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Nota di contenuto	Chapter 1. Introduction -- Chapter 2. Conservation Equations Physical and Mathematical Aspects -- Chapter 3. The Finite Volume Method -- Chapter 4. Solution of the Linear System -- Chapter 5. Advection and Diffusion Interpolation Functions -- Chapter 6. -- Three-Dimensional Advection/Diffusion of -- Chapter 7. Finding the Velocity Field Pressure-Velocity Couplings -- Chapter 8. All Speed Flows Calculation Coupling -- Chapter 9. Two and Three-Dimensional Parabolic Flows -- Chapter 10. General Recommendations for Conceiving and Testing Your Code -- Chapter 11. Introducing General Grids Discretization -- Chapter 12. Coordinate Transformation General Curvilinear Coordinate Systems -- Chapter 13. Unstructured Grids -- Chapter 14. Pressure Instabilities from Navier-Stokes to Biot's Consolidation -- Chapter 15.

Applications.

Sommario/riassunto

This book presents the developments of the finite volume method applied to fluid flows, starting from the foundations of the method and reaching the latest approaches using unstructured grids. It helps students learn progressively, creating a strong background on CFD. The text is divided into two parts. The first one is about the basic concepts of the finite volume method, while the second one presents the formulation of the finite volume method for any kind of domain discretization. In the first part of the text, for the sake of simplicity, the developments are done using the Cartesian coordinate system, without prejudice to the complete understanding. The second part extends this knowledge to curvilinear and unstructured grids. As such, the book contains material for introductory courses on CFD for under and graduate students, as well as for more advanced students and researchers.