

W. Roger Briley

Education

PhD, Mechanical Engineering, University of Texas at Austin, 1968
MS, Mechanical Engineering, University of Texas at Austin, 1967
BS, Mechanical Engineering, Louisiana Tech University, summa cum laude, 1965

Employment

Professor, Graduate School of Computational Engineering, University of Tennessee at Chattanooga, 2002-Present
Professor, Department of Mechanical Engineering, and NSF/ERC for Computational Field Simulation, Mississippi State University, 1991-2002
Co-Founder, Vice-President and Senior Research Scientist, Scientific Research Associates, Inc., Glastonbury, Connecticut, 1977-1991
Supervisor, Theoretical Gas Dynamics Group, United Technologies Research Center, East Hartford, Connecticut, 1974-1977
Research Engineer, Theoretical Gas Dynamics Group, United Technologies Research Center, East Hartford, Connecticut, 1968-1974
Research Engineer, Shell Development Company, Houston, Texas, Summer 1966

Academic Specialties

Computational Fluid Dynamics, Field Simulation Algorithms, Parallel Computing, Viscous Flow and Heat Transfer

Advisory Boards and Panels

Engineering and Science Foundation Director, Louisiana Tech University, 1999-2002
Industrial Advisory Council for Mechanical and Industrial Engineering, Louisiana Tech University, 1990-1996
Consultant for the Chief of Naval Research (1998-2002)
NSF Engineering Research Center for Computational Field Simulation, Mississippi State University: Co-Principal Investigator, Research Council, Thrust Leader for Solution Algorithms, Computational Engineering Education Board, 1991-2002
Panel on "Building Partnerships in Science and Engineering," National Science Foundation, 2000
NSF Graduate Fellowship Selection Panel, National Science Foundation, 1999
NSF Postdoctoral Research Associateship Review Panel (Computational Science and Engineering) (1995)
Panel on Computational Fluid Dynamics in Turbomachinery Applications, ASME, 1984

University Service

Major Professor for 7 Ph.D. and 4 M.S. graduates (1993-present)
Primary Author, PhD Proposal for Computational Engineering (UTC, 2002-2003)
Program Coordinator for Computational Engineering (UTC, 2002-2005)
Faculty Senate (UTC, 2003-2006)
Graduate Council (UTC, 2004-present)
Contributor to UTC SACS Substantive Change Proposal for Doctoral Level 5 Status (2004)
UTC Graduate Council Committee on Doctoral Policies and Procedures (2004)
Numerous Seminar Presentations on Integrated Research and Education in Computational Engineering at numerous local organizations and with UTC visitors (2002-present)
Preparation of content for UT SimCenter website, calendars, and promotional/recruiting flyers and magazine articles

Project Leader for two Grand Challenge Projects (Department of Defense High Performance Computing Modernization Office, 1997-2002)
Chair, College of Engineering Committee to Draft a Revision of the College Strategic Plan (MSU, 1993)
Invited speaker to present the Outstanding Alumnus Award for Mechanical and Industrial Engineering at Louisiana Tech University (1995)
Undergraduate student advisor for approximately 40 Mechanical Engineering students (MSU, 1992-2002)
ASME Session Chair and Panelist

Honors and Awards

Associate Fellow, American Institute of Aeronautics and Astronautics (2009)
University Academic Advisor Award, University of Tennessee at Chattanooga (2006)
Engineering Research Award, University of Tennessee at Chattanooga (2004)
Hearin Eminent Scholar in Engineering, Mississippi State University (Five-Year Appointment, 2001)
Outstanding Service and Leadership Award, Mechanical Engineering, Louisiana Tech University (1998)
Engineering Faculty Research Award, Mississippi State University (1999)
Outstanding Instructional Paper, College of Engineering, Mississippi State University (1995)
Outstanding Research Award, College of Engineering, Mississippi State University (1993-1994)
National Science Foundation Graduate Traineeship, University of Texas at Austin (1965-1968)

