1. Record Nr. UNINA9910254278403321

Titolo	Finite Volumes for Complex Applications VIII - Hyperbolic, Elliptic and Parabolic Problems : FVCA 8, Lille, France, June 2017 / / edited by Clément Cancès, Pascal Omnes
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-57394-2
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XIII, 559 p. 167 illus., 149 illus. in color.)
Collana	Springer Proceedings in Mathematics & Statistics, , 2194-1017 ; ; 200
Disciplina	532
Soggetti	Mathematics - Data processing Continuum mechanics Mathematical physics Computational Mathematics and Numerical Analysis Continuum Mechanics Theoretical, Mathematical and Computational Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	PART 4. Hyperbolic Problems. David Iampietro, Frederic Daude, Pascal Galon, and Jean-Marc Herard, A Weighted Splitting Approach For Low-Mach Number Flows -- Florence Hubert and Remi Tesson, Weno scheme for transport equation on unstructured grids with a DDFV approach -- M.J. Castro, J.M. Gallardo and A. Marquina, New types of Jacobian-free approximate Riemann solvers for hyperbolic systems -- Charles Demay, Christian Bourdarias, Benot de Laage de Meux, Stephane Gerbi and Jean-Marc Herard, A fractional step method to simulate mixed flows in pipes with a compressible two-layer model -- Theo Corot, A second order cell-centered scheme for Lagrangian hydrodynamics -- Clement Colas, Martin Ferrand, Jean-Marc Herard, Erwan Le Coupanec and Xavier Martin, An implicit integral formulation for the modeling of inviscid fluid flows in domains containing obstacles -- Christophe Chalons and Maxime Stauffert, A high-order Discontinuous Galerkin Lagrange Projection scheme for the barotropic Euler equations -- Christophe Chalons, Regis Duvigneau and Camilla

Fiorini, Sensitivity analysis for the Euler equations in Lagrangian coordinates -- Jooyoung Hahn, Karol Mikula, Peter Frolkovic, and Branislav Basara, Semi-implicit level set method with inflow-based gradient in a polyhedron mesh -- Thierry Goudon, Julie Llobell and Sebastian Minjeaud, A staggered scheme for the Euler equations -- Christian Bourdarias, Stephane Gerbi and Ralph Lteif, A numerical scheme for the propagation of internal waves in an oceanographic model -- Hamza Boukili and Jean-Marc Herard, A splitting scheme for three-phase flow models -- M. J Castro, C. Escalante and T. Morales de Luna, Modelling and simulation of non-hydrostatic shallow flows -- Svetlana Tokareva and Eleuterio Toro, A flux splitting method for the Baer-Nunziato equations of compressible two-phase flow -- Mohamed Boubekeur and Fayssal Benkhaldoun and Mohammed Seaid, GPU accelerated finite volume methods for three-dimensional shallow water flows -- Ward Melis, Thomas Rey and Giovanni Samaey, Projective integration for nonlinear BGK kinetic equations -- Lei Zhang, Jean-Michel Ghidaglia and Anela Kumbaro, Asymptotic preserving property of a semi-implicit method -- Sebastien Boyaval, A Finite-Volume discretization of viscoelastic Saint-Venant equations for FENE-P fluids -- David Coulette, Emmanuel Franck, Philippe Helluy, Michel Mehrenberger, Laurent Navoret, Palindromic Discontinuous Galerkin Method -- M. Lukacova-Medvid'ova, J. Rosemeier, P. Spichtinger and B. Wiebe, IMEX finite volume methods for cloud simulation -- Raimund Burger and Ilja Kroker, Hybrid stochastic Galerkin finite volumes for the diffusively corrected Lighthill-Whitham-Richards traffic model -- Hamed Zakerzadeh, The RS-IMEX scheme for the rotating shallow water equations with the Coriolis force -- Emmanuel Audusse, Minh Hieu Do, Pascal Omnes, Yohan Penel, Analysis of Apparent Topography scheme for the linear wave equation with Coriolis force -- N. Assiouene, M-O. Bristeau, E. Godlewski, A. Mangeney, C. Pares and J. Sainte-Marie, Application of a combined finite element - finite volume method to a 2D non-hydrostatic shallow water problem -- Emanuela Abbate, Angelo Iollo and Gabriella Puppo, A relaxation scheme for the simulation of low Mach number flows -- Stefan Vater, Nicole Beisiegel and Jorn Behrens, Comparison of wetting and drying between a RKDG2 method and classical FV based second-order hydrostatic reconstruction -- Anja Jeschke, Stefan Vater and J¨orn Behrens, A Discontinuous Galerkin Method for Non-Hydrostatic Shallow Water Flows -- Remi Abgrall and Paola Bacigaluppi, Design of a Second-Order Fully Explicit Residual Distribution Scheme for Compressible Multiphase Flows -- Martin Campos Pinto, An Unstructured Forward-Backward Lagrangian Scheme for Transport Problems -- Nicole Goutal, Minh-Hoang Le and Philippe Ung, A Godunov-type scheme for Shallow Water equations dedicated to simulations of overland flows on stepped slopes -- Dionysios Grapsas, Raphaele Herbin and Jean-Claude Latche, Two models for the computation of laminar flames in dust clouds -- Gregoire Pont, Pierre Brenner, High order finite volume scheme and conservative grid overlapping technique for complex industrial applications.- PART 5. Elliptic and Parabolic problems. Sarvesh Kumar, Ricardo Ruiz-Baier, Ruchi Sandilya, Discontinuous finite volume element methods for the optimal control of Brinkman equations -- L. Beaude, K. Brenner, S. Lopez, R. Masson, F. Smai, Non-isothermal compositional two-phase Darcy flow: formulation and outflow boundary condition -- Clement Cances, Didier Granjeon, Nicolas Peton, Quang Huy Tran, and Sylvie Wolf, Numerical scheme for a stratigraphic model with erosion constraint and nonlinear gravity flux -- Christoph Erath and Robert Schorr, Comparison of adaptive non-symmetric and three-field FVM-BEM coupling -- Thomas Fetzer, Christoph Gruninger,

