

## David L. Whitfield

### Education

PhD, Aerospace Engineering, University of Tennessee, 1971  
MS, Aerospace Engineering, University of Tennessee, 1968  
BS, Mechanical Engineering, Oklahoma State University, 1966

### Employment

*Director*, SimCenter: National Center for Computational Engineering, University of Tennessee at Chattanooga, 2002 to Present  
*Director*, Graduate School of Computational Engineering, University of Tennessee at Chattanooga, 2002 to Present  
*Associate Dean*, College of Engineering and Computer Science, University of Tennessee at Chattanooga, 2002 to Present  
*Director*, Computational Simulation and Design Center, Mississippi State University, 2000 - 2002  
*Director*, Computational Fluid Dynamics Laboratory, Mississippi State University, 1992 to 2000  
*Distinguished Professor*, Department of Aerospace Engineering, Mississippi State University, 1989 to 2002  
*Professor*, Department of Aerospace Engineering, Mississippi State University, 1981 to 2002  
*Supervisor*, ARO, Inc., Computational Fluid Dynamics Branch, Arnold Air Force Station, TN, 1975-1980  
*Research Engineer*, ARO, Inc., Arnold Air Force Station, TN, 1967-1975

### University Service

Outstanding Faculty Member in the College of Engineering, Mississippi State University, 1990  
Hearin-Hess Professor of Engineering, 1990-1991, 1991-1992, 1992-1993, 1993-1994, 1994-1995, 1995-1996  
Mississippi State University Alumni Outstanding Faculty Award for Research, 1994  
College of Engineering Outstanding Research Award, Mississippi State University, 1997  
Outstanding Career Achievement Award, Mississippi State University, 2001  
Hearin Eminent Professor, 2001-2002

### Academic Specialties

Computational Fluid Dynamics  
Solution Algorithms  
Unsteady Viscous Flow Applications  
Computational Design

### Professional Activities

American Institute of Aeronautics & Astronautics (AIAA), Fellow  
AIAA Technical Committee for Fluid Dynamics, Former Member  
SIAM  
Sigma Xi  
*Computers and Fluids*, Editorial Advisory Board  
National Research Council Committee to Assess Current Capabilities and Future Directions in Computational Fluid Dynamics  
Peer Review Team to Assess the NASA Langley Research Center Program in Unsteady Aerodynamics  
National Science Foundation Site Review Team for NSF Advanced Combustion Engineering Research Center

### Previous Grants & Contracts

NASA Langley Research Center  
NASA Glenn Research Center

NASA Ames Research Center  
NASA Marshall Space Flight Center  
Army Research Laboratory  
Air Force Office of Scientific Research  
Eglin Air Force Base  
Department of Energy  
Office of Naval Research  
DARPA (Defense Advanced Research Projects Agency)  
General Dynamics  
Lockheed Martin Denver  
Lockheed Martin Skunk Works  
Ingalls Shipbuilding  
Naval Surface Warfare Center Carderock Division  
NAVSEA

## Reviewer

*AIAA Journal*  
*Journal of Computational Physics*  
*Computers and Fluids*  
*ASME Journal of Fluids Engineering*  
*AIAA Journal of Propulsion and Energy*  
AIAA Conference Papers

## Publications

1. Whitfield, D. L., "Theoretical and Experimental Investigation of Boundary Layers in Low Density Hypersonic Axisymmetric Nozzles," AEDC-TR-68-193, September 1968. (Also MS Thesis, University of Tennessee, June 1968.)
2. Whitfield, D. L. And Lewis, C. H., "Analysis of Boundary Layers in Low Density Hypersonic Axisymmetric Nozzles, Including the Effects of Displacement, First-Order Transverse Curvature, Velocity Slip, and Temperature Jump," AIAA Paper No. 69-653, June 1969.
3. Whitfield, D. L. and Tidwell, E. D., "Low Density Wind Tunnel Measurements of the Chemiluminescent Reactions of Nitric Oxide with Atomic Oxygen and Atomic Hydrogen," AEDC-TR-69-196, November 1969.
4. Good, R. E., Golmb, D., DelGreco, F. P., Hill, D. W., and Whitfield, D. L. "Clusters in Nitric Oxide Jet Expansion," *Rarefied Gas Dynamics*, Vol. I., and New York: Academic Press, 1969, pp. 1449-1453.
5. Whitfield, D. L. and Lewis, C. H., "Boundary-Layer Analysis of Low-Density Nozzles Including Displacement, Slip, and Transverse Curvature," *Journal of Spacecraft and Rockets*, Vol. 7, No. 4, April 1970, pp. 462-468.
6. Whitfield, D. L. and Stephenson, W. B., "Sphere Drag in the Free-Molecular and Transitional Flow Regimes," AEDC-TR-70-32, April 1970.
7. Stephenson, W. B. and Whitfield, D. L., "Drag Measurements in a Low Density Gas Stream," AEDC-TR-70-25, May 1970.
8. Whitfield, D. L., "Dynamics of Particles in Free Molecular Flow with Application to High Altitude Meteoric Dust Collection Devices," AEDC-TR-70-139, August 1970.
9. Benek, J. A. and Whitfield, D. L., "AFRPL Scarfed Nozzle Condensation Study in 4x6 Research Chamber," LTR-AEDC-VKF-ASP-1-70, December 1970.
10. Powell, H. M., Hill, D. W., and Whitfield, D. L., "The Measurements and Analysis of Chemical and Gas Dynamic Properties of a Rocket Plume at Near Space Conditions (U)," *JANNAF Sixth Plume Technology Meeting*, Naval Postgraduate School, Monterey, CA, 1971, CPIA Publication 209, April 1971. (CONFIDENTIAL)
11. Whitfield, D. L. and Smithson, H. K. "Low-Density Supersonic Sphere Drag with Variable Wall Temperature," AEDC-TR-71-83, July 1971.
12. Powell, H. M., Hill, D. W., and Whitfield, D. L., "Evaluation of a Mass Spectrometer Probe for Density and Velocity Distribution Measurements in a Rocket Exhaust Plume," AEDC-TR-71-135, September 1971.

