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Descrizione fisica	1 online resource (323 pages) : illustrations (some color)
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Nota di contenuto	1. Structure Functions for Numerical Shocks (Au: L.G. Margolin and S.D. Ramsey) 2. Generalized Probability Density Function of the Solution to the Random Burgers Riemann Problem (Au: Juan Carlos Cortes and Marc Jornet) 3. Semi-analytical and Numerical study on Equatorial Rossby Solitary Waves under Non-traditional Approximation (Au: Ruigang Zhang , Quansheng Liu, and Liangui Yang) 4. High-Order Polynomial Recovery in Finite Element Advection Schemes (Au: Denise Vogel and Oswald Knoth) 5. Breakdown of Morphing Continuum Approach for Flows Under Translational Nonequilibrium. (Au: Jiamiao Sun, Mohamad Ibrahim Cheikh, Pedram Pakseresht, Mikel Aghachi, and James Chen) 6. Dynamics of Oscillatory Fluid Flow inside an Elastic Human Airway Hyperbolic Balance Laws: Residual Distribution, Local and Global Fluxes (Au: Remi Abgrall and Mario Ricchiuto) 7. An Energy-splitting High-order Numerical Method for Multi-material Flows (Au: Xin Lei and Jiequan Li) 8. An ADER-LSTDG Scheme for the Numerical Simulation of a Global Climate Model9. Efficient Experimental and Numerical Methods for Solving Vertical Distribution of Sediments in

Dam-break Flows (Au: Thomas Rowan and Mohammed Seaid)

Sommario/riassunto

This book contains select invited chapters on the latest research in numerical fluid dynamics and applications. The book aims at discussing the state-of-the-art developments and improvements in numerical fluid dynamics. All the chapters are presented for approximating and simulating how these methods and computations interact with different topics such as shock waves, non-equilibrium single and two-phase flows, elastic human-airway, and global climate. In addition to the fundamental research involving novel types of mathematical sciences, the book presents theoretical and numerical developments in fluid dynamics. The contributions by well-established global experts in fluid dynamics have brought different features of numerical fluid dynamics in a single book. The book serves as a useful resource for high-impact advances involving computational fluid dynamics, including recent developments in mathematical modelling, numerical methods such as finite volume, finite difference and finite element, symbolic computations, and open numerical programs such as OpenFOAM software. The book addresses interdisciplinary topics in industrial mathematics that lie at the forefront of research into new types of mathematical sciences, including theory and applications. This book will be beneficial to industrial and academic researchers, as well as graduate students, working in the fields of natural and engineering sciences. The book will provide the reader highly successful materials and necessary research in the field of fluid dynamics.