L., "Geometry Parameterization Method for Multidisciplinary Applications," *AIAA J.*, Vol. 47, No. 6, June 2009.
3. Lange, K., and Anderson, W. K., "Sensitivity Derivatives for Plasma Discharge Simulations," *AIAA J.*, Vol. 47, No. 6, June 2009.
4. Kapadia, S., Anderson, W. K., Elliott, L., "Adjoint-Based Sensitivity Analysis and Error Correction Methods Applied to Solid-Oxide Fuel Cells," *ASME J. of Fuel Cell Science and Technology*, Vol. 6, No. 2, May 2009.
5. Kapadia, S., Anderson, W. K., Elliott, L., "Sensitivity Analysis of a Three-Dimensional Solid-Oxide Fuel Cell Model," presented at the ASME 6th International Fuel Cell Science, Engineering, and Technology Conference, Denver, CO, June 16-18, 2008.
6. Kapadia, S., Anderson, W. K., Elliott, L., "Adjoint-Based Sensitivity Analysis and Error Correction Methods Applied to Solid-Oxide Fuel Cells," accepted for publication, *ASME J. of Fuel Cell Science and Technology*, also presented at the ASME 5th International Fuel Cell Science, Engineering, and Technology Conference, New York, NY., June 18-20, 2007.
7. Kapadia, S., Anderson, W. K., Elliott, L., and Burdyslaw, C., "Adjoint Method for Solid-Oxide Fuel Cell Simulations," *J. of Power Sources*, Vol. 166, February 2007, pp. 376-385.
8. Kapadia, S., Anderson, W. K., Elliott, L., "Design and Sensitivity Analysis of Solid-Oxide Fuel Cells Using Discrete Adjoint Methods," AIAA 2007-4832, paper presented at the AIAA 5th International Energy Conversion Engineering Conference and Exhibit, St. Louis, MO, June 25-27, 2007.
9. Elliott, L., Anderson, W. K., Kapadia, S., and Burdyslaw, C., "Analysis and Design of Solid-Oxide Fuel Cells with Advanced Numerical Techniques," AIAA 2007-4834, paper presented at the AIAA 5th International Energy Conversion Engineering Conference and Exhibit, St. Louis, MO, June 25-27, 2007.
10. M. Sahasrabudhe, S. Karman Jr., and W. Anderson, University of Tennessee, Chattanooga, TN, "Grid Control of Viscous Unstructured Meshes Using Optimization," AIAA-2006-532, 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 9-12, 2006.
11. Karman, Jr., S. L., Anderson, W. K., Sahasrabudhe, M., "Mesh Generation Using Unstructured Computational Meshes and Elliptic Partial Differential Equation Smoothing," AIAA Paper No. 2005-0923, 43rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2005.
12. Burdyslaw, C. E., Anderson, W. K., "A General and Extensible Unstructured Mesh Adjoint Method," *AIAA Journal of Aerospace Computing, Information, and Communications*, Vol. 2, No. 10, October 2005.
13. Nielsen, E. J., and Anderson, W. K., "Recent Improvements in Aerodynamic Design Optimization on Unstructured Meshes," *AIAA Journal*, Vol. 40, No. 6, June 2002, pp. 1155-1163.
14. Anderson, W. K., Newman, J. C., Whitfield, D. L., Nielsen, E. J., "Sensitivity Analysis for Navier-Stokes Equations on Unstructured Meshes Using Complex Variables," *AIAA Journal*, Vol. 39, No. 1, Jan. 2001, pp. 56-63.

Recent Theses and Dissertations Directed and/or Major Professor

1. Lange, J. K., "Sensitivity Analysis for a Radio-Frequency Atmospheric Pressure Plasma Discharge Simulation," Ph.D. Dissertation, University of Tennessee, Chattanooga, July 2009.
2. Kapadia, S., "Design and Sensitivity Analysis of Solid-Oxide Fuel Cells," Ph.D. Dissertation, University of Tennessee, Chattanooga, August 2008.
3. Elliott, L., "Solid-Oxide Fuel Cell Simulation and Design Optimization with Numerical Adjoint Techniques," Ph.D. Dissertation, University of Tennessee, Chattanooga, August 2008.
4. Lange, J. K., "A Fully Implicit Characteristic-Based Algorithm for a One-Dimensional Radio Frequency Glow Discharge Fluid Simulation," M.S. Thesis, University of Tennessee, Chattanooga, August 2007.
5. Burdyslaw, C. E., "Achieving Automatic Concurrency Between Computational Field Solvers and Adjoint Sensitivity Codes," Ph.D. Dissertation, University of Tennessee, Chattanooga, May 2006.
6. Nielsen, Eric J., "Aerodynamic Design Sensitivities on an Unstructured Mesh Using the Navier-Stokes Equations and a Discrete Adjoint Formulation," Ph.D. Dissertation, Virginia Polytechnic Institute and State University, 1998
7. Bonhaus, Daryl L., "A Higher Order Accurate Finite Element Method for Viscous Compressible Flows," Ph.D. Dissertation, Virginia Polytechnic Institute and State University, 1998
8. Bonhaus, Daryl L., "An Upwind Multigrid Method for Solving Viscous Flows on Unstructured Meshes," M.S. Thesis, George Washington University, 1993.
9. Viken, Sally "Comparison of a Navier-Stokes and a Coupled Euler/Integrated Boundary Layer Flow Solver with Transonic Airfoil Experimental Results," M.S. Thesis, George Washington University, 1998.