13. Smithson, H. K., Price, L. L., and Whitfield, D. L., "Wind Tunnel Testing of Interactions of High Altitude Rocket Plumes with the Free Stream," AEDC-TR-71-118, September 1971.
14. Stephenson, W. B. And Whitfield, D. L., "Drag Measurement in a Low Density Gas Stream," *IEEE Transactions on Aerospace Electronic Systems*, Vol. 7, No. 6, November 1971, pp. 1131-1137.
15. Whitfield, D. L., "Drag on Bodies in Rarefied High-Speed Flow," PhD Dissertation, University of Tennessee, December 1971.
16. Whitfield, D. L., "Analysis of Sphere and Cylinder Drag in Rarefied Flow," *Rarefied Gas Dynamics*, Vol. I, Editrice Tecnico Scientifica, Pisa, Italy, 1971, pp. 527-534.
17. Whitfield, D. L., "Mean Free Path of Molecules from a Surface in Rarefied Flow with Application to Correlating Drag Data," *AIAA Paper No. 73-198*, January 1973.
18. Whitfield, D. L., "Calibration of a Heat Flux Sensor in Rarefied Hypersonic Flow," LTR-AEDC-VKF-ASP-3-73, March 1973.
19. Whitfield, D. L., "Rarefied Flow Heat-Flux Calibration of an Earth Satellite Temperature Alarm System," LTR-AEDC-VKF-ASP-1-73, March 1973.
20. Whitfield, D. L., Lewis, J. W. L., Williams, W. D., et al., "Specie Number Density, Pitot Pressure, and Flow Visualization in the Near Field of Two Supersonic Nozzle Banks Used for Chemical Laser Systems," AEDC-TR-73-11, May 1973.
21. Whitfield, D. L., "Viscous Effects in Low-Density Nozzle Flows," AEDC-TR-73-52, June 1973.
22. Whitfield, D. L., Lewis, J. W. L., and Williams, W. D., "Specie Number Density, Pitot Pressure, and Flow Visualization in the Near Field of Two Supersonic Nozzle Banks Used for Chemical Laser Systems," *AIAA Paper No. 73-642*, July 1973.
23. Whitfield, D. L., Smithson, H. K., and Price, L. L., "Plume Boundary Jump of an Underexpanded Jet Exhausting Counter to a Freestream," *AIAA Journal*, Vol. 11, No. 9, September 1973, pp. 1336-1337.
24. Whitfield, D. L., "Mean Free Path of Emitted Molecules and Correlation of Sphere Drag Data," *AIAA Journal*, Vol. 11, No. 12, December 1973, pp. 1666-1670.
25. Whitfield, D. L., Lewis, J. W. L., and Williams, W. D., "Measurements in the Near Field of Supersonic Nozzles for Chemical Laser Systems," *AIAA Journal*, Vol. 12, No. 6, June 1974, pp. 870-872.
26. Whitfield, D. L., "Some Computations of Turbulent Boundary Layers," ARO-ER-74-3, August 1974.
27. Whitfield, D. L., "Some Improvements in Data Reduction of Pitot Pressure Measurements in Turbulent Boundary Layers," ARO-ER-74-4, August 1974.
28. Whitfield, D. L., "Heat Flux to Normal Flat Plates in Rarefied Hypersonic Flow," *Rarefied Gas Dynamics*, Vol. II, DFVLR-Press, Porz-Wahn, German, 1974, pp. D.18.1-D.18.7.
29. Whitfield, D. L., Bertrand, W. T., and Brewer, L. E., "Infrared Radiation Approximation for Homogeneous Plumes," *AIAA Paper No. 75-703*, May 1975.
30. Whitfield, D. L., "Infrared Turbojet Plume Radiation," AEDC-TR-76-14, February 1976.
31. Whitfield, D. L., "Analytical, Numerical and Experimental Results on Turbulent Boundary Layers," AEDC-TR-76-62, July 1976.
32. Whitfield, D. L. and High, M. D., "Velocity-Temperature Relations in Turbulent Boundary Layers with Non-Unity Prandtl Numbers," *AIAA Paper No. 76-411*, July 1976.
33. Whitfield, D. L. and High, M. D., "Velocity-Temperature Relations in Turbulent Boundary Layers with Non-Unity Prandtl Numbers," *AIAA Journal*, Vol. 15, No. 3, March 1977, pp. 431-434.
34. Whitfield, D. L., "Turbulent Flow Near a Wall Based on a Turbulent Kinetic Energy Equation," in *Boundary Layer Effects-Proceedings of the 5th U.S. Air Force-Federal Republic of Germany Data Exchange Agreement Meeting*, A.W. Fiore, Editor, AFFDL-TR-77-61, July 1977, pp. 447-454.
35. Whitfield, D. L., "Analytical Description of the Complete Two-Dimensional Turbulent Boundary-Layer Velocity Profile," AEDC-TR-77-79, September 1977.
36. Sinclair, D. W., Whitfield, D. L., and Lucci, C. A., "Holographic Interferometry Measurements of Subsonic Turbulent Boundary Layers," *AIAA Paper No. 78-119*, July 1978.

37. Whitfield, D. L., "Integral Solution of Compressible Turbulent Boundary Layers Using Improved Velocity Profiles," AEDC-TR-78-42, August 1978.
38. Whitfield, D. L., "Analytical Description of the Complete Turbulent Boundary Layer Velocity Profile," AIAA Paper No. 78-1158, 1978.
39. Whitfield, D. L., "Analytical Description of the Complete Turbulent Boundary Layer Velocity Profile," *AIAA Journal*, Vol. 17, No. 10, October 1979, pp. 1145-1147.
40. Whitfield, J. D., Pate, S. R., Kimzey, W. F., and Whitfield, D. L., "The Role of Computers in Aerodynamic Testing," *Computers and Fluids*, Vol. 8, No. 1, March 1980, pp. 71-99.
41. Whitfield, D. L., Swafford, T. W., and Jacocks, J. L., "Calculation of Turbulent Boundary Layers with Separation, Reattachment, and Viscous-Inviscid Interaction," AIAA Paper No. 80-1439, July 1980.
42. Whitfield, D. L., Jameson, A., and Schmidt, W., "Viscid-Inviscid Interaction on Airfoils Using Euler and Inverse Boundary-Layer Equations," Presented at the *U.S.-German Data Exchange Meeting* at DFVLR-AVA in Gottingen, Germany, April 1981.
43. Schmidt, W., Jameson, A., and Whitfield, D. L., "Finite Volume Solution for the Euler Equation for Transonic Flow over Airfoils and Wings Including Viscous Effects," AIAA Paper No. 81-1265, June 1981.
44. 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.
45. Whitfield, D. L., Swafford, T. W., and Donegan, T. L., "An Inverse Integral Computational Method for Compressible Turbulent Boundary Layers," in *Recent Contributions to Fluid Mechanics*, W. Haase, Editor, Springer-Verlag, Berlin, 1982.
46. Whitfield, D. L. and Jameson, A., "Three-Dimensional Euler Equation Simulation of Propeller-Wing Interaction in Transonic Flow," AIAA Paper No. 83-0236, January 1983.
47. Schmidt, W., Jameson, A., and Whitfield, D., "Finite-Volume Solutions to the Euler Equations in Transonic Flow," *Journal of Aircraft*, Vol. 20, No. 2, February 1983, pp. 127-133.
48. 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 Paper No. 83-1674, July 1983.
49. Whitfield, D. L. and Janus, J. M., "Three-Dimensional Unsteady Euler Equations Solution Using Flux Vector Splitting," AIAA Paper No. 84-1552, June 1984.
50. Whitfield, D. L. and Jameson, A., "Euler Equation Simulation of Propeller-Wing Interaction in Transonic Flow," *Journal of Aircraft*, Vol. 21, No. 11, November 1984, pp. 835-839.
51. Whitfield, D. L., Thomas, J. L., Jameson, A., and Schmidt, W., "Computation of Transonic Viscous-Inviscid Interacting Flow," in *Numerical and Physical Aspects of Aerodynamic Flows II*, T. Cebeci, Editor, Springer-Verlag, New York, 1984, pp. 285-295.
52. Belk, D. M., Janus, J. M., and Whitfield, D. L., "Three-Dimensional Unsteady Euler Equations Solutions on Dynamic Grids," AIAA Paper No. 85-1704, July 1985.
53. Swafford, T. W. and Whitfield, D. L., "Time-Dependent Solution of Three-Dimensional Compressible Turbulent Integral Boundary-Layer Equations," *AIAA Journal*, Vol. 23, No. 7, July 1985, pp. 1005-1013.
54. Edwards, D. E., Whitfield, D. L., and Carter, J. E., "Application of Interacting Boundary Layer Theory in the Analysis of Transonic Shock Induced Separation," *International Union of Theoretical and Applied Mechanics* (IUTAM), Palaiseau, France, September 1985.
55. Whitfield, D. L., "Implicit Upwind Finite Volume Scheme for the Three Dimensional Euler Equations," Engineering and Industrial Research Station Report MSSU-EIRS-ASE-85-1, Mississippi State University, Mississippi State, MS, September 1985.
56. Lijewski, L. E., Thompson, J. F., and Whitfield, D. L., "Computational Fluid Dynamics for Weapon Carriage and Separation," AGARD *Fluid Symposium on Store Airframe Aerodynamics*, Athens, Greece, October 1985.
57. Whitfield, D. L., "Viscous-Inviscid Interaction Computations Using a Pseudo Navier-Stokes Approach," in *Numerical and Physical Aspects of Aerodynamic Flows III*, T. Cebeci, Editor, Springer-Verlag, New York, 1985.

