

CFL3D Papers

General References

- 1. Biedron, R. and Thomas, J., "A Generalized Patched-Grid Algorithm with Application to the F-18 Forebody with Actuated Control Strake," *Computing Systems in Engineering*, Vol. 1, Nos. 2-4, pp. 563-576, 1990.
- 2. Compton, W., Thomas, J., Abeyounis, W., and Mason, M., "Transonic Navier-Stokes Solutions of Three-Dimensional Afterbody Flows," NASA TM 4111, July 1989.
- 3. Ghaffari, F., Luckring, J., Thomas, J., Bates, B., and Biedron, R., "Multiblock Navier-Stokes Solutions About the F/A-18 Wing-LEX-Fuselage Configuration," *Journal of Aircraft*, Vol. 30, No. 3, pp. 293-303, 1993.
- 4. Rumsey, C., Biedron, R., and Thomas, J., "CFL3D: Its History and Some Recent Applications," NASA TM-112861, May 1997; presented at the "Godunov's Method for Gas Dynamics" Symposium, Ann Arbor, MI, May 1-2, 1997.
- 5. Rumsey, C. and Vatsa, V., "Comparison of the Predictive Capabilities of Several Turbulence Models," *Journal of Aircraft*, Vol. 32, No. 3, pp. 510-514, 1995.
- 6. Rumsey, C., Sanetrik, M., Biedron, R., Melson, N., and Parlette, E., "Efficiency and Accuracy of Time-Accurate Turbulent Navier-Stokes Computations," *Computers & Fluids*, Vol. 25, No. 2, pp. 217-236, 1996.
- 7. Thomas, J., Krist, S., and Anderson, W., "Navier-Stokes Computations of Vortical Flows Over Low-Aspect-Ratio Wings," *AIAA Journal*, Vol. 28, No. 2, pp. 205-212, 1990.
- 8. Vatsa, V., Thomas, J., and Wedan, B., "Navier-Stokes Computations of a Prolate Spheroid at Angle of Attack," *Journal of Aircraft*, Vol. 26, No. 11, pp. 986-993, 1989.

Other References (Partial List)

9. Berry, J., Chaffin, M., and Duque, E., "Helicopter Fuselage Aerodynamic Predictions: Navier-Stokes and Panel Method Solutions and Comparison with Experiment," Amer-

CFL3D User's Manual 337

- ican Helicopter Society Aeromech Specialists Conference, pp. 3.5-1 3.5-20, January 1994.
- 10. Garriz, J., Vatsa, V., and Sanetrik, M., "Issues Involved in Coupling Navier-Stokes Mean-Flow and Linear Stability Codes," AIAA 94-0304, 1994.
- 11. Ghaffari, F., Bates, B., Luckring, J., and Thomas, J., "Transonic Navier-Stokes Solutions About a Complex High-Speed Accelerator Configuration," AIAA 90-0430, 1990.
- 12. Hsieh, T. and Wardlaw, A., "Unsteady Aerodynamics of a Transient Pitching Missile Body from 0 Degrees to 25 Degrees," AIAA 94-3500, 1994.
- 13. Jones, K., Biedron, R., and Whitlock, M., "Application of a Navier-Stokes Solver to the Analysis of Multielement Airfoils and Wings Using Multizonal Grid Techniques," AIAA 95-1855, 1995.
- 14. Krist, S. L., *A Grid-Overlapping Technique Applied to a Delta Wing in a Wind Tunnel*, Masters thesis, George Washington University, 1994.
- 15. Krist, S., Washburn, A., and Visser, K., "A Computational and Experimental Investigation of a Delta Wing with Vertical Tails," AIAA 93-3009, 1993.
- 16. Lessard, V., "Analysis of a High Speed Civil Transport Configuration at Subsonic Flow Conditions Using a Navier-Stokes Solver," NASA CR 4490, 1993.
- 17. Londenberg, W., "Transonic Navier-Stokes Calculations About a 65 degree Delta Wing," NASA CR 4635, 1994.
- 18. Londenberg, W., "Turbulence Model Evaluation for the Prediction of Flows Over a Supercritical Airfoil with Deflected Aileron at High Reynolds Number," AIAA 93-0191, 1993.
- 19. McMillin, S., Pittman, J., and Thomas, J., "Computational Study of Incipient Leading-Edge Separation on a Supersonic Delta Wing," *Journal of Aircraft*, Vol. 29, No. 2, pp. 203-209, 1992.
- McMillin, S., Thomas, J., and Murman, E., "Navier-Stokes and Euler Solutions for Lee-Side Flows Over Supersonic Delta Wings - A Correlation With Experiment," NASA TP-3035, 1990.
- 21. Melnik, R., Siclari, M., Marconi, F., Barber, T., and Verhoff, A., "An Overview of a Recent Industry Effort at CFD Code Certification," AIAA 95-2229, 1995.

