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	Nota di contenuto	1. Introduction -- I. Basic theory -- 2. Scalar conservation laws -- 3. The GRP method for scalar conservation laws -- 4. Systems of conservation laws -- 5. The Generalized Reimann Problem (GRP) for compressible fluid dynamics -- 6. Analytical and numerical treatment of fluid dynamical problems -- II. Numerical implementation -- 7. From the GRP algorithm to scientific computing -- 8. Geometric extensions -- 9. A physical extension: reacting flow -- 10. Wave interaction in a duct- a comparative study -- A. Entropy conditionsfor scalar conservation laws -- B. Convergence of godunov scheme -- C. Reimann solver for a y-law gas -- D. The MUSCL scheme.
	Sommario/riassunto	Numerical simulation of compressible, inviscid time-dependent flow is

a major branch of computational fluid dynamics. Its primary goal is to obtain accurate representation of the time evolution of complex flow patterns, involving interactions of shocks, interfaces, and rarefaction waves. The Generalized Riemann Problem (GRP) algorithm, developed by the authors for this purpose, provides a unifying 'shell' which comprises some of the most commonly used numerical schemes of this process. This 2003 monograph gives a systematic presentation of the GRP methodology, starting from the underlying mathematical principles, through basic scheme analysis and scheme extensions (such as reacting flow or two-dimensional flows involving moving or stationary boundaries). An array of instructive examples illustrates the range of applications, extending from (simple) scalar equations to computational fluid dynamics. Background material from mathematical analysis and fluid dynamics is provided, making the book accessible to both researchers and graduate students of applied mathematics, science and engineering.