58. Whitfield, D. L. and Thomas, J. L., "Transonic Viscous-Inviscid Interaction Using Euler and Inverse Boundary-Layer Equations," Vol. 3 of the Series in Recent Advances in Numerical Methods in Fluids entitled *Computational Methods in Viscous Flow*, W.G. Habashi, Editor, Pineridge Press, Swansea, U. K., 1985.
59. Anderson, W. K., Thomas, J. L., and Whitfield, D. L., "Multigrid Acceleration of the Flux Split Euler Equations," AIAA Paper No. 86-0274, January 1986.
60. Belk, D. M., Janus, J. M., and Whitfield, D. L., "Three-Dimensional Unsteady Euler Equations Solutions on Dynamic Grids," AFATL-TR-86-21, Air Force Armament Laboratory, April 1986.
61. Janus, J. M. and Whitfield, D.L., "Advanced 3-D Viscous SSME Turbine Rotor Stator CFD Algorithms," Final Report NAS8-36486, Prepared for George C. Marshall Space Flight Center, Marshall Space Flight Center, Alabama, and September 1986.
62. Belk, D. M. And Whitfield, D. L., "3-D Euler Solutions on Blocked Grids Using an Implicit Two-Pass Algorithm," AIAA Paper No. 87-0450, January 1987.
63. Belk, D. M. And Whitfield, D. L., "Time-Accurate Euler Equations Solutions on Dynamic Blocked Grids," AIAA Paper No. 87-1127-CP, June 1987.
64. Gatlin, B. and Whitfield, D. L., "An Implicit Upwind Finite Volume Method for Solving the Three-Dimensional Thin-Layer Navier-Stokes Equations," AIAA Paper No. 87-1149-CP, June 1987.
65. 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 Paper No. 87-1197, June 1987.
66. Belk, D. M., Janus, J. M., and Whitfield, D. L., "Three-Dimensional Unsteady Euler Equations Solution on Dynamic Grids," *AIAA Journal*, Vol. 25, No. 9, September 1987, pp. 1160-1161.
67. Whitfield, D. L., Janus, J. M., and Simpson, L. B., "Implicit Finite Volume High Resolution Wave-Split Scheme for Solving the Unsteady Three-Dimensional Euler and Navier-Stokes Equations on Stationary or Dynamic Grids," Engineering and Industrial Research Station Report MSSU-EIRS-ASE-88-2, Mississippi State University, Mississippi State, MS, February 1988.
68. Anderson, W. K., Thomas, J. L., and Whitfield, D. L., "Multigrid Acceleration of the Flux-Split Euler Equations," *AIAA Journal*, Vol. 26, No. 6, June 1988, pp. 649-654.
69. Janus, J. M. and Whitfield, D. L., "Improved 3-D Turbomachinery CFD Algorithm," Final Report, Prepared for Scientific Research Associates, Inc., Glastonbury, CT, and June 1988.
70. Pirzadeh, S. and Whitfield, D. L., "Three-Dimensional Unsteady Transonic Viscous-Inviscid Interaction Using the Euler and Boundary-Layer Equations," AIAA Paper No. 88-2578, June 1988.
71. Thompson, J. F. and Whitfield, D. L., "Transonic Flow Solutions on General 3D Regions Using Composite-Block Grids," *11th International Conference on Numerical Methods in Fluid Dynamics*, Williamsburg, VA, June 27 - July 1, 1988.
72. Mounts, J. S., Belk, D. M., and Whitfield, D. L., "Program EAGLE User's Manual: Vol. IV - Multiblock Implicit, Steady-State Euler Code," AFATL-TR-88-117, Vol. IV, Air Force Armament Laboratory, September 1988.
73. Anderson, W. K., Thomas, J. L., and Whitfield, D. L., "Three-Dimensional Multigrid Algorithms for the Flux-Split Euler Equations," NASA-TP-2829, November 1988.
74. Janus, J. M. and Whitfield, D. L., "A Simple Time-Accurate Turbomachinery Algorithm with Numerical Solutions of an Uneven Blade Count Configuration," AIAA Paper No. 89-0206, January 1989.
75. Whitfield, D. L., Janus, J. M., and Arabshahi, A., "Unsteady Euler Solutions on Dynamic Blocked Grids for Complex Configurations," *AGARD Specialists Meeting on Mesh Generation for Complex Three-Dimensional Configurations*, Leon, Norway, May 24-25, 1989.
76. Simpson, L. B. and Whitfield, D. L., "A Flux-Difference Split Algorithm for Unsteady Thin-Layer Navier-Stokes Solutions," AIAA Paper No. 89-1995, June 1989.
77. Whitfield, D. L. and Thompson, J. F., "Computation of Transonic Flow about Stores," AFATL-TR-89-20, Eglin Air Force Base, FL, June 1989.

