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Nota di contenuto	Numerical charge conservation in Particle-In-Cell codes / R. Barthelme, C. Parzani -- An adaptive Particle-In-Cell method using multi-resolution analysis / J.-P. Chehab, Albert Cohen, D. Jennequin, J. J. Nieto, J. R. Roche, Ch. Roland -- Adaptive numerical resolution of the Vlasov equation / M. Campos Pinto, M. Mehrenberger -- A conservative and entropic method for the Vlasov-Fokker-Planck-Landau equation / N. Crouseilles, F. Filbet -- Numerical studies for nonlinear Schrodinger equations: the Schrodinger-Poisson-X model and Davey-Stewartson systems / Christophe Besse, Norbert J. Mauser, Hans Peter Stimming -- Ionospheric plasmas: model derivation, stability / Christophe Besse, Jean Claudel, P. Degond, F. Deluzet, Gerard Gallice, Christian Tessieras -- A case study on the reliability of multiphase WKB approximation for the one-dimensional Schrodinger equation / L. Gosse -- Liquid jet generation and break-up / Celine Baranger, G. Baudin, L. Boudin, Bruno Despres, Frederic Lagoutiere, E. Lapebie, Takeo Takahashi -- Numerical study of a conservative bifluid model with interpenetration / B. Despres, S. Jaouen, C. Mazeran, Takeo Takahashi -- DINMOD: A diffuse interface model for two-phase flows modelling / F. Caro, F. Coquel, D. Jamet, S. Kokh -- Sharp and diffuse interface methods for phase transition problems in liquid-vapour flows / F. Coquel, D. Diehl, C. Merkle, Christian Rohde -- Geometric Eddington factor for radiative

transfer / J. Cartier, A. Munnier -- Arbitrary high order discontinuous Galerkin schemes / Michael Dumbser, C.-D. Munz -- The multiple pressure variables method for fluid dynamics and aeroacoustics at low Mach numbers / C.-D. Munz, Michael Dumbser, M. Zucchini.

Sommario/riassunto

Hyperbolic and kinetic equations arise in a large variety of industrial problems. For this reason, the CEMRACS summer research center held at CIRM in Luminy in 2003 was devoted to this topic. During a six-week period, junior and senior researchers worked full time on several projects proposed by industry and academia. Most of this work was completed later on, and the results are now reported in the present book. The articles address modelling issues as well as the development and comparisons of numerical methods in different situations. The applications include multi-phase flows, plasma physics, quantum particle dynamics, radiative transfer, sprays and aeroacoustics. The text is aimed at researchers and engineers interested in modelling and numerical simulation of hyperbolic and kinetic problems arising from applications.