

1. Record Nr.	UNISA996466683903316
Titolo	Coherent Structures in Complex Systems [[electronic resource] ] : Selected Papers of the XVII Sitges Conference on Statistical Mechanics Held at Sitges, Barcelona, Spain, 5–9 June 2000. Preliminary Version // edited by D. Reguera, L.L. Bonilla, J.M. Rubi
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2001
ISBN	3-540-44698-2
Edizione	[1st ed. 2001.]
Descrizione fisica	1 online resource (IX, 465 p.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 567
Disciplina	530.13
Soggetti	Artificial intelligence Physics Statistical physics Dynamical systems Biophysics Biological physics Fluids Artificial Intelligence Physics, general Complex Systems Biological and Medical Physics, Biophysics Fluid- and Aerodynamics Statistical Physics and Dynamical Systems
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 at the end of each chapters and index.
Nota di contenuto	Turbulence -- Description and Dynamics of Vortical Structures of Turbulence -- Self-Sustaining Mechanisms of Wall Turbulence -- The Largest Scales in Turbulent Flow: The Structures of the Wall Layer -- Patterning and Transition to Turbulence in Subcritical Systems: The Case of Plane Couette Flow -- Effects of the Upstream Conditions on the Mean Statistics of Turbulent Boundary Layers with Zero Pressure

Gradient -- Evolution of the Large-Scale Structures in the 'Far-Field' of Turbulent Shear Flows -- Quantum Kinetic Model of Turbulence -- The Transport of Small Particles by a Fluid -- Combustion -- Nonlinear Dynamics of Wrinkled Premixed Flames and Related Statistical Problems -- Experimental Studies of Laminar Flame Instabilities -- Gaseous Detonations -- The Vortical Structure of Flame Spreading over Liquid Fuels -- Patterns in Biology, Chemical Reactions and Fluid Flow -- Applications of Mathematical Modelling to Biological Pattern Formation -- The Artistry of Bacterial Colonies and the Antibiotic Crisis -- Periodicity in Age-Resolved Populations -- Nonequilibrium Nanostructures in Condensed Reactive Systems -- Pattern Formation in Electric Discharges -- Evidence for Eigenfrequencies in Dendritic Growth Dynamics -- Patterns in the Bulk and at the Interface of Liquid Crystals -- Inviscid Two-Dimensional Fluid Dynamics Experiments with Magnetized Electron Columns -- Interaction of Nearly-Inviscid, Multi-mode Faraday Waves and Mean Flows -- Stationary and Oscillatory Flow of a Charged Liquid Around a Blade Electrode -- Granular Media and Fractures -- Science in the Sandbox: Fluctuations, Friction and Instabilities -- Cluster Instability in Freely Evolving Granular Gases -- Granular Gases — The Early Stage -- Experimental and Theoretical Study of the Gravity Induced Granular Flow in Two-Dimensional Silos -- Dynamics of Fracture -- Avalanches and Damage Clusters in Fracture Processes.

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Sommario/riassunto

A rich variety of real-life physical problems which are still poorly understood are of a nonlinear nature. Examples include turbulence, granular flows, detonations and flame propagation, fracture dynamics, and a wealth of new biological and chemical phenomena which are being discovered. Particularly interesting among the manifestations of nonlinearity are coherent structures. This book contains reviews and contributions reporting on the state of the art regarding the role of coherent structures and patterns in nonlinear science.

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