



Finite-Difference Techniques for Vectorized Fluid Dynamics Calculations

By -

Springer. Paperback. Book Condition: New. Paperback. 236 pages. Dimensions: 8.9in. x 5.9in. x 0.5in. This book describes several finite-difference techniques developed recently for the numerical solution of fluid equations. Both convective (hyperbolic) equations and elliptic equations (of Poissons type) are discussed. The emphasis is on methods developed and in use at the Naval Research Laboratory, although brief descriptions of competitive and kindred techniques are included as background material. This book is intended for specialists in computational fluid dynamics and related subjects. It includes examples, applications and source listings of program modules in Fortran embodying the methods. Contents Introduction 1 (D. L. Book) 2 Computational Techniques for Solution of Convective Equations 5 (D. L. Book and J. P. Boris) 2. 1 Importance of Convective Equations 5 2. 2 Requirements for Convective Equation Algorithms 7 2. 3 Quasiparticle Methods 10 2. 4 Characteristic Methods 13 2. 5 Finite-Difference Methods 15 2. 6 Finite-Element Methods 20 2. 7 Spectral Methods 23 3 Flux-Corrected Transport 29 (D. L. Book, J. P. Boris, and S. T. Zalesak) 3. 1 Improvements in Eulerian Finite-Difference Algorithms 29 3. 2 ETBFCT: A Fully Vectorized FCT Module 33 3. 3 Multidimensional FCT 41 4 Efficient Time Integration Schemes for...



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