1. Record Nr. UNINA9910300158903321

Titolo	High Order Nonlinear Numerical Schemes for Evolutionary PDEs : Proceedings of the European Workshop HONOM 2013, Bordeaux, France, March 18-22, 2013 / / edited by Rémi Abgrall, Héloïse Beaugendre, Pietro Marco Congedo, Cécile Dobrzynski, Vincent Perrier, Mario Ricchiuto
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2014
ISBN	3-319-05455-4
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (220 p.)
Collana	Lecture Notes in Computational Science and Engineering, , 2197-7100 ; ; 99
Disciplina	515.35
Soggetti	Differential equations Mathematics Mathematics - Data processing Mathematical models Differential Equations Applications of Mathematics Computational Mathematics and Numerical Analysis Mathematical Modeling and Industrial Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	High–order Asymptotic–Preserving methods for nonlinear relaxation from hyperbolic systems to convection–diffusion equations -- A hybrid finite difference-WENO scheme for large eddy simulation of compressible flows -- Finite volume formulation of a third-order residual-based compact scheme for unsteady flow computations -- Parallel implementation of k-exact Finite Volume Reconstruction on Unstructured Grids -- 3D Application of Higher Order Multigrid Algorithms for a RANS-kw DG-Solver -- Taylor expansion method for linear lattice Boltzmann schemes with an external force. Application to boundary conditions -- High order SFV and mixed SDG/FV methods for the uncertainty quantification in multidimensional conservation laws --

High-order Discontinuous Galerkin solution of unsteady flows by using an advanced implicit method -- Detecting edges in high order methods for hyperbolic conservation laws -- A comparison of analytical solutions of a high-order RBC scheme and its equivalent differential equation for a steady shock problem -- Discontinuous Galerkin method and applications to fluid-structure interaction problems. .

Sommario/riassunto

This book collects papers presented during the European Workshop on High Order Nonlinear Numerical Methods for Evolutionary PDEs (HONOM 2013) that was held at INRIA Bordeaux Sud-Ouest, Talence, France in March, 2013. The central topic is high order methods for compressible fluid dynamics. In the workshop, and in this proceedings, greater emphasis is placed on the numerical than the theoretical aspects of this scientific field. The range of topics is broad, extending through algorithm design, accuracy, large scale computing, complex geometries, discontinuous Galerkin, finite element methods, Lagrangian hydrodynamics, finite difference methods and applications and uncertainty quantification. These techniques find practical applications in such fields as fluid mechanics, magnetohydrodynamics, nonlinear solid mechanics, and others for which genuinely nonlinear methods are needed.