1. Record Nr. UNINA9910300247603321

Autore	Holden Helge
Titolo	Front Tracking for Hyperbolic Conservation Laws / / by Helge Holden, Nils Henrik Risebro
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2015
ISBN	3-662-47507-3
Edizione	[2nd ed. 2015.]
Descrizione fisica	1 online resource (XIV, 517 p. 1240 illus. in color.)
Collana	Applied Mathematical Sciences, , 0066-5452 ; ; 152
Disciplina	515.353
Soggetti	Applied mathematics Engineering mathematics Numerical analysis Mathematical physics Applications of Mathematics Numerical Analysis Theoretical, Mathematical and Computational Physics Mathematical and Computational Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Preface -- Introduction -- Scalar Conservation Laws -- A Short Course in Difference Methods -- Multidimensional Scalar Conservation Laws -- The Riemann Problem for Systems -- Existence of Solutions of the Cauchy Problem -- Well-Posedness of the Cauchy Problem -- Conservation Laws with Discontinuous Flux Functions -- Total Variation, Compactness etc -- The Method of Vanishing Viscosity -- Answers and Hints -- Index.
Sommario/riassunto	This is the second edition of a well-received book providing the fundamentals of the theory hyperbolic conservation laws. Several chapters have been rewritten, new material has been added, in particular, a chapter on space dependent flux functions, and the detailed solution of the Riemann problem for the Euler equations. Hyperbolic conservation laws are central in the theory of nonlinear partial differential equations and in science and technology. The reader is given a self-contained presentation using front tracking, which is

also a numerical method. The multidimensional scalar case and the case of systems on the line are treated in detail. A chapter on finite differences is included. From the reviews of the first edition: "It is already one of the few best digests on this topic. The present book is an excellent compromise between theory and practice. Students will appreciate the lively and accurate style." D. Serre, MathSciNet "I have read the book with great pleasure, and I can recommend it to experts as well as students. It can also be used for reliable and very exciting basis for a one-semester graduate course." S. Noelle, Book review, German Math. Soc. "Making it an ideal first book for the theory of nonlinear partial differential equations...an excellent reference for a graduate course on nonlinear conservation laws." M. Laforest, Comp. Phys. Comm.