

A survey of several finite difference methods for systems of nonlinear hyperbolic conservation laws.

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Review

### A survey of several finite difference methods for systems of nonlinear hyperbolic conservation laws

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#### Abstract

The finite difference methods of Godunov, Hyman, Lax and Wendroff (two-step), MacCormack, Rusanov, the upwind scheme, the hybrid scheme of Harten and Zwas, the antidiffusion method of Boris and Book, the artificial compression method of Harten, and Glimm's method, a random choice method, are discussed. The methods are used to integrate the one-dimensional Eulerian form of the equations of gas dynamics in Cartesian coordinates for an inviscid, nonheat-conducting fluid. The test problem was a typical shock tube problem. The results are compared and demonstrate that Glimm's method has several advantages.



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