78. Arabshahi, A. and Whitfield, D. L., "A Multiblock Approach to Solving the Three-Dimensional Unsteady Euler Equations About A Wing-Pylon-Store Configuration," AIAA Paper No. 89-3401, Presented at the *AIAA Atmospheric Flight Mechanics Conference*, Boston, MA, August 14-16, 1989.
79. Janus, J. M., Whitfield, D. L., Horstman, H., and Mansfield, F., "Computation of the Unsteady Flowfield About a Counter Rotating Propfan Cruise Missile," AIAA Paper No. 90-3093, August 1990.
80. Whitfield, D. L., "Newton-Relaxation Schemes for Nonlinear Hyperbolic Systems," *Engineering & Industrial Research Station Report*, MSSU-EIRS-ASE-90-3, Mississippi State University, Mississippi State, MS, October 1990.
81. Arabshahi, A. and Whitfield, D. L., "Numerical Simulation of Supersonic Unsteady Flow for Multibody Configurations," AIAA Paper No. 91-0023, January 1991.
82. McDonald, H. and Whitfield, D. L., "Self Propelled Maneuvering Underwater Vehicles," *Proceedings of the 21<sup>st</sup> Symposium on Naval Hydrodynamics*, National Research Council, 1991, pp. 478-489.
83. Taylor, L. K. and Whitfield, D. L., "Unsteady Three-Dimensional Incompressible Euler and Navier-Stokes Solver for Stationary and Dynamic Grids," AIAA Paper No. 91-1650, June 1991.
84. Whitfield, D. L. and Taylor, L. K., "Discretized Newton-Relaxation Solution of High Resolution Flux-Difference Split Schemes," AIAA Paper No. 91-1539, June 1991.
85. Janus, J. M., Horstman, H. Z., and Whitfield, D. L., "Unsteady Flowfield Simulation of Ducted Prop-Fan Configurations," AIAA Paper No. 92-0521, January 1992.
86. Mansfield, F. A. and Whitfield, D. L., "Investigation of Solution Operators for the Two-Dimensional Unsteady Euler Equations," AIAA Paper No. 92-0050, January 1992.
87. Simpson, L. B. and Whitfield, D. L., "Flux-Difference Split Algorithm for Unsteady Thin-Layer Navier-Stokes Solutions," *AIAA Journal*, Vol. 30, No. 4, April 1992, pp. 914-922.
88. Mansfield, F. A. and Whitfield, D. L., "Investigation of Solution Operators for the Three-Dimensional Unsteady Euler Equations," AIAA Paper No. 92-2666, June 1992.
89. Whitfield, D. L., "An Implicit Solution of Roe's Approximate Riemann Solver Using True and Approximate Jacobians, Including Discretized and Sparse Matrix Updating," *Engineering & Industrial Research Station Report*, MSSU-EIRS-ERC-93-1, Mississippi State University, Mississippi State, MS, October 1992.
90. Janus, J.M., Arabshahi, A., and Whitfield, D.L., "Numerical Solution and Algorithm Analysis for the Unsteady Navier-Stokes Equations on Dynamic Multiblock Grids, Volume I," WL-TR-92-7044, Eglin Air Force Base, FL, October 1992.
91. Janus, J.M., Cox, C.F., Arabshahi, A., Cinnella, P. C., and Whitfield, D.L., "Numerical Solution and Algorithm Analysis for the Unsteady Navier-Stokes Equations on Dynamic Multiblock Grids Including Chemical Equilibrium, Volume II," WL-TR-92-7044, Eglin Air Force Base, FL, October 1992.
92. Chen, J. P. and Whitfield, D. L., "Navier-Stokes Calculations for the Unsteady Flow Field of Turbomachinery," AIAA Paper No. 93-0676, *31st AIAA Aerospace Sciences Meeting and Exhibit*, Reno, Nevada, January 1993.
93. Beddhu, M., Taylor, L.K., and Whitfield, D.L., "A Time Accurate Calculation Procedure for Incompressible Flows with a Free Surface Using a Modified Artificial Compressibility Formulation," *Mississippi State Annual Conference on Differential Equations and Computational Simulations*, Mississippi State, MS, March 1993.
94. Pankajakshan, R., Arabshahi, A., and Whitfield, D.L., "Turbofan Flowfield Simulation Using Euler Equations with Body Forces," AIAA Paper No. 93-1978, *AIAA/SAE/ASME/ASEE 29th Joint Propulsion Conference and Exhibit*, Monterey, CA, June 28-30, 1993.
95. Sreenivas, K., Whitfield, D.L., and Huff, D.L., "High Resolution Numerical Simulation of the Linearized Euler Equations in Conservation Law Form," AIAA Paper No. 93-2934, *AIAA 24th Fluids Dynamics Conference*, Orlando, FL, July 6-9, 1993.
96. Vanden, K. J. and Whitfield, D.L., "Direct and Iterative Algorithms for the Three-Dimensional Euler Equations," AIAA Paper No. 93-3378, *11th AIAA Computational Fluid Dynamics Conference*, Orlando, FL, July 6-9, 1993.
97. Taylor, L. K., Busby, J. A., Jiang, M. Y., Arabshahi, A., Sreenivas, K., and Whitfield, D. L., "Time Accurate Incompressible Navier-Stokes Simulation of the Flapping Foil Experiment," *The Proceedings Sixth*

*International Conference on Numerical Ship Hydrodynamics, Iowa City, Iowa, August 2–5, 1993, pp. 721–738.*

