



CHAOS, SOLITONS & FRACTALS

An interdisciplinary journal of nonlinear science

AUTHOR INFORMATION PACK

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ISSN: 0960-0779

DESCRIPTION

Chaos, Solitons & Fractals aims to be a leading journal in the **interdisciplinary field of Nonlinear Science**. It encourages the submission of articles concerning the **fundamentals** of the following subjects: **dynamics; non-equilibrium processes in physics; complex matter and networks; computational biology; fluctuations and random processes; self-organization; social phenomena; technology.**

The journal can only accept papers whose primary subject area lies within the above Aims & Scope. In particular, please take notice of the following: In order to be acceptable, manuscripts of more **mathematical nature** should at least attempt a connection to **physical insight or new qualitative features**. The word "Solitons" should be understood as a label especially **extended to all nonlinear integrable systems in complex natural phenomena**. The paper should not bear on some explicit formulae, some standard solutions, constructions, or asymptotic methods. The journal is interested in articles providing strong insights in the **mathematical theory of fractals** that play an important role either in understanding the general theory or are profound for an important **particular application**, especially in **complex systems**. Numerical computations should only assist the developed results. Also welcome are the discovery of new fractals that are crucial for important applications. The subject listing is specified further in the journal's [classification list](#). Authors are required to specify matching classifications upon submission of their work.

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AUDIENCE

Engineers, physicists and mathematicians involved in nonlinear sciences, chaos and fractal research.

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Nonlinear dynamics and Non-equilibrium processes in physics

Christophe Letellier, Université de Rouen, Saint-Etienne du Rouvray, France

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Nonequilibrium Statistical Mechanics for Classical and Quantum Physical Systems, and Physics of Complex Systems in Interdisciplinary applications; Noise-induced phenomena in physical, biological and financial complex systems; Anomalous diffusion and Lévy flights; Transient dynamics in Josephson junctions; Spintronics

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Non-Linear Dynamics Applied to Biology (including Ecology and Epidemiology); Biomathematics; Times Series; Wavelets

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Complex networks structure and dynamics; Complex systems; Social networks; Graph theory

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Noise-induced phenomena in complex dynamical systems Non-equilibrium thermodynamics and fluctuation-dissipation relations Anomalous diffusion, Levy flights and Levy walks Turbulence, fractals and scaling

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Theory of nonlinear dynamical systems and chaos modelling from observational data; Applications to environmental behaviors as observed in situ or from space, with a special focus on biosphere (vegetation, ecology, epidemiology) and hydrosphere (karstic springs, ground water, snow)

Jan Nagler, Max Planck Institut (MPI) für Dynamik und Selbstorganisation, Göttingen, Germany

Stochastic systems, with applications at the interface between physics, biology, sociology and economics, in particular phase transitions and tipping points, ergodicity breaking and estimation of risk in uncertain environments

Andrey Pankratov, Russian Academy of Sciences, Nizhny Novgorod, Russian Federation

Noise and fluctuations in dynamical systems and, in particular, in Josephson electronic devices

David Papo, University of Lille 3, Lille, France

Paolo Paradisi, National Research Council of Italy (CNR), Pisa, Italy

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Quantum chaos; Many-body quantum dynamics; Open quantum systems; Non-equilibrium statistical mechanics and transport

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Davide Valenti, University of Palermo, Palermo, Italy

Non-Equilibrium Statistical Mechanics in classic and quantum physical systems: - stochastic processes and noise induced effects in nonlinear systems; - Josephson junctions; - dynamics of quantum particles in bistable potentials; - models of Population Dynamics with applications to Complex Systems: spatio-temporal dynamics of phytoplankton in marine environment; bacterial growth; - noise effects and stabilizing role of fluctuations (volatility) in financial markets (Econophysics)

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ODEs; Hyperbolicity; Integrability

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