Courses and Workshops

ENCM 734 Viscous Flow Computation (Graduate)
ENCM 534 Viscous Flow Theory (Graduate)
ME-8853 Viscous Flow I (Graduate)
ME-8863 Viscous Flow II (Graduate)
ME-3113 Engineering Analysis (Undergraduate)
ME-3313 Heat Transfer (Undergraduate)
CME-4993 Introduction to Computational Field Simulation (Undergraduate)
Short Courses Supporting Technology Transfer for Flow Simulation Software, Mississippi State University (8/99, 12/00); University of Michigan (6/02); NAVSEA/Carderock (7/01)

Reviewer

Journal of Computational Physics
Journal of Fluid Mechanics
Computers and Fluids
ASME Journal of Fluids Engineering
AIAA Journal
Journal of Aircraft
International Journal of Heat and Mass Transfer
National Science Foundation
Office of Naval Research
NASA
Air Force Office of Scientific Research

Professional Societies

American Society of Mechanical Engineers (ASME)
American Institute of Aeronautics and Astronautics (AIAA)
American Society for Engineering Education (ASEE)
Tau Beta Pi (Engineering Honor Society)
Pi Tau Sigma (Honorary Mechanical Engineering Society)
Omicron Delta Kappa (National Leadership Honor Society)
Phi Kappa Phi (Academic Honor Society)
Sigma Xi (Scientific Research Society)

Publications

Book Chapters

1. Lambert, B. K., Taylor, L. K., and W. R. Briley, Evaluation of a Preconditioned Flow Solver for a Broad Range of Mach Number and Temperature Ratio. Numerical Simulation of Incompressible Flows, M. M. Hafez, Ed., River Edge, NJ: World Scientific Publishing Co., 2003, pp. 605-621.
2. Pankajakshan, R., Taylor, L. K., Sheng, C., Briley, W. R., and D. L. Whitfield: Scalable Parallel Implicit Multigrid Solution of Unsteady Incompressible Flows. Frontiers of Computational Fluid Dynamics 2002, Edited by D. A. Caughey and M. M. Hafez, World Scientific Publishing Company PTE. LTD., Singapore, pp. 181-195, 2002.
3. Pankajakshan, R. and W. R. Briley: Parallel Solution of Viscous Incompressible Flow on Multi-Block Structured Grids Using MPI. Parallel Computational Fluid Dynamics - Implementations and Results Using Parallel Computers, Edited by S. Taylor, A. Ecer, J. Periaux, and N. Satofuca, Elsevier Science, B. V., Amsterdam, pp. 601-608, 1996.
4. H. McDonald and W. R. Briley: A Survey of Some Recent Work on Interacted Boundary Layer Theory for Flow with Separation: Numerical and Physical Aspects of Aerodynamic Flows II, Edited by T. Cebeci, Springer Verlag, New York, pp. 141-162, 1984.
5. H. McDonald, S. J. Shamroth and W. R. Briley: Transonic Flows with Viscous Effects. Transonic, Shock, and Multidimensional Flows: Advances in Scientific Computing, Academic Press, Inc., 1982.
6. H. McDonald and W. R. Briley: Some Observations on Numerical Solution of the Three Dimensional Navier Stokes Equations: Numerical and Physical Aspects of Aerodynamic Flows, Edited by T. Cebeci, Springer Verlag, New York, pp. 99-120, 1982.