98. Arabshahi, A. and Whitfield, D. L., “Numerical Simulation of Supersonic Unsteady Flow for Multibody Configuration,” *International Journal of Scientific Computing and Modeling*, Vol. 1, Special Issue, December 1993, pp. 111–126.
99. Whitfield, D. L. and Taylor, L. K., “Numerical Solution of the Two-Dimensional Time-Dependent Incompressible Euler Equations,” MSSU-EIRS-ERC-93-14, April 1994.
100. Beddhu, M., Taylor, L.K., and Whitfield, D.L., “A Time Accurate Calculation Procedure for Flows with a Free Surface Using a Modified Artificial Compressibility Formulation,” *Applied Mathematics and Computation*, December 1994, pp. 33-48.
101. Sheng, C., Taylor, L., and Whitfield, D. L., “An Efficient Multigrid Acceleration for Solving the 3-D Incompressible Navier-Stokes Equations in Generalized Curvilinear Coordinates,” *AIAA Paper No. 94-2335*, 1994.
102. Beddhu, M, Jiang, M-Y., Taylor, L. K., and Whitfield, D. L., “Toward Computation of Ocean Flows Using Navier-Stokes Equations,” *Supercomputing '94 Proceedings*, IEEE Computer Society Press, 1994, pp. 144-153.
103. Whitfield, D. L., Taylor, L. K., Beddhu, M., and Arabshahi, A., “Discretized Newton-Relaxation Solution of the Three-dimensional Unsteady Incompressible Navier-Stokes Equations,” *Frontiers of Computational Fluid Dynamics*, Chapter 28, pp. 575-594, D.A. Caughey and M. M. Hafez editors, Wiley Publishing, 1994.
104. Webster, R. S., Chen, J. P., and Whitfield, D. L., “Numerical Simulation of a Helicopter Rotor in Hover and Forward Flight,” AIAA Paper No. 95–0193, *AIAA 33rd Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 9–12, 1995.
105. Taylor, L. K., Arabshahi, A., and Whitfield, D. L., “Unsteady Three-Dimensional Incompressible Navier-Stokes Computations for a 6:1 Prolate Spheroid Undergoing Time-Dependent Maneuvers,” *AIAA Paper No. 95-0313, AIAA 33rd Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 9–12, 1995.
106. Arabshahi, A., Taylor, L. K., and Whitfield, D. L., “UNCLE: Toward a Comprehensive Time-Accurate Incompressible Navier-Stokes Flow Solver,” *AIAA Paper No. 95-0050, AIAA 33rd Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 9–12, 1995.
107. Sheng, C., Taylor, L. K., and Whitfield, D. L., “Multiblock Multigrid Solution of Three-Dimensional Incompressible Turbulent Flow About Appended Submarine Configurations,” *AIAA Paper No. 95-0203, AIAA 33rd Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 9–12, 1995.
108. Whitfield, D. L., “Perspective on Applied CFD,” *AIAA Paper No. 95-0349, AIAA 33rd Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 9–12, 1995.
109. Beddhu, M., Jiang, M-Y., Taylor, L.K., and Whitfield, D.L., “Computation of Steady and Unsteady Flows with a Free Surface Around the Wigley Hull,” *Mississippi State Annual Conference on Differential Equations and Computational Simulations*, Mississippi State, MS, April 1995.
110. Vanden, K. J. and Whitfield, D. L., “Direct and Iterative Algorithms for the Three-Dimensional Euler Equations,” *AIAA Journal*, Vol. 33, No. 5, May 1995, pp. 851-858.
111. Briley, W. R., Neeraramban, S. S., and Whitfield, D. L., “Implicit Lower-Upper/Approximate- Factorization Algorithms for Viscous Incompressible Flows,” *AIAA Paper No. 95-1742 - CP, 12th Computational Fluid Dynamics Conference*, San Diego, CA, June 19-22, 1995.
112. Sreenivas, K., and Whitfield, D.L., “Nonlinear (Time Domain) and Linearized (Time and Frequency domain) Solutions to the Compressible Euler Equations in Conservative Law Form,” *NASA-CR-199398*, August 1995.
113. Sheng, C., Taylor, L. K., and Whitfield, D. L., “A Multigrid Algorithm for Unsteady Incompressible Euler and Navier-Stokes Flow Computations,” *Sixth International Symposium on Computational Fluid Dynamics*, Lake Tahoe, Nevada, September 4-8, 1995.
114. Arabshahi, A. and Whitfield, D. L., “Multiblock Euler Computation of Transonic Flow about a Generic Aircraft Configuration,” *International Journal of Computational Fluid Dynamics*, Vol. 4, Numbers 3-4, September 1995, ISSN: 1061 8562 IJCCFEC, pp. 307-321.
115. Taylor, L. K. And Whitfield, D. L., “Investigation of the Accuracy of an Unsteady Incompressible Euler Equation Algorithm,” *Proceedings of the International Conference on Scientific Computing and Modeling*, Eastern Illinois University, October 1995.

