1. Record Nr. UNINA9910967032503321

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Titolo	Computational Methods for Fluid Dynamics / / by Joel H. Ferziger, Milovan Peric
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 1996
ISBN	3-642-97651-4
Edizione	[1st ed. 1996.]
Descrizione fisica	1 online resource (XIV, 364 p.)
Disciplina	532/.05/015194
Soggetti	Mechanics, Applied Mathematical physics Engineering Mechanics Mathematical Methods in Physics Theoretical, Mathematical and Computational Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Basic Concepts of Fluid Flow -- 1.1 Introduction -- 1.2 Conservation Principles -- 1.3 Mass Conservation -- 1.4 Momentum Conservation -- 1.5 Conservation of Scalar Quantities -- 1.6 Dimensionless Form of Equations -- 1.7 Simplified Mathematical Models -- 1.8 Mathematical Classification of Flows -- 1.9 Plan of This Book -- 2. Introduction to Numerical Methods -- 2.1 Approaches to Fluid Dynamical Problems -- 2.2 What is CFD? -- 2.3 Possibilities and Limitations of Numerical Methods -- 2.4 Components of a Numerical Solution Method -- 2.5 Properties of Numerical Solution Methods -- 2.6 Discretization Approaches -- 3. Finite Difference Methods -- 3.1 Introduction -- 3.2 Basic Concept -- 3.3 Approximation of the First Derivative -- 3.4 Approximation of the Second Derivative -- 3.5 Approximation of Mixed Derivatives -- 3.6 Approximation of Other Terms -- 3.7 Implementation of Boundary Conditions -- 3.8 An Introduction to Spectral Methods -- 3.9 The Algebraic Equation System -- 3.10 Discretization Errors -- 3.11 Example -- 4. Finite Volume Methods -- 4.1 Introduction -- 4.2 Approximation of Surface Integrals -- 4.3 Approximation of Volume Integrals -- 4.4 Interpolation Practices -- 4.5 Deferred Correction -- 4.6 Implementation of Boundary Conditions --

4.7 The Algebraic Equation System -- 4.8 Examples -- 5. Solution of Linear Equation Systems -- 5.1 Introduction -- 5.2 Direct Methods -- 5.3 Iterative Methods -- 5.4 Coupled Equations and Their Solution -- 5.5 Non-Linear Equations and their Solution -- 5.6 Convergence Criteria -- 5.7 Examples -- 6. Methods for Unsteady Problems -- 6.1 Introduction -- 6.2 Methods for Initial Value Problems in ODEs -- 6.3 Application to the Generic Transport Equation -- 6.4 Examples -- 7. Solution of the Navier-Stokes Equations -- 7.1 Special Features of the Navier-Stokes Equations -- 7.2 Choice of Variable Arrangement on the Grid -- 7.3 Calculation of the Pressure -- 7.4 Other Methods -- 7.5 Solution Methods for the Navier-Stokes Equations -- 7.6 Note on Pressure and Incompressibility -- 7.7 Boundary Conditions for the Navier-Stokes Equations -- 7.8 Examples -- 8. Complex Geometries -- 8.1 The Choice of Grid -- 8.2 Grid Generation -- 8.3 The Choice of Velocity Components -- 8.4 The Choice of Variable Arrangement -- 8.5 Finite Difference Methods -- 8.6 Finite Volume Methods -- 8.7 Control-Volume-Based Finite Element Methods -- 8.8 Pressure-Correction Equation -- 8.9 Axisymmetric Problems -- 8.10 Implementation of Boundary Conditions -- 8.11 Examples -- 9. Turbulent Flows -- 9.1 Introduction -- 9.2 Direct Numerical Simulation (DNS) -- 9.3 Large Eddy Simulation (LES) -- 9.4 RANS Models -- 9.5 Reynolds Stress Models -- 10. Compressible Flow -- 10.1 Introduction -- 10.2 Pressure-Correction Methods for Arbitrary Mach Number -- 10.3 Methods Designed for Compressible Flow -- 11. Efficiency and Accuracy Improvement -- 11.1 Multigrid Methods for Flow Calculation -- 11.2 Adaptive Grid Methods and Local Grid Refinement -- 11.3 Parallel Computing in CFD -- 12. Special Topics -- 12.1 Moving Grids -- 12.2 Free Surface Flows -- 12.3 Heat Transfer -- 12.4 Flow With Variable Fluid Properties -- 12.5 Meteorological and Oceanographic Applications -- 12.6 Combustion -- A. Appendeces -- A.1 List of Computer Codes and How to Access Them -- A.2 List of Frequently Used Abbreviations.

Sommario/riassunto

The book offers an overview of the techniques used to solve problems in fluid mechanics on computers and describes in detail those most often used in practice. Included are advanced techniques in computational fluid dynamics, like direct and large-eddy simulation of turbulence, multigrid methods, parallel computing, moving grids, structured, block-structured and unstructured boundary-fitted grids, free surface flows. The book shows common roots and basic principles for many apparently different methods. The issues of numerical accuracy, estimation and reduction of numerical errors are dealt with in detail, with many examples. The book also contains a great deal of practical advice for code developers and users. The book is designed to be equally useful to beginners and experts. All computer codes can be accessed from the publisher's server ftp.springer.de on the internet.