Journal Articles

1. Sivakumar, P., Hyams, D. G., Taylor, L.K., and W. R. Briley: A Primitive-Variable Riemann Method for Solution of the Shallow-Water Equations with Wetting and Drying. *Journal of Computational Physics*, **228**(19):7452-7472, 2009.
2. Briley, W. R., Taylor, L. K., and D. L. Whitfield: High-Resolution Viscous Flow Simulations at Arbitrary Mach Number. *Journal of Computational Physics*, **184**(1):79-105, 2003.
3. Briley, W. R. and H. McDonald: An Overview and Generalization of Implicit Navier-Stokes Algorithms and Approximate Factorization. *Journal of Computers and Fluids*, **30**:807-828, 2001.
4. Briley, W. R., and B. K Hodge: A CFD Project Combining Solution Algorithms, Software Development/Validation and Viscous Flow Calculations. *Computer Applications in Engineering Education*, **5**(3): 161-168, 1997.
5. Briley, W. R., S. S. Neerarambam and D. L. Whitfield: Implicit Lower-Upper/ Approximate-Factorization Algorithms for Incompressible Flows. *Journal of Computational Physics*, **128**: 32-42, 1996.
6. Govindan, T. R., W. R. Briley, and H. McDonald: General Three-Dimensional Viscous Primary/Secondary Flow Analysis. *AIAA Journal*, **29**(3): 361-390, 1991.
7. N.-S. Liu, F. Davoudzadeh, W. R. Briley and S. J. Shamroth: Navier-Stokes Simulation of Transonic Blade-Vortex Interactions, *Journal of Fluids Engineering*, **112**: 501-509, 1990.
8. W. R. Briley and H. McDonald: Three Dimensional Viscous Flows with Large Secondary Velocity. *Journal of Fluid Mechanics*, **144**: 47-77, 1984.
9. S. J. Shamroth, H. McDonald and W. R. Briley: Prediction of Cascade Flow Fields Using the Averaged Navier Stokes Equations. *Journal of Engineering for Gas Turbines and Power*, **106**: 383-390, 1984.
10. J. P. Kreskovsky, W. R. Briley and H. McDonald: Investigation of Mixing in a Turbofan Exhaust Duct, Part I: Analysis and Computational Procedure. *AIAA Journal*, **22**(3): 374-382, 1984.
11. W. R. Briley, H. McDonald and S. J. Shamroth: A Low Mach Number Euler Formulation and Application to Time Iterative LBI Schemes. *AIAA Journal*, **21**(10): 1467-1469, 1983.
12. W. R. Briley and H. McDonald: On the Structure and Use of Linearized Block Implicit and Related Schemes. *Journal of Computational Physics*, **34**: 54, 1980.
13. W. R. Briley and H. McDonald: Solution of the Multidimensional Compressible Navier Stokes Equations by a Generalized Implicit Method. *Journal of Computational Physics*, **24**(4): 372-397, 1977.

14. J. P. Kreskovsky, S. J. Shamroth and W. R. Briley: A Numerical Study of the Unsteady Leading Edge Separation Bubble on an Oscillating Airfoil. *Computer Methods in Applied Mechanics and Engineering*, **11**: 39-56, 1977.
15. H. McDonald and W. R. Briley: Three Dimensional Supersonic Flow of a Viscous or Inviscid Gas. *Journal of Computational Physics*, **19**(2): 150-178, 1975.
16. W. R. Briley and H. McDonald: Numerical Prediction of Incompressible Separation Bubbles. *Journal of Fluid Mechanics*, **69**(4): 631-656, 1975.
17. W. R. Briley: A Numerical Method for Predicting Three Dimensional Viscous Flows in Ducts. *Journal of Computational Physics*, **14**(1): 8-28, 1974.
18. W. R. Briley: A Numerical Study of Laminar Separation Bubbles Using the Navier Stokes Equations. *Journal of Fluid Mechanics*, **47**(4): 713-736, 1971.