116. Sheng, C., Taylor, L. K., and Whitfield, D. L., "Multigrid Algorithm for Three-Dimensional Incompressible High-Reynolds Number Turbulent Flows," *AIAA Journal*, Vol. 33, No. 11, November 1995, pp. 2073-2079.
117. Sheng, C., Taylor, L.K., Chen, J.P, Jiang, M.Y., and Whitfield, D.L., "Multigrid Computations of 3-D Incompressible Internal and External Viscous Rotating Flows," MSSU-EIRS-ERC-96-1, February 1996.
118. Briley, R., Neerarambab, S.S., and Whitfield, D.L., "Implicit Lower-Upper/Approximate Factorization Algorithms for Incompressible Flows," *Journal of Computational Physics*, Vol. 123, March 1996, pp. 32-42.
119. McDonald, H. and Whitfield, D. L., "Self Propelled Maneuvering Underwater Vehicles," *Twenty-First Symposium on Naval Hydrodynamics*, Trondheim, Norway, June 24-28, 1996.
120. Whitfield, D. L., "Numerical Solution of the Shallow Water Equations," MSSU-EIRS-ERC-96-4, July 1996.
121. Beddhu, M., Taylor, L. K., and Whitfield, D. L., "Strong Conservative Form of the Incompressible Navier-Stokes Equations in Rotating Frame with a Solution Procedure," *Journal of Computational Physics*, Vol. 128, No. 2, October 1996, pp. 427-437.
122. Chen, J. P., Ghosh, A. R., Sreenivas, D., and Whitfield, D. L., "Comparison of Computations Using Navier-Stokes Equations in Rotating and Fixed Coordinates for Flow Through Turbomachinery," AIAA Paper No. 97-0878, *AIAA 35th Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 6-10, 1997.
123. Jonnalagadda, R., Taylor, L. K., and Whitfield, D. L., "Multiblock Multigrid Incompressible RANS Computation of Forces and Moments on Appended SUBOFF Configurations at Incidence," AIAA Paper No. 97-0624, *AIAA 35th Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 6-10, 1997.
124. Sheng, C., Chen, J.P., Taylor, L. K., Jiang, M.Y., and Whitfield, D.L., "Unsteady Multigrid Method for Simulating 3-D Incompressible Navier-Stokes Flows on Dynamic Relative Motion Grids," AIAA Paper No. 97-0446, *AIAA 35th Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 6-10, 1997.
125. Boger, D.A., Davoudzadeh, F., Dreyer, J.J., McDonald, H., Schott, C.G., Zierke, W.C., Arabshahi, A., Briley, W.R., Busby, J.A., Chen, J.P., Jiang, M.Y., Jonnalagadda, R., McGinley, J., Pankajakshan, R., Sheng, C., Stokes, M.L., Taylor, L.K., and Whitfield, D.L., "A Physics-Based Means of Computing the Flow Around a Maneuvering Underwater Vehicle," Technical Report No. TR 97-002, Applied Research Laboratory, Penn State University, January 1997.
126. Beddhu, M., Jiang, M-Y., Whitfield, D.L., Taylor, L.K., and Arabshahi, A. "Computational Physical Oceanography- A Comprehensive Approach Based on Generalized CFD/Grid Techniques for Planetary Scale Simulations of Oceanic Flows," MSSU-EIRS-ERC-97-5, March 1997.
127. Sheng, C., Whitfield, D.L. and Anderson, W.K., "A Multiblock Approach for Calculating Incompressible Fluid Flows on Unstructured Grids," AIAA Paper No. 97-1866, *13th AIAA Computational Fluid Dynamics Conference*, Snowmass, CO, June 1997.
128. Davoudzadeh, F., Taylor, L. K., Zierke, W. C., Dryer, J. J., McDonald, H. and Whitfield, D. L., "Coupled Navier-Stokes and Equations of Motion Simulation of Submarine Maneuvers, Including Crashback," FEDSM97-3129, *1997 ASME Fluids Engineering Division Summer Meeting*, Vancouver, British Columbia, Canada, June 22-26, 1997.
129. Pankajakshan, R., Briley, W.R., Taylor, L.K., Sheng, C., Jiang, M.Y., and Whitfield, D.L. "Parallel Simulation Methodology for Maneuvering Submarine/Propulsor Configurations," *Maneuvering Submarine Review*, NSWC/Carderock, October 1997.
130. Busby, J.A., Taylor, L. K., Jiang, M.Y., and Whitfield, D.L., "Unsteady 3-D Incompressible Flow Interaction in Multiple Blade-Row Turbomachinery," AIAA Paper No. 98-0423, *AIAA 36th Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 12-15, 1998.
131. Beddhu, M., Jiang, M. Y., Whitfield, D. L., Taylor, L. K. and Arabshahi, A., "CFD Validation of the Free Surface Flow Around DTMB Model 5415 Using Reynolds Averaged Navier-Stokes Equations," Presented in the Third Osaka Colloquium on Advanced CFD Applications to Ship Flow and Hull Form Design, Osaka, Japan, May 25-27, 1998.
132. Sreenivas, K. and Whitfield, D.L., "Time-and Frequency-domain Numerical Simulation of Linearized Euler Equations," *AIAA Journal*, Vol. 36, No. 6, June 1998, pp. 968-975.
133. Taylor, L.K., Pankajakshan, R., Jiang, M., Sheng, C., Briley, W.R., Whitfield, D.L., Davoudzadeh, F., Boger, D.A., Gibeling, H.J., Gorski, J., Haussling, H., Coleman, R., and Buley G., "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.
134. Beddhu, M., Jiang, M-Y., Taylor, L.K., and Whitfield, D.L., “Computation of Steady and Unsteady Flows with a Free Surface Around the Wigley Hull,” *Applied Mathematics and Computation*, 89: pp. 67-84, 1998.
  135. Newman, J.C., Anderson, W.K., and Whitfield, D.L., “Multidisciplinary Sensitivity Derivatives Using Complex Variables,” MSSU-COE-ERC-98-08, July 1998.
  136. Whitfield, D.L., and Taylor, L.K., “Variants of a Two-Level Method for the Approximate Numerical Solution of Field Simulation Equations,” MSSU-EIRS-ERC-98-09, July 1998.
  137. 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 Whitfield, D.L., “A Perspective on Naval Hydrodynamic Flow Simulations,” Presented in the 22<sup>nd</sup> Symposium on Naval Hydrodynamics, Washington, D.C., August 9-14, 1998.
  138. Beddhu, M., Nichols, S., Jiang, M.Y., Sheng, C., Whitfield, D.L., and Taylor, L.K., “Comparison of EFC and CFD Results of the Free Surface Flow Field about the Series 60 Cb=0.6 Ship,” 25th American Towing Conference, Iowa City, IA, September 1998.
  139. Sheng, C., Hyams, D., Sreenivas, K., Gaither, J.A., Marcum, D. L., Whitfield, D.L. and Anderson, W.K., “Three-Dimensional Incompressible Navier-Stokes Flow Computations About Complete Configurations Using a Multi-Block Unstructured Grid Approach,” AIAA-99-0778, 37th AIAA Aerospace Sciences Meeting, Reno, NV, January 1999.
  140. Janus, J. M., Horstman, H. S., and Whitfield, D.L., “Unsteady Flowfield Simulation of Ducted Prop-Fan Configurations,” *Journal of Propulsion and Power*, Vol. 15, No. 1, January-February 1999, pp. 64-72.
  141. Newman III, J.C., Anderson, W.K., and Whitfield, D.L., “A Step Size Independent Approach to Multidisciplinary Sensitivity Analysis and Design Optimization,” Proc., 17th AIAA Applied Aerodynamics Conference, AIAA Paper No. 99-3101, June 1999.
  142. Anderson, W.K., Whitfield, D.L., Newman III, J.C., Nielsen, E.J., “Sensitivity Analysis for the Navier-Stokes Equations on Unstructured Meshes Using Complex Variables,” Proc., 14th AIAA Computational Fluid Dynamics Conference, AIAA Paper No. 99-3294, June 1999.
  143. Beddhu, M., Jiang, M.Y., Whitfield, D.L., and Taylor, L.K., “Computation of the Wetted Transom Stern Flow over Model 5415,” Seventh International Conference on Numerical Ship Hydrodynamics, Nantes, France, July 19-22, 1999.
  144. Hyams, D.G., Sreenivas, K., Sheng, C., Briley, W.R., Marcum, D.L., and Whitfield, D.L., “An Investigation of Parallel Implicit Solution Algorithms for Incompressible Flows on Multielement Unstructured Topologies,” Proc., 38th Aerospace Sciences Meeting & Exhibit, AIAA Paper No. 2000-0271, Reno, NV, January 2000.
  145. Pankajakshan, R., Taylor, L.K., Jiang, M., Remotigue, M.G., Briley, W.R., and Whitfield, D.L., “Parallel Simulations for Control-Surface Induced Submarine Maneuvers,” Proc., 38th Aerospace Sciences Meeting & Exhibit, AIAA Paper No. 2000-0962, Reno, NV, January 2000.
  146. Hyams, D.G., Sreenivas, K., Sheng, C., Nichols, S., Taylor, L.K., Briley, W.R., and Whitfield, D.L., “An Unstructured Multielement Solution Algorithm for Complex Geometry Hydrodynamic Simulations,” 23rd Symposium on Naval Hydrodynamics, Falde Reuil, France, September 2000.
  147. 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 2000*, Edited by D. A. Caughey and M. M. Hafez, World Scientific Publishing Company PTE. LTD., Singapore, 2000.
  148. Beddhu, M., Pankajakshan, R., Jiang, M. Y., Taylor, L. K., Remotigue, M. G., Briley, W. R. and Whitfield, D. L., “Computation and Evaluation of CFD Results for Practical Ship Hull Forms,” presented at Workshop on CFD in Ship Hydrodynamics held in Gothenburg, Sweden, September 14-16, 2000.
  149. Briley, W., Taylor, L., and Whitfield, D., 2001, Scalable Flow Simulations with Rotating Components,” Naval Oceanographic Office, Major Shared Resource Center - Navigator, pp. 4-7. Spring 2000.
  150. Beddhu, M., Pankajakshan, R., Jiang, M. Y., Taylor, L. K., Briley, W. R. and Whitfield, D. L., “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.

