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Soggetti	Geophysics Fluid mechanics Thermodynamics Mathematical physics Geophysics/Geodesy Engineering Fluid Dynamics Mathematical Applications in the Physical Sciences
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Nota di bibliografia	Includes bibliographical references at the end of each chapters and indexes.
Nota di contenuto	Creeping Motion around Spheres at Rest in a Newtonian Fluid -- Three-Dimensional Creeping Flow – Systematic Derivation of the Shallow Flow Approximations -- Shallow Rapid Granular Avalanches -- Uniqueness and Stability -- Turbulent Modeling -- Turbulent Mixing Length Models and Their Applications to Elementary Flow Congurations -- Thermodynamics – Fundamentals -- Thermodynamics – Field Formulation -- Gas Dynamics -- Dimensional Analysis, Similitude and Physical Experiments at Laboratory Scale.
Sommario/riassunto	In this book fluid mechanics and thermodynamics (F&T) are approached as interwoven, not disjoint fields. The book starts by analyzing the creeping motion around spheres at rest: Stokes flows, the Oseen correction and the Lagerstrom-Kaplun expansion theories are presented, as is the homotopy analysis. 3D creeping flows and rapid granular avalanches are treated in the context of the shallow flow

approximation, and it is demonstrated that uniqueness and stability deliver a natural transition to turbulence modeling at the zero, first order closure level. The difference-quotient turbulence model (DQTM) closure scheme reveals the importance of the turbulent closure schemes' non-locality effects. Thermodynamics is presented in the form of the first and second laws, and irreversibility is expressed in terms of an entropy balance. Explicit expressions for constitutive postulates are in conformity with the dissipation inequality. Gas dynamics offer a first application of combined F&T. The book is rounded out by a chapter on dimensional analysis, similitude, and physical experiments.