Conference Papers and Presentations

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 Through Flow 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 Through Flow of Cooling Air," GT2009-59969, ASME Turbo EXPO 2009, June 8-12, 2009, Orlando, FL.
3. Wilson, R., Nichols, D., Mitchell, B., Karman, Jr., S., Betro, V., Hyams, D., Sreenivas, K., Taylor, L., Briley R., and Whitfield D., "Simulation of a Surface Combatant with Dynamic Ship Maneuvers," Proceedings 9th International Conference on Numerical Ship Hydrodynamics, Ann Arbor, Michigan, 5-8 Aug. 2007.
4. Arabshahi, Abdollah, Webster, Robert S., Briley, W. Roger and Whitfield, David L., "Numerical Analysis of Solid Propellant Rocket Motor Internal Flows," AIAA Paper No. 2006-5114, 42nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Sacramento, CA, July 2006.
5. Wilson, R.V., Nichols, D.S., Mitchell, B., Karman, S.L., Hyams, D.G., Sreenivas, K., Taylor, L.K., Briley, W.R., and Whitfield, D.L., "Application of an Unstructured Free Surface Flow Solver for High Speed Transom Stern Ships," 26th Symposium on Naval Hydrodynamics, Rome Italy, September. 17-22, 2006.
6. K. Sreenivas, L. Taylor, and R. Briley, "A Global Preconditioner for Viscous Flow Simulations at All Mach Numbers," AIAA-2006-3852, June 2006.
7. S. Nichols, B. Mitchell, K. Sreenivas, L. Taylor, D. Whitfield and R. Briley, "Aerosol Propagation in an Urban Environment," AIAA 2006-3726, June 2006.
8. Sreenivas, K., Hyams, D. G., Nichols, D. S., Mitchell, B., Taylor, L. K., Briley, W. R., and Whitfield, D. L., "Development of an Unstructured Parallel Flow Solver for Arbitrary Mach Numbers," AIAA Paper No. 2005-0325, 43rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2005.
9. Taylor, L. K., Pankajakshan, R., Briley, W. R., and Whitfield, D. L., "Scalable Parallel Implicit Algorithm for Advanced Turbulence Closures," AIAA Paper No. 2005-0876, 43rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2005.
10. Briley, W. R., Pankajakshan, R., Taylor, L. K., Gorski, J. J., Slomski, J. F., Dommermuth, D. G., Rottman, J. W., Innis, G. E., "Submerged Wakes in Littoral Regions," 2003 DoD HPCMP Users Group Conference, Bellevue, WA, June, 2003.
11. Pankajakshan, R., Taylor, L. K., Briley, W. R., and Whitfield, D. L., "Arbitrary Mach Number Flow Simulations," AIAA Paper No. 2003-1236, 41st Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2003.
12. W. R. Briley, Keynote Address: Computational Fluid Dynamics and Computational Engineering Education. Forum on Advances in Fluids Engineering Education, FEDSM2002-31378, ASME Joint U.S.-European Fluids Engineering Division Summer Meeting, Montreal, Canada, July 2002.
13. Pankajakshan, R., Remotigue, M. G., Taylor, L. K., Jiang, M., Briley, W. R., and D. L. Whitfield: Validation of Control-Surface Induced Submarine Maneuvering Simulations Using UNCLE. 24th Symposium on Naval Hydrodynamics, Fukuoka, Japan, July 8-13, 2002.
14. Remotigue, M.G., Pankajakshan, R., Jiang, M., Taylor, L.K., Briley, W.R., and Whitfield, D.L., "Dynamic Grid Generation for Simulation of Submarine Maneuvers: Part II," 8th International Conference on Numerical Grid Generation in computational Field Simulations, Honolulu, Hawaii, 2002.

