

Preface

This book contains a collection of papers suggested by the scientific committee including the best papers presented in the 2nd International Conference (CHAOS2009) on Chaotic Modeling, Simulation and Applications, Chania, Crete, Greece, June 1-5, 2009. The aim of the conference was to invite and bring together people working in interesting topics of chaotic modeling, nonlinear and dynamical systems and chaotic simulation.

The book includes papers on various important topics of Chaotic Modeling and Simulation as:

- Bifurcation and chaos in multimachine power systems, Chaos in multiplicative systems, Deterministic chaos machine, Dynamics of a bouncing ball, N -body chaos.
- Spatiotemporal chaos, Chaotic mixing in the system Earth, Multiple equilibria and endogenous cycles, Growth models, EnKF and particle filters for meteorological models, 3D steady flows, Local and global Lyapunov exponents, Routh-Hurwitz conditions and the Lyapunov second method, Chaotic behavior of plasma surface interaction, Simulation of geochemical self-organization, Atmospheric pressure plasma.
- On the entropy flows to disorder, Quantum scattering and transport, Electron quantum transport, Qualitative dynamics of interacting classical spins, Atomic de Broglie-wave chaos, q -deformed nonlinear maps.
- A two population model for the stock market problem, Complex dynamics in an asset pricing model, Hick Samuelson Keynes dynamic economic models, Maxwell-Bloch equations as predator-prey system.
- Linear communication channels and synchronization, Identifying chaotic and quasiperiodic time-series, New model of nonlinear oscillations generators, Transmission line models, Optimum CSK communication, Symmetry-break in a minimal Lorenz-like system, Longwave Marangoni convection.
- Nonlinear system's synthesis, Strategies of synergetics, Synergetics control, Synergetics and multi-machine power system modification.
- Sub-critical transitions in coupled map lattices, Markov processes and transition probabilities.
- Music composition from the cosine law of a frequency-amplitude triangle, Composing chaotic music from a varying second order recurrence equation.
- Chaotic neural networks, A novel neuro-fuzzy algorithm.

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