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Nota di contenuto	1 Overview of this monograph -- 2 Models arising in fluid and solid dynamics -- 3 Nonlinear hyperbolic systems of balance laws -- 4 Riemann problem for ideal fluids -- 5 Compressible fluids governed by a general equation of state -- 6 Nonclassical Riemann solver with prescribed kinetics. The hyperbolic regime -- 7 Nonclassical Riemann solver with prescribed kinetics. The hyperbolic-elliptic regime -- 8 Compressible fluids in a nozzle with discontinuous cross-section. Isentropic flows -- 9 Compressible fluids in a nozzle with discontinuous cross-section. General flows -- 10 Shallow water flows with discontinuous topography -- 11 Shallow water flows with temperature gradient -- 12 Baer-Nunziato model of two-phase flows -- References -- Index.
Sommario/riassunto	This monograph provides a comprehensive study of the Riemann problem for systems of conservation laws arising in continuum physics. It presents the state-of-the-art on the dynamics of compressible fluids and mixtures that undergo phase changes, while remaining accessible

to applied mathematicians and engineers interested in shock waves, phase boundary propagation, and nozzle flows. A large selection of nonlinear hyperbolic systems is treated here, including the Saint-Venant, van der Waals, and Baer-Nunziato models. A central theme is the role of the kinetic relation for the selection of under-compressible interfaces in complex fluid flows. This book is recommended to graduate students and researchers who seek new mathematical perspectives on shock waves and phase dynamics.