15. Chen, J. P., and W. R. Briley: A Parallel Flow Solver for Unsteady Multiple Blade Row Turbomachinery Simulations. ASME Paper 2001-GT-0348, presented at ASME TURBO EXPO 2001, New Orleans, LA, June 2001.
16. Pankajakshan, R., Taylor, L. K., Sheng, C., Jiang, M. J., Briley, W. R., and D. L. Whitfield: Parallel Efficiency in Implicit Multiblock, Multigrid Simulations, with Application to Submarine Maneuvering. AIAA Paper 2001-1093, 39th Aerospace Sciences Meeting Conference and Exhibit, Reno, NV, January 2001.
17. Tao, Y. X., Xu, G., Mansoor, A. M., Kirmani, S. S., and W. R. Briley: Development of Ice Accretion Model Using Modular Approach. AIAA Paper 2001-0682, 39th Aerospace Sciences Meeting Conference and Exhibit, Reno, NV, January 2001.
18. Sreenivas, K., Hyams, D. G., Mitchell, B., Taylor, L. K., Briley, W. R., and D. L. Whitfield: Physics-Based Simulations of Reynolds Number Effects in Vortex Intensive Incompressible Flows. Symposium of Advanced Flow Management, Applied Vehicle Technology Panel Meeting, Norway, May 2001.
19. Hyams, D. G., Sreenivas, K., Sheng, C., Nichols, S., Taylor, L. K., Briley, W. R., Marcum, D. L., and D. L. Whitfield: An Unstructured Multielement Solution Algorithm for Complex Geometry Hydrodynamic Simulations. Proceedings, 23rd Symposium on Naval Hydrodynamics, Val de Reuil, France, September 2000.
20. Pankajakshan, R., Taylor, L. K., Jiang, M., Remotigue, M. G., Briley, W. R., and D. L. Whitfield: Parallel Simulations for Control-Surface Induced Submarine Maneuvers. *AIAA Paper 2000-0962*, 38th Aerospace Sciences Meeting, Reno, NV, 2000.
21. Hyams, D. G., Sreenivas, K., Sheng, C., Briley, W. R., Marcum, D.L., and D. L. Whitfield: An Investigation of Parallel Implicit Solution Algorithms for Incompressible Flows on Multielement Unstructured Topologies. *AIAA Paper 2000-0271*, 38th Aerospace Sciences Meeting, Reno, NV, 2000.
22. Beddhu, M., Pankajakshan, R., Jiang, M. Y., Taylor, L. K., Briley, W. R., and D. L. Whitfield: Computation of Nonlinear Turbulent Free Surface Flows using the Parallel UNCLE code. 23rd Symposium on Naval Ship Hydrodynamics, Val de Reuil, France, September 17-22, 2000.
23. Beddhu, M., Pankajakshan, R., Jiang, M. Y., Taylor, L. K., Remotigue, M. G., Briley, W. R., and D. L. Whitfield: Computation and Evaluation of CFD Results for Practical Ship Hull Forms. Presented at Gothenburg 2000, Workshop on CFD in Ship Hydrodynamics, Gothenburg, Sweden, September 14-16, 2000.
24. Beddhu, M., Pankajakshan, R., Jiang, M. Y., Remotigue, M. G., Sheng, C., Taylor, L. K., Briley, W. R., and D. L. Whitfield: Computation of Nonlinear Turbulent Free Surface Flows Using the Parallel UNCLE Code. Proceedings, 23rd Symposium on Naval Hydrodynamics, Val de Reuil, France, September 2000.
25. Taylor, L. K., Pankajakshan, R., M. Jiang, C. Sheng, Briley, W. R., Whitfield, D. L., Davoudzadeh, F., Boger, D. A., Gibeling, H. J., Gorski, J., Haussling, H., Coleman, R., and G. Buley: Large-Scale Simulations for Maneuvering Submarines and Propulsors. *AIAA Paper No. 98-2930*, 29th AIAA Plasmadynamics and Lasers Conference, Albuquerque, NM, June 15-18, 1998.
26. Arabshahi, A., Beddhu, M., Briley, W. R., Chen, J. P., Gaither, A., Gaither, K., Janus, J. M., Jiang, M., Marcum, D., McGinley, J., Pankajakshan, R., Remotigue, M., Sheng, C., Sreenivas, K., Taylor, L. K., and D.L. Whitfield: A Perspective on Naval Hydrodynamics Flow Simulations. Proceedings, 22nd Symposium on Naval Hydrodynamics, Washington, DC, August 9-14, 1998.
27. W. R. Briley and B. K. Hodge: A CFD Project Combining Solution Algorithms, Software Development and Viscous Flow Calculations. Presented at the Forum on Instructional Fluid Dynamics, Joint ASME/JSME Fluids Engineering Conference, Hilton Head, SC, August 13-18, 1995.
28. R. Pankajakshan and W. R. Briley: Parallel Solution of Viscous Incompressible Flow on Multi-Block Structured Grids Using MPI. Presented at Parallel CFD '95, California Institute of Technology, June 26-29, 1995.
29. W. R. Briley, S. Neerarambam and D. L. Whitfield: Implicit Lower-Upper/Approximate-Factorization Algorithms for Viscous Incompressible Flows. Presented at 12th AIAA CFD Conference, San Diego, CA, June 19-22, 1995.
30. B. Soni, W. R. Briley and M. Stokes: Computational Field Simulation for Complex Physics and Complex Geometry. Invited Presentation at NSF Computational Engineering Grantee's Meeting, University of Colorado at Boulder, May 16-18, 1994.
31. J. Zhu, X. Zhuang, S. Neerarambam and W. R. Briley: Progress on Parallel Solution of Unsteady Viscous Incompressible Flows. Presented at ONR Workshop on Application of High Performance Computers to Submarine Hydrodynamics, University of Illinois at Urbana/Champaign, 1994.
32. W. R. Briley, D. S. Reese, A. Skjellum, and L. Turcotte: NHPDCC - The National High Performance Distributed Computing Consortium. *Proceedings, Scalable Libraries Conference*, IEEE Computer Society