Bernd Flemisch, Rainer Helmig, On the Conditions for Coupling Free Flow and Porous-MediumFlow in a Finite Volume Framework -- Mario Ohlberger and Felix Schindler, Non-Conforming Localized Model Reduction with Online Enrichment: Towards Optimal Complexity in PDE constrained Optimization -- Hanz Martin Cheng and Jerome Droniou, Combining the Hybrid Mimetic Mixed method and the Eulerian Lagrangian Localised Adjoint Method for approximating miscible flows in porous media -- Ambartsumyan, E. Khattatov and I. Yotov, Mixed finite volume methods for linear elasticity -- Nabil Birgle, Roland Masson and Laurent Trenty, A nonlinear domain decomposition method to couple compositional gas liquid Darcy and free gas flows -- Jurgen Fuhrmann, Annegret Glitzky and Matthias Liero, Hybrid Finite-Volume/Finite-Element Schemes for p(x)-Laplace Thermistor Models -- E. Ahusborde, B. Amaziane and M. El Ossmani, Finite Volume Scheme for Coupling Two–Phase Flow with Reactive Transport in Porous Media -- Martin Schneider, Dennis Gl¨aser, Bernd Flemisch and Rainer Helmig, Nonlinear finite-volume scheme forcomplex flow processes on corner-point grids -- Daniil Svyatskiy and Konstantin Lipnikov, Consistent nonlinear solver for solute transport in variably saturated porous media -- Jan ten Thije Boonkkamp, Martijn Anthonissen and Ruben Kwant, A two-dimensional complete flux scheme in local flow adapted coordinates -- Birane Kane, Robert Kl¨ofkorn, Christoph Gersbacher, hp-Adaptive Discontinuous Galerkin Methods for Porous Media Flow -- N. Kumar, J.H.M. ten Thije Boonkkamp, B. Koren and A. Linke, A Nonlinear Flux Approximation Scheme for the Viscous Burgers Equation -- Rene Beltman, Martijn Anthonissen and Barry Koren, Mimetic Staggered Discretization of Incompressible Navier-Stokes for Barycentric Dual Mesh -- Sebastien Boyaval, Guillaume Enchery, Riad Sanchez and Quang Huy Tran, A reduced-basis approach to two-phase flow in porous media -- S´ebastien Boyaval, Guillaume Ench´ery, Riad Sanchez and Quang Huy Tran, On the capillary pressure in basin modeling -- Jurgen Fuhrmann, Clemens Guhlke, A finite volume scheme for Nernst-Planck-Poisson systems with ion size and solvation effects -- Vasiliy Kramarenko, Kirill Nikitin, and Yuri Vassilevski, A nonlinear correction FV scheme for near-well regions -- Florent Chave, Daniele A. Di Pietro and Fabien Marche, A Hybrid High-Order method for the convective Cahn-Hilliard problem in mixed form -- Alexey Chernyshenko, Maxim Olshahskii and Yuri Vassilevski, A hybrid finite volume – finite element method for modeling flows in fractured media -- Michele Botti, Daniele A. Di Pietro, and Pierre Sochala, A nonconforming high-order method for nonlinear poroelasticity -- Hanen Amor and Fayssal Benkhaldoun and Tarek Ghoudi and Imad Kissami and Mohammed Seaid, New criteria for mesh adaptation in finite volume simulation of planar ionization wave front propagation. - Author Index.

Sommario/riassunto

This book is the second volume of proceedings of the 8th conference on "Finite Volumes for Complex Applications" (Lille, June 2017). It includes reviewed contributions reporting successful applications in the fields of fluid dynamics, computational geosciences, structural analysis, nuclear physics, semiconductor theory and other topics. The finite volume method in its various forms is a space discretization technique for partial differential equations based on the fundamental physical principle of conservation, and recent decades have brought significant advances in the theoretical understanding of the method. Many finite volume methods preserve further qualitative or asymptotic properties, including maximum principles, dissipativity, monotone decay of free energy, and asymptotic stability. Due to these properties, finite volume methods belong to the wider class of compatible discretization

methods, which preserve qualitative properties of continuous problems at the discrete level. This structural approach to the discretization of partial differential equations becomes particularly important for multiphysics and multiscale applications. The book is useful for researchers, PhD and master’s level students in numerical analysis, scientific computing and related fields such as partial differential equations, as well as for engineers working in numerical modeling and simulations.