

Timothy W. Swafford

Education

PhD, Aerospace Engineering, Mississippi State University, August 1983.
MS, Mechanical Engineering, University of Tennessee, Knoxville, March 1976.
BS, Aerospace Engineering, University of Tennessee, Knoxville, June 1974.

Employment

Professor & Head, Graduate School of Computational Engineering, University of Tennessee at Chattanooga, 2002 to Present

Deputy Director, Applied Technology Department, Sverdrup Technology, Inc., AEDC Group, 1998 to 2002

Chief Engineer, Computational Analysis and Applications, Sverdrup Technology, Inc., AEDC Group, 1996 to 1998

Deputy Director, National Science Foundation Engineering Research Center (ERC) for Computational Field Simulation, Mississippi State University, 1992 to 1996

Associate Professor, Department of Aerospace Engineering, Mississippi State University, 1988 to 1996

Section Supervisor, Sverdrup Technology, Inc., Propulsion Computational Technology, Arnold Engineering Development Center, Arnold AFB, TN, 1987 to 1988

Assistant Professor (Adjunct), University of Tennessee Space Institute, Tullahoma, TN, 1985 to 1988

Senior Research Engineer, Sverdrup Technology, Inc., Propulsion Computational Technology, Arnold Engineering Development Center, Arnold AFB, TN, 1981 to 1987

Instructor, Motlow Community College, Tullahoma, TN, 1980

Research Engineer, Sverdrup Technology, Inc. (then ARO, Inc.), Propulsion Wind Tunnel Facility, Analysis Section, Arnold Engineering Development Center, Arnold AFB, TN, 1976-1981

Academic Specialties

Computational Fluid Dynamics

Computational Applications in Aerodynamics, Hydrodynamics, and Propulsion

University Service

Major Professor for 5 Masters Degree students

Committee Member for 12 Master Degree students and 11 Doctoral Degree candidates

Professional Memberships

American Institute of Aeronautics and Astronautics (AIAA)

Sigma Xi

Tau Beta Pi

Sigma Gamma Tau

Pi Tau Sigma

Reviewer

AIAA Journal

AIAA Journal of Aircraft

AIAA Journal of Spacecraft and Rockets

ASME Journal of Fluids Engineering

Computers and Fluids

Journal of Ship Research

Book Articles

1. Swafford, T.W., "Time-Dependent Inverse Solution of Three-Dimensional Compressible, Turbulent Integral Boundary-Layer Equations in Non-orthogonal Curvilinear Coordinates," **Lecture Notes in Physics**, Vol. 218, Springer-Verlag, 1985, pp. 541-545.
2. Whitfield, D.L., Swafford, T.W., and Donegan, T.L., "In Inverse Integral Computational Method for Compressible Turbulent Boundary Layers," **Recent Contributions to Fluid Mechanics**, Editor: W. Haase, Springer-Verlag, 1982, pp. 294-302.

Journal Articles, Papers, Reports

1. Dweik, Z., Briley, W.R., Swafford, T.W., and Hunt, B., "Computational Study of the Heat Transfer of the Buoyancy-Driven Rotating Cavity with Axial Throughflow of Cooling Air," GT2009-59978, ASME Turbo EXPO 2009, June 8-12, 2009, Orlando, FL.
2. Dweik, Z., Briley, W.R., Swafford, T.W., and Hunt, B., "Computational Study of the Unsteady Flow Structure of the Buoyancy-Driven Rotating Cavity with Axial Throughflow of Cooling Air," GT2009-59969, ASME Turbo EXPO 2009, June 8-12, 2009, Orlando, FL.
3. Daiber, M.P., Bomba, Joseph, and Swafford, T.W., "Analysis Method for the Design of Compensated Pitot-static Probes for Use on General Aviation Aircraft," SAE Technical Paper 951431, 1995 SAE Aerospace Atlantic Conference, May 23-25, 1995, Dayton, Ohio.
4. Swafford, T.W., Bomba, Joseph, and Daiber, M.P., "Computational Analysis of Compensated Pitot-static Probes Using the Euler Equations," AIAA-95-1839-CP, AIAA Applied Aerodynamics Conference, San Diego, California, June 1995.
5. Swafford, T.W., Loe, D.H., Huff, D.L., Huddleston, D.H., and Reddy, T.S.R., "The Evolution of NPHASE: Euler/Navier-Stokes Computations of Unsteady Two Dimensional Cascade Flow Fields," AIAA-94-1834-CP, June 1994.
6. Swafford, T.W., "Computation of Unsteady Supersonic Quasi-One-Dimensional Viscous-Inviscid Interacting Flow Fields," **AIAA Journal**, Vol. 31, No. 2, pp. 404-408, February 1993.
7. Reddy, T.S.R., Bakhle, Milind A., Huff, Dennis L., and Swafford, T.W., "Flutter Analysis of Supersonic Axial Flow Cascades Using a High Resolution Euler Solver; Part I: Formulation and Validation," NASA Technical Memorandum 105798, August 1992 (Limited Distribution Until August 1994).
8. Swafford, Timothy W., Huddleston, David H., Busby, Judy A., and Chesser, B. Lawrence, "Computation of Steady and Unsteady Quasi-One-Dimensional Viscous-Inviscid Interacting Internal Flows at Subsonic, Transonic, and Supersonic Mach Numbers," Mississippi State University, Engineering and Industrial Research Station Report MSSU-EIRS-ERC-92-1, June 1992.
9. Reddy, T.S.R., Bakhle, Milind A., Huff, D.L., and Swafford, T.W., "Analysis of Cascades Using a Two Dimensional Euler Solver," AIAA-92-2370, April 1992.
10. Reddy, T.S.R., Bakhle, Milind A., Huff, D.L., and Swafford, T.W., "Flutter Analysis of Cascades Using a Two Dimensional Euler Solver," AIAA-91-1681, June 1991.
11. Huff, D.L., Swafford, T.W., and Reddy, T.S.R., "Euler Flow Predictions for An Oscillating Cascade Using a High Resolution Wave-Split Scheme," ASME-91-GT-198, June 1991.
12. Swafford, T.W., Unsteady Viscous-Inviscid Interaction via Direct Coupling of the 1D Euler and 2D Integral Boundary-Layer Equations," Mississippi State University, Engineering and Industrial Research Station Report MSSU-EIRS-ERC-90-1, March 1991.
13. Whitfield, D.L., Swafford, T.W., Janus, J.M., Mulac, R.A., and Belk, D.M., Three-Dimensional Unsteady Euler Solutions for Propfans and Counter-Rotating Propfans in Transonic Flow," AIAA-87-1197, June 1987.
14. Phares, W.J., Cooper, G.K., Swafford, T.W., and Jones, R.R., "Application of Computational Fluid Dynamics to Test Facility and Experiment Design," AIAA-86-1733, June 1986.

