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Collana	Lecture Notes in Physics, , 0075-8450 ; ; 449
Disciplina	621.402/3
Soggetti	Physics Fluids Physical chemistry Chemometrics Computational intelligence Mathematical Methods in Physics Numerical and Computational Physics, Simulation Fluid- and Aerodynamics Physical Chemistry Math. Applications in Chemistry Computational Intelligence
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Livello bibliografico	Monografia
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Nota di contenuto	Some open issues in premixed turbulent combustion -- The scalar-field front propagation equation and its applications -- Effects of local flow field on chemical reactions in thin reaction zone of premixed flames -- Direct numerical simulation of chemically reacting turbulence -- Prediction of NOx emission index of turbulent diffusion flame -- Solitary wave solution of turbulent mixing layer by the method of pseudo-compressibility -- Simplified transport and reduced chemistry models of premixed and nonpremixed combustion -- Preferential diffusion effects in diffusion flames -- Modeling low Reynolds number microgravity combustion problems -- Numerical modeling of graphite combustion using elementary, reduced and semi-global heterogeneous

reaction mechanisms -- Atomistic approach on diamond growth from gaseous phases -- Flame propagation in closed vessels -- Pressure-driven disturbances in fluid dynamic interactions with flames -- The nonlinear dynamics of intrinsic acoustic oscillations in combustion-driven systems -- Modeling of combustion of a gaseous sphere using mathematica -- Wavelets as a numerical tool -- Numerical simulation of dynamic interaction of a droplet with a vortex using a CIP-combined unified procedure method -- Gasification and combustion of a moving droplet undergoing continuous phase change in supercritical ambience -- Vapor diffusion flames, their stability, and annular pool fires -- Flames in vortices & tulip-flame inversion -- Flame ignition of premixed methane-air flow -- Combustion waves: Non adiabatic -- Determination of laminar flame speeds from nozzle-generated counterflow flames -- Some topics in reverse smoulder -- Porous medium combustion -- Stability of reacting mixing layers -- Ignition and combustion characteristics in supersonic flow -- Level-set techniques applied to unsteady detonation propagation.

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#### Sommario/riassunto

The articles in this volume treat various problems in combustion science that are of importance in applications to technology and to environmental sciences. The authors treat turbulence in premixed and non-premixed flames as well as pressure interactions and wave phenomena. Also supersonic flows and detonations are discussed. The main emphasis, however, is on the modelling and numerical treatment of combustion phenomena. The book addresses researchers in physics and engineering, and mathematicians from scientific computing.

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