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Nota di contenuto	Preface; Contents; Thomas Y. Hou, Xinwei Yu: Introduction to the Theory of Incompressible Inviscid Flows; 1 Introduction; 2 Derivation and exact solutions; 3 Local well-posedness of the 3D Euler equation; 4 The BKM blow-up criterion; 5 Recent global existence results; 6 Lower dimensional models for the 3D Euler equations; 7 Vortex patch; References; Denis Serre: Systems of Conservation Laws. Theory, Numerical Approximation and Discrete Shock Profiles.; 1 Hyperbolic systems of conservation laws; 2 Finite difference schemes; 3 Discrete shock profiles; References Seiji Ukai, Tong Yang: Kinetic Theory and Conservation Laws: An Introduction.Abstract; 1 Introduction; 2 Expansions and their unification; 3 Detour to hyperbolic conservation laws; 4 Spectral analysis on the linearized Boltzmann operator; 5 Global existence and convergence rates; References; Xiaoming Wang: Elementary Statistical Theories with Applications to Fluid Systems.; 1 Introduction; 2 Stationary statistics; 3 Remarks on time dependent statistics; Appendix:

	some useful theorems; References; Yuxi Zheng: The Compressible Euler System in Two Space Dimensions.; Introduction 1 Physical phenomena and mathematical problems2 Characteristic decomposition of the pseudo-steady case; 3 The hodograph transformation and the interaction of rarefaction waves; Appendix B: convertibility; 4 Local solutions for quasilinear systems; 5 Invariant regions for systems; 6 The pressure gradient system; 7 Open problems; Epilogue: Stories; References
Sommario/riassunto	This book is a collection of lecture notes on Nonlinear Conservation Laws, Fluid Systems and Related Topics delivered at the 2007 Shanghai Mathematics Summer School held at Fudan University, China, by world's leading experts in the field. The volume comprises five chapters that cover a range of topics from mathematical theory and numerical approximation of both incompressible and compressible fluid flows, kinetic theory and conservation laws, to statistical theories for fluid systems. Researchers and graduate students who want to work in this field will benefit from this essential reference as