15. Swafford, T.W., and Whitfield, D.L., "Time-Dependent Solution of Three-Dimensional Turbulent Integral Boundary-Layer Equations," **AIAA Journal**, Vol. 23, No. 7, July 1985, pp. 1005-1013.
16. Swafford, T.W., "Three-Dimensional, Time-Dependent, Compressible, Turbulent, Integral Boundary-Layer Equations in General Curvilinear Coordinates and Their Numerical Solution," AEDC-TR-83-37, Arnold AFB, TN, September 1983.
17. Swafford, T.W., "Analytical Approximation of Two Dimensional Separated Turbulent Boundary Layer Velocity Profiles," **AIAA Journal**, Vol. 21, No. 6, June 1983, pp. 923-926.
18. Swafford, T.W., "Three-Dimensional, Time-Dependent, Compressible, Turbulent, Integral Boundary-Layer Equations in General Curvilinear Coordinates and Their Numerical Solution," PhD Dissertation, Mississippi State University, August 1983.
19. Swafford, T.W. and Whitfield, D.L., "Numerical Solutions of Three-Dimensional Time-Dependent Compressible Turbulent Integral Boundary-Layer Equations in General Curvilinear Coordinates," AIAA-83-1674, July 1983.
20. Whitfield, D.L., Swafford, T.W., and Jacocks, J.L., "Calculation of Turbulent Boundary Layers with Separation and Viscous-Inviscid Interaction," **AIAA Journal**, Vol. 19, No. 10, October 1981, pp. 1315-1322.
21. Swafford, T.W., "Analytical Approximation of Two Dimensional Separated Turbulent Boundary Layer Velocity Profiles," AEDC-TR-79-99, Arnold AFB, TN, October 1980.
22. Swafford, T.W., "Computational Support to Tests at AEDC/PWT," AEDC-TMR-80-P32, Arnold AFB, TN, September 1980 (Limited Distribution).
23. Whitfield, D.L., Swafford, T.W., and Jacocks, J.L., "Calculation of Turbulent Boundary Layers with Separation, Reattachment, and Viscous-Inviscid Interaction," AIAA-80-1439, June 1980.
24. Swafford, T.W., "Calculation of Skin Friction in Two Dimensional, Transonic, Turbulent Flow," AEDC-TR-79-12, Arnold AFB, TN, 1979.
25. Swafford, T.W., "An Experimental and Analytical Investigation of a Radial Face Seal," MS Thesis, University of Tennessee, Knoxville, TN, 1976.

Theses Directed and/or Major Professor

1. Busby, Judy A., Master of Science in Aerospace Engineering. Thesis Title: Analysis of Viscous-Inviscid Interactions for Internal Flows, August 1992.
2. Chesser, B. Lawrence, Master of Science in Aerospace Engineering. Thesis Title: Evaluation of Computed Steady and Unsteady Quasi-One-Dimensional Viscous-Inviscid Interacting Flow Fields Through Comparisons with Two Dimensional Navier-Stokes Solutions, December 1992.
3. Loe, David, Master of Science in Aerospace Engineering. Thesis Title: Numerically Stable Viscous Flow Predictions for Oscillating Cascades, December 1993.
4. Felder, Richard P., Master of Science in Aerospace Engineering. Thesis Title: Implementation of a Multigrid Method for Computing Steady-State Two Dimensional Cascade Flow Fields, December 1995.
5. Bomba, Joey, Master of Science in Aerospace Engineering. Thesis Title: Computationally-Aided Approach to the Design of Compensated Pitot-Static Tubes Using the Euler Equations, December 1995.