1. Record Nr. UNISA996466706303316

Titolo	Dissipative solitons : from optics to biology and medicine / / edited by N. Akhmediev, A. Ankiewicz
Pubbl/distr/stampa	Berlin, Germany : , : Springer, , [2008] ©2008
ISBN	3-540-78217-6
Edizione	[1st ed. 2008.]
Descrizione fisica	1 online resource (XIII, 479 p. 349 illus.)
Collana	Lecture notes in physics ; ; 751
Disciplina	530.124
Soggetti	Solitons Energy dissipation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Three Sources and Three Component Parts of the Concept of Dissipative Solitons -- Solitons in Viscous Flows -- Cavity Solitons in Semiconductor Devices -- Dissipative Solitons in Laser Systems with Non-Local and Non-Instantaneous Nonlinearity -- Excitability Mediated by Dissipative Solitons in Nonlinear Optical Cavities -- Temporal Soliton #x201C;Molecules#x201D; in Mode-Locked Lasers: Collisions, Pulsations, and Vibrations -- Compounds of Fiber-Optic Solitons -- Dissipative Nonlinear Structures in Fiber Optics -- Three-Wave Dissipative Brillouin Solitons -- Spatial Dissipative Solitons Under Convective and Absolute Instabilities in Optical Parametric Oscillators -- Discrete Breathers with Dissipation -- Anharmonic Oscillations, Dissipative Solitons and Non-Ohmic Supersonic Electric Transport -- Coherent Optical Pulse Dynamics in Nano-composite Plasmonic Bragg Gratings -- Collective Focusing and Modulational Instability of Light and Cold Atoms -- On Vegetation Clustering, Localized Bare Soil Spots and Fairy Circles -- Propagation of Traveling Pulses in Cortical Networks -- Wave Phenomena in Neuronal Networks -- Spiral Waves and Dissipative Solitons in Weakly Excitable Media.
Sommario/riassunto	The dissipative soliton concept is a fundamental extension of the concept of solitons in conservative and integrable systems. It includes ideas from three major sources, namely standard soliton theory

developed since the 1960s, nonlinear dynamics theory, and Prigogine's ideas of systems far from equilibrium. These three sources also correspond to the three component parts of this novel paradigm. This book explains the above principles in detail and gives the reader various examples from optics, biology and medicine. These include laser systems, optical transmission lines, cortical networks, models of muscle contraction, localized vegetation structures and waves in brain tissues.