- 22. Milholen, W., Chokani, N., and Al-Saadi, J., "Performance of Three-Dimensional Compressible Navier-Stokes Codes at Low Mach Numbers," *AIAA Journal*, Vol. 34, No. 7, pp. 1356-1362, 1996.
- 23. Newsome, R., "Navier-Stokes Simulation of Wing-Tip and Wing-Juncture Interactions for a Pitching Wing," AIAA 94-2259, 1994.
- 24. Rivers, M. and Wahls, R., "Comparison of Computational and Experimental Results for a Supercritical Airfoil," NASA TM-4601, 1994.
- 25. Robinson, B. and Yeh, D., "Toward Certification for CFD Codes for Aft End/Nozzle Configurations," AIAA 94-2242, 1994.
- 26. Rudy, D., "Validation Studies for CFL3D, CFL3DE, and GASP Codes," Paper No. 115, 10th National Aero-Space Plane Technology Symposium, April 1991.
- 27. Rumsey, C., "Computation of Acoustic Waves Through Sliding-Zone Interfaces," AIAA Journal, Vol. 35, No. 2, pp. 263-268, 1997; also, "Computation of Acoustic Waves Through Sliding-Zone Interfaces Using an Euler/Navier-Stokes Code," AIAA 96-1752, 1996.
- 28. Stephens, M., Shih, T., and Civinskas, K., "Computation of Flow and Heat Transfer in a Rectangular Channel with Ribs," AIAA 95-0180, 1995.
- 29. Tai, T., "Simulation and Analysis of V-22 Tiltrotor Aircraft Forward Flight Flowfield," AIAA 95-0045, 1995.
- 30. Thomas, J., "An Implicit Multigrid Scheme for Hypersonic Strong-Interaction Flow-fields," *Communications in Applied Numerical Methods*, Vol. 8, pp. 683-693, 1992.
- 31. Yagle, Patrick, An Investigation of the Effect of Turbulence Model and Boundary Layer Transition on Predicting Vortical Flows on 65 degree Delta Wings at Mach 1.6, Masters Thesis, George Washington University, September 1995.

Turbulence Model References

 $k-\varepsilon$:

32. Abid, R., "Evaluation of Two-Equation Turbulence Models for Predicting Transitional Flows", *International Journal of Engineering Science*, Vol. 31, pp. 831-840, 1993.

Baldwin-Barth:

33. Baldwin, B. and Barth, T., "A One-Equation Turbulent Transport Model for High Reynolds Number Wall-Bounded Flows," NASA TM-102847, August 1990.

Baldwin-Lomax:

- 34. Baldwin, B. and Lomax, H., "Thin Layer Approximation and Algebraic Model for Separated Turbulent Flow," AIAA 78-257, 1978.
- 35. Degani, D. and Schiff, L., "Computation of Supersonic Viscous Flows Around Pointed Bodies at Large Incidence," AIAA 83-0034, 1983.

$$k-\omega$$
 (SST):

- 36. Menter, F., "Improved Two-Equation $k-\omega$ Turbulence Models for Aerodynamic Flows," NASA TM 103975, 1992.
- 37. Menter, F., "Zonal Two Equation k ω Turbulence Models for Aerodynamic Flows," AIAA 93-2906, 1993.
- 38. Menter, F. and Rumsey, C., "Assessment of Two-Equation Turbulence Models for Transonic Flows," AIAA 94-2343, 1994. Some corrections to this paper are:

Equation (1) should be:
$$\sigma \mu_t = \mu + \sigma \mu_t \\ \sigma^* \mu_t = \mu + \sigma^* \mu_t$$

Equation (17) should be:
$$\Gamma = \max(2\Gamma_3, \Gamma_1)$$

Spalart-Allmaras

- 39. Spalart, P. and Allmaras, S., "A One-Equation Turbulence Model for Aerodynamic Flows," *La Recherche Aerospatiale*, No. 1, pp. 5-21, 1994.
- 40. Spalart, P. and Allmaras, S., "A One-Equation Turbulence Model for Aerodynamic Flows," AIAA 92-0439, 1992.

Wilcox $k - \omega$:

41. Wilcox, D., "Reassessment of the Scale Determining Equation for Advanced Turbulence Models", *AIAA Journal*, Vol. 26, No. 11, pp. 1299-1310, 1988.

- *EASM* $k \omega$ *and* $k \varepsilon$ *(as eddy-viscosity or as non-equilibrium):*
- 42. Gatski, T. and Speziale, C., "On Explicit Algebraic Stress Models for Complex Turbulent Flows," *Journal of Fluid Mechanics*, Vol. 254, pp. 59-78, 1993.
- 43. Abid, R., Rumsey, C., and Gatski, T., "Prediction of Nonequilibrium Turbulent Flows with Explicit Algebraic Stress Models," *AIAA Journal*, Vol. 33, No. 11, pp. 2026-2031, November 1995.
- 44. Gatski, T., "Prediction of Airfoil Characteristics with Higher Order Turbulence Models," NASA TM 110246, April 1996.
- 45. Girimaji, S., "Fully-Explicit and Self-Consistent Algebraic Reynolds Stress Model," NASA CR 198243, December 1995; also ICASE Report No. 95-82, 1995; also *Theoretical and Computational Fluid Dynamics*, Vol. 8, pp. 387-402, 1996.

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