

**Wendroff, B.**

**A two-dimensional HLL E Riemann solver and associated Godunov-type difference scheme for gas dynamics.** (English) [Zbl 0984.76064](#)

*Comput. Math. Appl.* 38, No. 11-12, 175-185 (1999).

Summary: The approximate three-state Riemann solver HLL E is formally extended to a nine-state two-dimensional solver. Then the associated Godunov scheme is outlined and applied to two test problems.

**MSC:**

**76M20** Finite difference methods applied to problems in fluid mechanics

Cited in **22** Documents

**76N15** Gas dynamics (general theory)

**76L05** Shock waves and blast waves in fluid mechanics

**Keywords:**

gas dynamics; four-shock configuration; approximate three-state Riemann solver HLL E; nine-state two-dimensional solver; Godunov scheme

**Software:**

[HLL E](#)

**Full Text:** [DOI](#)

**References:**

- [1] Harten, A.; Lax, P.D.; van Leer, B., On upstream differencing and Godunov-type schemes for hyperbolic conservation laws, *SIAM rev.*, 25, 35-61, (1983) · [Zbl 0565.65051](#)
- [2] Einfeldt, B., On Godunov-type methods for gas dynamics, *SIAM J. numer. anal.*, 25, 294-318, (1988) · [Zbl 0642.76088](#)
- [3] Schulz-Rinne, C.W.; Collins, J.P.; Glaz, H.M., Numerical solution of the Riemann problem for two-dimensional gas dynamics, *SIAM J. sci. comput.*, 14, 1394-1414, (1993) · [Zbl 0785.76050](#)
- [4] Einfeldt, B.; Munz, C.D.; Roe, P.L.; Sjögren, B., On Godunov-type methods near low densities, *J. comp. phys.*, 92, 273-295, (1991) · [Zbl 0709.76102](#)
- [5] Batten, P.; Clarke, N.; Lambert, C.; Clauson, D.M., On the choice of wavespeeds for the HLLC Riemann solver, *SIAM J. sci. comput.*, 18, 1553-1570, (1997) · [Zbl 0992.65088](#)
- [6] Liska, R.; Wendroff, B., Composite schemes for conservation laws, *SIAM J. numer. anal.*, 35, 2250-2271, (1998) · [Zbl 0920.65054](#)
- [7] Toro, E.F., *Riemann solvers and numerical methods for fluid dynamics*, (1997), Springer · [Zbl 0888.76001](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.