- Press, Los Alamos, CA, 1994. (Also presented at Workshop on Distributed Computing for Aerospace Applications, NASA Ames, 1993).
33. W. R. Briley, D. V. Roscoe, H. J. Gibeling, R. C. Buggeln, and J. S. Sabnis: Computation of Flow Past a Turbine Blade With and Without Tip Clearance. Presented at *36th ASME International Gas Turbine and Aeroengine Congress and Exposition* (Orlando, FL), June 1991.
 34. T. R. Govindan and W. R. Briley: Generalized Primary/Secondary Flow Analysis of Viscous Flow Around Bodies at Incidence. *AIAA Paper No. 91 0186* (29th Aerospace Sciences Meeting, Reno, NV), 1991.
 35. W. R. Briley, R. C. Buggeln and H. McDonald: Solution of the Incompressible Navier Stokes Equations Using Artificial Compressibility Methods. *Proceedings, 11th International Conference on Numerical Methods in Fluid Dynamics* (Williamsburg, VA), Springer Verlag, 1988.
 36. R. C. Buggeln, W. R. Briley, S. J. Shamroth and H. McDonald: Solution of the Three Dimensional Navier Stokes Equations for Turbine Flows. 1st World Congress on Computational Mechanics (Univ. Texas, Austin TX), 1986.
 37. S. J. Lin, W. R. Briley and H. McDonald: Numerical Study of Three Dimensional Viscous Flows With System Rotation, *AIAA Paper No. 85 1691 CP*, (18th Fluid Dynamics and Plasmadynamics and Lasers Conference, Cincinnati OH), 1985.
 38. W. R. Briley, R. C. Buggeln and H. McDonald: Solution of the Three Dimensional Navier Stokes Equations for a Steady Laminar Horseshoe Vortex Flow, *AIAA Paper No. 84 1520 CP*, 7th CFD Conference (Univ. Cincinnati), 1985.
 39. W. R. Briley and H. McDonald: Three Dimensional Viscous Flows with Large Secondary Velocity. *ASME Symposium on Computation of Internal Flows: Methods and Applications* (New Orleans, LA), 1984
 40. R. Levy, W. R. Briley and H. McDonald: Viscous Primary/Secondary Flow Analysis for Use with Nonorthogonal Coordinates, *AIAA Paper No. 83 0556* (21st Aerospace Sciences Meeting, Reno, NV), 1983.
 41. S. J. Shamroth, H. McDonald and W. R. Briley: Application of a Navier Stokes Analysis to Transonic Cascade Flow Fields. *ASME Paper 82 GT 235*, 1982.
 42. R. C. Buggeln, W. R. Briley and H. McDonald: Solution of the Navier Stokes Equations for Three Dimensional Turbulent Flow with Viscous Sublayer Resolution. *AIAA Paper No. 81 1023*, AIAA 5th Computational Fluid Dynamics Conference (NASA Ames), 1981.
 43. Kreskovsky, J. P., Briley, W. R., and H. McDonald, Analysis and computation of three-dimensional flow in strongly curved ducts. ASME Winter Annual Meeting, Washington, D.C., (A82-29001 13-02); American Society of Mechanical Engineers, pp. 129-140, 1981.
 44. W. R. Briley and H. McDonald: Computation of Three Dimensional Horseshoe Vortex Flow Using the Navier Stokes Equations. *Proceedings, 7th International Conference on Numerical Methods in Fluid Dynamics* (Stanford Univ.), Springer Verlag, New York, 1980, pp. 91-98
 45. R. Levy, H. McDonald and W. R. Briley: A Three Dimensional Turbulent Compressible Subsonic Duct Flow Analysis for Use with Constructed Coordinate Systems. *AIAA Paper No. 80 1398*, AIAA 13th Fluid and Plasma Dynamics Conference (Snowmass, CO), 1980.
 46. W. R. Briley and H. McDonald: Analysis and Computation of Viscous Subsonic Primary and Secondary Flows. *Proceedings, AIAA 4th Computational Fluid Dynamics Conference* (Williamsburg, VA), 1979.
 47. H. McDonald and W. R. Briley: Computational Fluid Dynamic Aspects of Internal Flows. Invited Paper, *AIAA 4th Computational Fluid Dynamics Conference* (Williamsburg, VA), 1979, pp. 266-283.
 48. S. J. Shamroth and W. R. Briley: A Viscous Flow Analysis of the Tip Vortex Generation Process. *AIAA Paper No. 79 1546*, 12th Fluid and Plasma Dynamics Conference (Williamsburg, VA) 1979.
 49. Levy R., McDonald, H., and W. R. Briley, Calculation of three-dimensional turbulent subsonic flow in transition ducts. *Proceedings of 6th International Conference on Numerical Methods in Fluid Dynamics*, Tiflis, GA, pp. 361-369, 1978.
 50. W. R. Briley and H. McDonald: Solution of the Three Dimensional Compressible Navier Stokes Equations by an Implicit Technique. *Proceedings, 4th International Conference on Numerical Methods in Fluid Dynamics* (Univ. Colorado, Boulder CO), Springer Verlag, New York, 1974, pp. 105-110.
 51. W. R. Briley: The Computation of Three Dimensional Viscous Internal Flows. *Proceedings, 3rd International Conference on Numerical Methods in Fluid Dynamics* (Paris, France), Vol. II, Springer Verlag, New York, 1973, pp. 33-38.
 52. W. R. Briley and H. A. Walls: Numerical Study of Time Dependent Rotating Flow in a Cylindrical Container at Low and Moderate Reynolds Numbers. *Proceedings, 2nd International Conference on Numerical Methods in Fluid Dynamics* (Univ. California, Berkeley), Springer Verlag, New York, 1971, pp. 377-384.

