

Title: MUSTA-TVD Scheme for Hyperbolic Conservation Laws

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The author presents the use of a second order TVD scheme for a Multi-Stage approach to solve Hyperbolic equations. This work builds up from the basis established by Toro and Titarev [1,2] for generating numerical approximations to the the solution of the Riemann-Problem, as well as Zahran's own work[3].

Three examples are presented in this paper, a scalar equation, a system of equations and an example of shock interaction with entropy waves. The numerical results presented show a superior performance of the proposed algorithm with respect to the original MUSTA and TVD schemes.

1. V. A. Titarev, E. F. Toro , *MUSTA schemes for multi-dimensional hyperbolic systems: analysis and improvements*, International Journal for Numerical Methods in Fluids, vol. 49, no. 2, pp. 117-147, 2005.
2. E.F. Toro and V.A. Titarev, *MUSTA schemes for systems of conservation laws*, Journal of Computational Physics, vol. 216, no. 2, pp. 403-429, 2006.
3. Y. H. Zahran, *A Central WENO-TVD Scheme for Hyperbolic Conservation Laws*, Novi Sad J. Math., vol. 36, no. 2, pp. 25-42, 2006.