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Nota di contenuto	Equations of motion for vortices in 2-D easy-plane magnets -- Central peak signatures from vortices in 2D easy-plane antiferromagnets -- Free vortices in the quasi-two dimensional XY antiferromagnet BaNi ₂ (PO ₄) ₂ ? -- The electric resistivity of a magnetic semiconductor with easy-axis of anisotropy populated by magnon solitons -- Thermodynamics of quantum spin chains -- Dissipative superluminous Brillouin solitons in an optical-fiber ring cavity -- Polarisation fluctuations in nonlinear optical fibres -- Stochastic dynamics of spatial solitons on the periodic interface of two nonlinear media -- Conversion of ultrashort optical solitons in the fibre-optical loop -- Dynamics of breather modes in a nonlinear “helical” model of DNA -- Equilibrium and nonequilibrium statistical mechanics of a nonlinear model of DNA -- A simple model of DNA dynamics -- Anomalous vibrational modes in acetanilide: a F.D.S. incoherent inelastic neutron scattering study -- Nonlinear excitations in a quantum dimer -- Kinks in disordered

conjugated polymers -- A discrete selftrapping equation model for Scheibe aggregates -- Computer simulation of cardiac arrhythmias and of defibrillating electric shocks. Effects of antiarrhythmic drugs -- Numerical studies of solitons on lattices -- A symplectic solder for lattice equations -- Solitary wave solutions to the discrete nonlinear Schrödinger equation -- Asymptotic bi-soliton in diatomic chains -- Nonlinear dynamics of localized structures and proton transfer in a hydrogen-bonded chain model including dipole interactions -- Resonant states in the propagation of waves in a periodic, non-linear medium -- GAP solitons in 1D asymmetric physical systems -- Evidence of energy diffusion in pure anharmonic disordered chains -- A numerical venture into the menagerie of coherent structures of a generalized Boussinesq equation -- Self-organization and nonlinear dynamics with spatially coherent structures -- Modulational instability and two-dimensional dynamical structures -- Competitive interactions and 2-D structures at finite temperatures -- Interactions of solitons in (2+1) dimensions -- Spiral waves in excitable media -- Kadomtsev-Petviashvili and (2+1)-dimensional burgers equations in the Bénard problem -- Non-linearity and coherence in models of superconductivity -- Chaotic polaronic and bipolaronic states in coupled electron-phonon systems -- Chaotic motion of solitons in the PDE model of long Josephson junctions -- Nonlinear structure of phase motion from the study of differential equations near resonant tori -- Noise induced bifurcations in simple nonlinear models -- Coherent behaviour of single degrees of freedom in an order-to-chaos transition -- Dissipation in Quantum Field Theory -- Coherence and Quantum Groups -- Exact periodic solutions for a class of multispeed discrete Boltzmann models -- Collective coordinates by a variational approach: Problems for sine Gordon and ϕ^4 models -- Exact solution of the perturbed sine-Gordon breather problem -- Numerical results concerning the generalized Zakharov system -- Resonances in nonlinear Klein-Gordon kink scattering by impurities -- Resonant kink-impurity interactions -- Localized self-similar structures for a coupled nls equation: An approximate analysis -- Searching for solitons with a direct binary operator method -- The inverse problem of dynamics for the nonlinear Klein-Gordon equation. Pulsons and bubbles in the models with logarithmic nonlinearities.

Sommario/riassunto

Nature provides many examples of coherent nonlinear structures and waves, and these have been observed and studied in various fields ranging from fluids and plasmas through solid-state physics to chemistry and biology. These proceedings reflect the remarkable process in understanding and modeling nonlinear phenomena in various systems that has recently been made. Experimental, numerical, and theoretical activities interact in various studies that are presented according to the following classification: magnetic and optical systems, biosystems and molecular systems, lattice excitations and localized modes, two-dimensional structures, theoretical physics, and mathematical methods. The book addresses researchers and graduate students from biology, engineering, mathematics, and physics.
