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Collana	Lecture Notes in Physics, , 0075-8450 ; ; 319
Disciplina	536.7
Soggetti	Thermodynamics Statistical physics Dynamical systems Quantum computers Spintronics Quantum physics Complex Systems Quantum Information Technology, Spintronics Quantum Physics Statistical Physics and Dynamical Systems
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Nota di contenuto	A review of current issues in the quantum theory of envelope solitons -- Fluctuations in the transient dynamics of nonlinear optical systems -- Theoretical methods in pattern formation in Physics, Chemistry and Biology -- Two nonequilibrium phase transitions: Stochastic Hopf bifurcation and onset of relaxation oscillations in the diffusive sine-Gordon model -- Exactly solvable multistable Fokker-Planck models with arbitrarily prescribed N lowest eigenvalues -- Phase and frequency dynamics in laser instabilities -- Fluctuations and critical phenomena in reaction-diffusion systems -- From deterministic chaos to noise in retarded feedback systems -- Non-local and non-linear problems in the physics of disordered media -- Convection in binary mixtures propagating and standing patterns -- Time-dependent phase

transitions -- Quantum treatment of dispersive optical bistability -- Spontaneous symmetry breaking and spatial structures in optical systems -- Scaling for an interfacial instability -- Field theory for growth kinetics.

Sommario/riassunto

This collection of lectures covers a wide range of present day research in thermodynamics and the theory of phase transitions far from equilibrium. The contributions are written in a pedagogical style and present an extensive bibliography to help graduates organize their further studies in this area. The reader will find lectures on principles of pattern formation in physics, chemistry and biology, phase instabilities and phase transitions, spatial and temporal structures in optical systems, transition to chaos, critical phenomena and fluctuations in reaction-diffusion systems, and much more.