151. Chen, J., and Whitfield, D., "Computation of Rotor-Stator Interaction Using the Navier-Stokes Equations (NASA Grant NAG3-1712, Final Report)," MSSU-COE-ERC-00-12, October 2000.
152. Anderson, W.K., Newman, J.C., Whitfield, D.L., and Nielsen, E.J., "Sensitivity Analysis for Navier-Stokes Equations on Unstructured Meshes Using Complex Variables." *AIAA Journal*, Vol. 39, No. 1, January 2001, pp. 56-63.
153. 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.
154. Taylor, L., Briley, W., and Whitfield, D., "High-Resolution Viscous Flow Simulations at Arbitrary Mach Number," MSSU-COE-ERC-01-04, March 2001.
155. Sreenivas, K., Hyams, D.G., Mitchell, B., Taylor, L.K., Briley, W.R., and Whitfield, D.L., "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.
156. Briley, W., Taylor, L., and Whitfield, D., "Scalable Flow Simulations with Rotating Components," *Navigator*, Naval Oceanographic Office: Major Shared Resource Center, Spring 2001, pp. 4-7.
157. Newman, James C. III and Whitfield, D., "Sensitivity Derivative Analysis for Use in Computational Design Optimization," MSSU-COE-ERC-01-06, September 2001.
158. 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," 8<sup>th</sup> International Conference on Numerical Grid Generation in computational Field Simulations, Honolulu, Hawaii, 2002.
159. Newman, James C. III, Pankajakshan, R., Whitfield, D.L., and Taylor, L.K., "Computational Design Optimization Using RANS," presented at 24th Symposium on Naval Hydrodynamics Fukuoka, JAPAN, 8-13, July 2002.
160. Pankajakshan, R., Taylor, L.K., Sheng, C., Briley, W.R., and Whitfield, D.L., "Scalable Parallel Implicit Multigrid Solution of Unsteady Incompressible Flows," *Frontiers of Computational Fluid Dynamics 2002*, (Eds. D.A. Caughey and M.M. Hafez), World Scientific Publishing Co., 2002, pp. 181-195.
161. Pankajakshan, R., Remotigue, M.G., Taylor, L.K., Jiang, M., Briley, W.R., and Whitfield, D.L., "Validation of Control-Surface Induced Submarine Maneuvering Simulations using UNCLE," 24th Symposium on Naval Hydrodynamics, Fukuoka, JAPAN, 8-13, July 2002.
162. Sreenivas, K., Hyams, D.G., Sheng, C., Jayaraman, B., Wang, X., Mitchell, B., Jiang, M.Y., Pankajakshan, R., Taylor, L.K., Gaither, K.P., Gaither, A., Beeland, H., Marcum, D.L., Briley, W.R., and Whitfield, D.L., "Physics-Based Maneuvering Simulations for Tiltrotor Aircraft," MSSU-COE-ERC-02-06, April 2002.
163. Janus, J. Mark and Whitfield, D.L., "Enhancement of Computational Fluid Dynamic Capabilities at Lockheed Martin," MSSU-COE-ERC-02-07, April 2002.
164. Sheng, C., Newman, James C. III, Remotigue, M., Chen, J.P., Marcum, D.L., and Whitfield, D.L., "Development of Unstructured Computational Capabilities Applicable to MSU TURBO with an Arbitrary Mach Number Algorithm," MSSU-COE-ERC-02-16, October 2002.
165. Taylor, L., Briley, W., and Whitfield, D., "High-Resolution Viscous Flow Simulations at Arbitrary Mach Number," *Journal of Computational Physics*, Vol. 184, January 2003, pp. 79-105.
166. 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.
167. Newman III, J.C., Whitfield, D.L., and Anderson, W.K., "Step-Size Independent Approach for Multidisciplinary Sensitivity Analysis," *Journal of Aircraft*, Vol. 40, No. 4, July or August 2003.
168. 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.
169. 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.

170. McCallen, R., Salari, K., Ortega, J. M., Castellucci, P. J., Eastwood, C. D., Dechant, L., Hassan, B., Pointer, W. D., Browand, F., Leonard, A., Rubel, M. T., Ross, J. C., Heineck, J. T., Walker, S. M., Storms, B., Roy, C., Whitfield, D., Pankajakshan, R., Taylor, L. K., Sreenivas, K., Englar, R. J., "DOE's Effort to Reduce Truck Aerodynamic Drag Through Joint Experiments and Computations," SAE Paper 2005-01-3511, 2005 SAE Commercial Vehicle Engineering Conference, Rosemont, IL, November 2005.
171. S. Nichols, D. Hyams, K. Sreenivas, B. Mitchell, L. Taylor, D. Whitfield, "An Unstructured Incompressible Multi-Phase Solution Algorithm", AIAA-2006-1290, 44th AIAA Aerospace Sciences Meeting and Exhibit, January 2006.
172. K. Sreenivas, R. Pankajakshan, S. Nichols B. Mitchell, L. Taylor, D. Whitfield, "Aerodynamic Simulation of Heavy Trucks with Rotating Wheels", AIAA-2006-1394, 44th AIAA Aerospace Sciences Meeting and Exhibit, January 2006
173. D. Hyams, K. Sreenivas, and D. Whitfield, "Parallel FAS Multigrid for Arbitrary Mach Number, High Reynolds Number Unstructured Flow Solvers," AIAA-2006-2821, June 2006.
174. S. Nichols, B. Mitchell, K. Sreenivas, L. Taylor, D. Whitfield and R. Briley, "Aerosol Propagation in an Urban Environment," AIAA 2006-3726, June 2006.
175. 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.
176. Almeida<sup>1</sup>, T.G., Walker<sup>1</sup>, D.T., Leighton<sup>1</sup>, R.I., Alajbegovic<sup>1</sup>, A., Pankajakshan<sup>2</sup>, R., Taylor<sup>2</sup>, L.K., Whitfield<sup>2</sup>, D.L., Ceccio<sup>3</sup>, S.L., (<sup>1</sup>General Dynamics; <sup>2</sup>Univ. Tennessee Chattanooga; <sup>3</sup>Univ. Michigan), "A Reynolds-Averaged Model for the Prediction of Friction Drag Reduction by Polymer Additives," 26th Symposium on Naval Hydrodynamics, Rome Italy, September. 17-22, 2006.
177. 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.
178. K. Sreenivas, S. Nichols, D. Hyams, B. Mitchell, S. Sawyer, and D. Whitfield, "Computational Simulation of Heavy Trucks," AIAA-2007-1087, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007.
179. A. Arabshahi, K. Sreenivas, S. Nichols, B. Mitchell, L. Taylor and D. Whitfield, "Computational Analysis of Turbulent Internal Flow in Ballistic Rocket Motors," AIAA-2007-1449, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007.
180. Arabshahi, A. and Whitfield, D. L., "Computational of Dynamic Stability and Control Derivatives," THEC Final Report, January 2005 – July 2007.
181. Arabshahi, A., Webster, R. S., Briley, W. R., and Whitfield, D. L., "Advancement and Verification of the Navier-Stokes Flow Solver for Rocket Motor Internal Flows," THEC Final Report, July 2005 – June 2007.
182. Wilson, R., Nichols, S., Mitchell, B., Karman, S., Betro, V., Hyams, D., Sreenivas, K., Taylor, L., Briley, R., and Whitfield D., "Simulation of a Surface Combatant with Dynamic Ship Maneuvers," 9th Int. Conf. in Num. Ship Hydro., University of Michigan, 5-8 Aug. 2007.
183. Sreenivas, K., Mitchell, B., Nichols, D.S., Hyams, D.G., and Whitfield, D.L., "Computational Simulation of the GCM Tractor-Trailer Configuration," Aerodynamics of Heavy Vehicles II: Trucks, Buses, and Trains, Lake Tahoe, August 2007.
184. Pankajakshan R., Mitchell B., and L. Whitfield D.L., "Full-Scale Simulations of Drag Reduction Devices for Class 8 Trucks," Aerodynamics of Heavy Vehicles: Trucks, Busses and Trains II Lake Tahoe CA, Aug. 26-31, 2007. To be published.
185. Ramesh Pankajakshan, Kidambi Sreenivas, Brent Mitchell, and David L. Whitfield, "CFD Simulations of Class 8 Trucks," 2007-01-4293, SAE 2007 Commercial Vehicle Engineering Congress & Exhibition, October 2007.
186. Wilson, R., Lei, J., Karman, Jr., S., Hyams, D., Sreenivas, K., Taylor, L., and Whitfield D., 2008, "Simulation of Large Amplitude Ship Motions for Prediction of Fluid-Structure Interaction," Proceedings of the 27th ONR Symposium on Naval Hydrodynamics, Seoul, Korea, 5-10 Oct. 2008.
187. Whitfield, D.L, Pankajakshan, R., Sreenivas, K., and, Taylor, L.K. "Numerical Derivatives, Matrix-Vector Product, and Richardson Extrapolation Using Complex Variables," UTC-CECS-SimCenter-2008-01, March 2008.