53. W. R. Briley: An Analysis of Laminar Separation Bubble Flow Using the Navier Stokes Equations. Invited paper, Specialists Workshop on Unsteady, Three Dimensional and Separated Flow (Georgia Tech. Univ.), 1971. (Proceedings published by Purdue Univ.).

Theses and Dissertations Directed and/or Major Professor

1. Jennifer L. Boyd, "Parallel Performance Predictions for Algorithms and Software Development," MS Thesis, Computational Engineering, Mississippi State University, July 1993.
2. Shyam S. Neerarambam, "Convergence Analysis of a Block Decoupled Implicit Parallel Algorithm," MS Thesis, Mechanical Engineering, Mississippi State University, December 1993.
3. Andrew W. Coleman, "Uncertainty Analysis and Ocean Modeling Using the Shallow Water Equations," MS Thesis, Mechanical Engineering, Mississippi State University, August 1997.
4. Ramesh Pankajakshan, "Parallel Solution of Unsteady Incompressible Viscous Flows Using Multiblock Structured Grids," PhD Dissertation, Computational Engineering, Mississippi State University, May 1998.
5. Shyam S. Neerarambam, "A Parallel Viscous Turbomachinery Flow Solver and Application to Distortion-Induced Compressor Rotor Stall," PhD Dissertation, Computational Engineering, Mississippi State University, May 1998.
6. Daniel G. Hyams, "An Investigation of Parallel Implicit Solution Algorithms for Incompressible Flows on Unstructured Topologies," PhD Dissertation, Mechanical Engineering, Mississippi State University, May 2000.
7. Kelly P. Gaither, "An Object-Oriented Toolkit for Visualizing Large-Scale Unstructured Scientific Data," PhD Dissertation, Computational Engineering (Major Professor), Mississippi State University, May 2000.
8. Brian K. Lambert, "Accuracy and Performance Characteristics of a Modern CFD Algorithm over a Range of Mach Numbers and Wall Temperatures," MS Thesis, Computational Engineering, Mississippi State University, May 2001.
9. Brian K. Lambert, "Development and Validation of a Time Accurate Algorithm for Low Mach Number Compressible Flow," PhD Dissertation, Computational Engineering, University of Tennessee at Chattanooga, December 2004.
10. Pradeep Sivakumar, "Characteristic-Based, Parallel, Numerical Solver for the Shallow Water Equations on Unstructured Grids with Wet/Dry Interfaces," PhD Dissertation, Computational Engineering, University of Tennessee at Chattanooga, December 2006.
11. Zaineddin Dweik, "Computational Study of Turbomachinery-Related Flows and Heat Transfer in Buoyancy-Driven Rotating Cavities with Axial Cooling-Air Through-Flow," , PhD Dissertation, Computational Engineering, University of Tennessee at Chattanooga, December 2007.

