

# Lattice-Gas Cellular Automata: Simple Models of Complex Hydrodynamics (Collection Alea-Saclay: Monographs and Texts in Statistical Physics)

By Daniel H. Rothman, Stiphane Zaleski



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Language: Chinese. Paperback. Pub Date: 2004-12-1 Pages: 297 Publisher: Cambridge University Press The text is a self-contained. comprehensive introduction to thetheory of hydrodynamic lattice gases Lattice-gas cellular automataare discrete models of fluids Identical particles hop from site.. tosite on a regular lattice. obeying simple conservative scatteringrules when they collide. Remarkably. at a scale larger than thelattice spacing. these discrete models simulate the Navier-Stokesequations of fluid mechanics. This book addresses three importantaspects of lattice gases. First. it shows how such simple idealisedmicroscopic dynamics give rise to isotropic macroscopichydrodynamics. Second. it details how the simplicity of the latticegas provides for equally simple models of fluid phase separation. hydrodynamic interfaces. and multiphase flow. Lastly. itillustrates how lattice-...



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