## Theses and Dissertations Directed and/or Major Professor

1. Timothy W. Swafford, "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.
2. James L. Thomas, "Transonic Viscous-Inviscid Interaction Using Euler and Inverse Boundary Layer Equations," PhD Dissertation, Mississippi State University, December 1983.
3. J. Mark Janus, "The Development of a Three Dimensional Split Flux Vector Euler Solver with Dynamic Grid Applications," MS Thesis, Mississippi State University, August 1984.
4. Keith M. Kisielewski, "A Numerical Investigation of Rain Effects on Lift Using a Three-Dimensional Split Flux Vector Form of the Euler Equations," MS Thesis, Mississippi State University, May 1985.
5. W. Kyle Anderson, "Implicit Multigrid Algorithms for the Three-Dimensional Flux Split Euler Equations," PhD Dissertation, Mississippi State University, August 1986.
6. Dave M. Belk, "Three-Dimensional Euler Equations Solutions on Dynamic Blocked Grids," PhD Dissertation, Mississippi State University, August 1986.
7. Boyd Gatlin, "An Implicit, Upwind Method for Obtaining Symbiotic Solutions to the Thin-Layer Navier-Stokes Equations," PhD Dissertation, Mississippi State University, August 1987.
8. Shahyar Pirzadeh, "Three-Dimensional Unsteady Transonic Viscous - Inviscid Interaction," PhD Dissertation, Mississippi State University, December 1988.
9. L. Bruce Simpson, "Unsteady Three-Dimensional Thin-Layer Navier-Stokes Solutions on Dynamic Blocked Grids," PhD Dissertation, Mississippi State University, December 1988.
10. Abdollah Arabshahi, "A Dynamic Multiblock Approach to Solving the Unsteady Euler Equations About Complex Configurations," PhD Dissertation, Mississippi State University, May 1989.
11. Jonathan Mark Janus, "Advanced 3-D CFD Algorithm for Turbomachinery," PhD Dissertation, Mississippi State University, May 1989.
12. Frank Mansfield, "Investigation of Solution Operators for the Three-Dimensional Unsteady Euler Equation," PhD Dissertation, Mississippi State University, May 1991.
13. Lafe K. Taylor, "Unsteady Three-Dimensional Incompressible Algorithm Based on Artificial Compressibility," PhD Dissertation, Mississippi State University, May 1991.
14. Jen Ping Chen, "Unsteady Three-Dimensional Thin-Layer Navier-Stokes Solutions for Turbomachinery in Transonic Flow," PhD Dissertation, Mississippi State University, December 1991.
15. Kirk Vanden, "Direct and Iterative Algorithms for the Three-Dimensional Euler Equations," PhD Dissertation, Mississippi State University, December 1992.
16. Ramesh Pankajakshan, "Turbofan Flowfield Simulation Using Euler Equations with Body Forces," MS Thesis, Mississippi State University, May 1993.
17. Kidambi Sreenivas, "High Resolution Numerical Simulation of the Linearized Euler Equations in Conservation Law Form," MS Thesis, Mississippi State University, August 1993.
18. Robert S. Webster, "Numerical Simulation of a Helicopter Rotor in Hover and Forward Flight," MS Thesis, Mississippi State University, August 1994.
19. Chunhua Sheng, "Development of A Multiblock Multigrid Algorithm for the Three-Dimensional Incompressible Navier-Stokes Equations," PhD Dissertation, Mississippi State University, December 1994.
20. John Whitmire, "A Numerical Simulation of the Lockheed-Martin Titan IV Booster," MS Thesis, Mississippi State University, December 1995.
21. Chee-Siong Er, "Numerical Simulation of Incompressible Viscous Laminar Convective Heat Transfer Flow," MS Thesis, Mississippi State University, December 1995.
22. Ramanadham Jonnalagadda, "Reynolds Averaged Navier-Stokes Computation of Forces and Moments for Appended Suboff Configurations at Incidence," MS Thesis, Mississippi State University, May 1996.
23. Amrit Raj Ghosh, "Solutions to Three Dimensional Thin Layer Navier Stokes Equations in Rotating Coordinates for Flow Through Turbomachinery," MS Thesis, Mississippi State University, December 1996.

24. Kidambi Sreenivas, "Linearized Euler Analysis of Turbomachinery," PhD Dissertation, Mississippi State University, December 1996.
25. Judy Busby, "Unsteady 3-D Incompressible Flow Interaction in Multiple-Blade-Row Turbomachinery," PhD Dissertation, Mississippi State University, May 1997.
26. Stephen Nichols, "Calculation of Free Surface Wave Forms and Flow Field about the Series 60 CB=0.6 Ship," MS Thesis, Mississippi State University, May 1998.
27. Xiao Wang, "Computation of High Reynolds Number Ocean Flows Using Absolute and Relative Stokes Tensors," MS Thesis, Mississippi State University, May 1998.
28. Montgomery C. Hughson, "A 3-D Unstructured CFD Method for Maneuvering Vehicles," PhD Dissertation, Mississippi State University, December 1998.
29. Anand Pillai, "Radial Partitioning in a Compressible Viscous Parallel Flow Solver for Turbomachinery," MS Thesis, Mississippi State University, December 1998.
30. Michael Gerard Remotigue, "Structured Grid Technology to Enable Flow Simulation in an Integrated System Environment," PhD Dissertation, Mississippi State University, December 1999.
31. Robert Samuel Webster, "A Numerical Study of the Conjugate Conduction-Convection Heat Transfer Problem," PhD Dissertation, Mississippi State University, May 2001.
32. Wesley H. Brewer, "On Simulating Tip-Leakage Vortex Flow to Study the Nature of Cavitation Inception," PhD Dissertation, Mississippi State University, May 2002.
33. D. Stephen Nichols, "Development of a Free Surface Method Utilizing an Incompressible Multi-Phase Algorithm to Study the Flow About Surface Ships and Underwater Vehicles," PhD Dissertation, Mississippi State University, August 2002.
34. Xiao Wang, "A Preconditioned Algorithm for Turbomachinery Viscous Flow," PhD Dissertation, Mississippi State University, December 2005.
35. R. Glenn Brook, "A Parallel, Matrix-Free Newton Method for Solving Approximate Boltzmann Equations on Unstructured Topologies," PhD Dissertation, University of Tennessee at Chattanooga, December 2008.