Sponsored Research

1. Validated Aerodynamic Analysis and Design Tools for Integrated Embedded Aircraft Propulsion Systems (\$1,500,000, NASE-GRC, 2007-2010, Co-Investigator)
2. Computational Analysis of Synthetic Jet Actuators Supporting Aerotonomy, Inc. Phase II (\$59,000, Aerotonomy, Inc., 2007-2008, Principal Investigator)
3. Plasma Dynamics Software Interface and Test Cases (\$192,000, Coronal Energy, LLC, 2006-2007, Co-Principal Investigator)
4. Physical/Mathematical Modeling and Solution of Field Simulation Problems (\$100,000, CoE Applied Computational Science and Engineering, 2006-2007, Co-Principal Investigator)
5. Computational Analysis Assessment and Advancement of Solid Rocket Motor (SRM) Modeling and Simulation Tools (\$210,000, SPARTA, Inc., 2005-2006, Co-Principal Investigator)
6. Computational Methods for Field Simulation (\$168,000, CoE Applied Computational Science and Engineering, 2005-2006, Principal Investigator)
7. Development of a Parallel Turbomachinery Flow Solver (\$225,000, NASA-GRC, 1999-2001, Co-Principal Investigator)
8. Physics-Based Maneuvering Predictions of Tiltrotor Aircraft (\$775,000, NASA-ARC, 1998-2001, Co-Principal Investigator)
9. Computational Prediction of Aircraft Icing Phenomena (\$500,000, NSF, 1998-2003, Co-Principal Investigator)

10. Development of an Integrated Simulation System for Navy Application of the UNCLE Code (\$45,000, ONR, 1998-1999, Co-Principal Investigator)
11. Development of a Parallel Turbomachinery Flow Solver (\$75,000, NASA-LeRC, 1998-1999, Co-Principal Investigator)
12. Maneuvering Prediction of Full-Scale Underwater Vehicles (\$480,000, Office of Naval Research, 1997-1999, Co-Principal Investigator)
13. Physics-Based Maneuvering of Commuter Aircraft, (\$100,000, NASA-Ames, 1997-1998, Co-Principal Investigator)
14. Engineering Research Center for Computational Field Simulation (\$8,716,000, National Science Foundation, 1997-2001, Co-Principal Investigator)
15. Parallel Solution of Unsteady Incompressible Viscous Flows (\$50,000, Office of Naval Research, 1993-1995, Co-Principal Investigator)
16. Flow Around Maneuvering Appended Bodies (\$630,000, ONR, ARL/Penn State, 1993-1996, Co-Principal Investigator)
17. Simulation of Viscous Flow Past Submarine Geometries on Parallel Computers with MIMD Architectures (\$50,000, DARPA, ARL/Penn, 1992-1993, Principal Investigator)
18. Efficient Navier Stokes Flow Prediction Algorithms (NASA-MSFC Contracts NAS8-36260 and NAS8-37340, 1985-1990, Principal Investigator)
19. Unsteady Flow Calculations for Simulation of Dynamic Lift of Airfoils (Navy SBIR Contract, 1991, Co-Principal Investigator)
20. Turbine Blade Tip Clearance Flow Analysis (NASA MSFC Contract, 1988-1990, Co-principal Investigator)
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22. Computation of Flow Around a Maneuvering Submerged Body (Office of Naval Research Contract N00167-86-C-0049, 1986-1989, Co-Principal Investigator)
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