

Topical Table of Contents

Agent Based Modeling and Simulation, Section Editor: Filippo Castiglione

Agent Based Computational Economics
Agent Based Modeling and Artificial Life
Agent Based Modeling and Computer Languages
Agent Based Modeling and Simulation, Introduction to
Agent Based Modeling, Large Scale Simulations
Agent Based Modeling, Mathematical Formalism for
Agent-Based Modeling and Simulation
Cellular Automaton Modeling of Tumor Invasion
Computer Graphics and Games, Agent Based Modeling in
Embodied and Situated Agents, Adaptive Behavior in
Interaction Based Computing in Physics
Logic and Geometry of Agents in Agent-Based Modeling
Social Phenomena Simulation
Swarm Intelligence

Autonomous Robotics, Complexity and Nonlinearity in, Section Editor: Warren Dixon

Adaptive Visual Servo Control
Cognitive Robotics
Complexity and Non-Linearity in Autonomous Robotics, Introduction to
Continuum Robots
Distributed Controls of Multiple Robotic Systems, An Optimization Approach
Distributed Robotic Teams: A Framework for Simulated and Real-World Modeling
Foraging Robots
Human Robot Interaction
Image Based State Estimation
Modular Self-Reconfigurable Robots
Motion Prediction for Continued Autonomy
Multiple Mobile Robot Teams, Path Planning and Motion Coordination in
Neuro-fuzzy Control of Autonomous Robotics
Self-replicating Robotic Systems
Software Architectures for Autonomy

Cellular Automata, Mathematical Basis of, Section Editor: Andrew Adamatzky

Additive Cellular Automata
Algorithmic Complexity and Cellular Automata
Cellular Automata and Groups
Cellular Automata and Language Theory
Cellular Automata as Models of Parallel Computation
Cellular Automata in Hyperbolic Spaces

Cellular Automata Modeling of Physical Systems
 Cellular Automata on Triangular, Pentagonal and Hexagonal Tessellations
 Cellular Automata with Memory
 Cellular Automata, Classification of
 Cellular Automata, Emergent Phenomena in
 Cellular Automata, Universality of
 Chaotic Behavior of Cellular Automata
 Dynamics of Cellular Automata in Non-compact Spaces
 Ergodic Theory of Cellular Automata
 Evolving Cellular Automata
 Firing Squad Synchronization Problem in Cellular Automata
 Gliders in Cellular Automata
 Growth Phenomena in Cellular Automata
 Identification of Cellular Automata
 Mathematical Basis of Cellular Automata, Introduction to
 Phase Transitions in Cellular Automata
 Quantum Cellular Automata
 Reversible Cellular Automata
 Self-organised Criticality and Cellular Automata
 Self-Replication and Cellular Automata
 Structurally Dynamic Cellular Automata
 Tiling Problem and Undecidability in Cellular Automata
 Topological Dynamics of Cellular Automata

Chaos and Complexity in Astrophysics, Section Editor: Steve N. Shore

Acceleration Mechanisms
 Astronomical Time Series, Complexity in
 Astrophysics, Chaos and Complexity in
 Astrophysics: Dynamical Systems
 Chaos and Complexity in Astrophysics, Introduction to
 Cosmic Gravitational Background, Stochastic
 Cosmic Strings
 Exobiology (theoretical), Complexity in
 Exobiology and Complexity
 Orbital Dynamics, Chaos in
 Self-Organization in Magnetohydrodynamic Turbulence
 Space Plasmas, Dynamical Complexity in
 Stellar Dynamics, N-body Methods for
 Topological Magnetohydrodynamics and Astrophysics

Climate Modeling, Global Warming and Weather Prediction, Section Editor: Hartmut Grassl

Abrupt Climate Change Modeling
 Climate Change and Agriculture
 Climate Change and Human Health
 Climate Change, Economic Costs of
 Climate Modeling, Global Warming and Weather Prediction, Introduction to
 Cryosphere Models
 Regional Climate Models: Linking Global Climate Change to Local Impacts
 Single Column Modeling of Atmospheric Boundary Layers
 and the Complex Interactions with the Land Surface

Complex Networks and Graph Theory, Section Editor: Geoffrey Canright

Community Structure in Graphs
Complex Gene Regulatory Networks – From Structure to Biological Observables: Cell Fate Determination
Complex Networks and Graph Theory
Complex Networks, Visualization of
Food Webs
Growth Models for Networks
Human Sexual Networks
Internet Topology
Link Analysis and Web Search
Motifs in Graphs
Non-negative Matrices and Digraphs
Random Graphs, A Whirlwind Tour of
Synchronization Phenomena on Networks
World Wide Web, Graph Structure

Complexity in Computational Chemistry, Section Editor: Danail Bonchev

Biochemistry, Chaotic Dynamics, Noise, and Fractal Space in
Biological Complexity and Biochemical Information
Biological Development and Evolution, Complexity and Self-Organization in
Cellular Automata Modeling of Complex Biochemical Systems
Composites, Multifunctional
Computational Chemistry, Introduction to Complexity in
Computer-Aided Design of the Reaction Site in Heterogeneous Catalysis
DNA-templated Self-assembly of Protein Arrays and Highly Conductive Nanowires
Drug Design with Artificial Intelligence Methods
Drug Design with Artificial Neural Networks
Drug Design with Machine Learning
Drug Design, Molecular Descriptors in
Information Theoretic Complexity Measures
Molecular Evolution, Networks in
Nanoscale Atomic Clusters, Complexity of
Polymers, Nonlinearity in
QSAR Modeling and QSAR Based Virtual Screening, Complexity and Challenges of Modern
Quantum Similarity and Quantum Quantitative Structure-Properties Relationships (QQSPR)
Self-assembled Materials
Topological Complexity of Molecules

Complexity in Earthquakes, Tsunamis, and Volcanoes, and Forecast, Section Editor: William H. K. Lee

Brittle Tectonics: A Non-linear Dynamical System
Complexity in Earthquakes, Tsunamis, and Volcanoes, and Forecast, Introduction to
Crustal Deformation During the Seismic Cycle, Interpreting Geodetic Observations of
Earthquake Clusters over Multi-dimensional Space, Visualization of
Earthquake Damage: Detection and Early Warning in Man-Made Structures
Earthquake Early Warning System in Southern Italy
Earthquake Engineering, Non-linear Problems in
Earthquake Forecasting and Verification
Earthquake Location, Direct, Global-Search Methods
Earthquake Magnitude
Earthquake Monitoring and Early Warning Systems

Earthquake Networks, Complex
 Earthquake Nucleation Process
 Earthquake Occurrence and Mechanisms, Stochastic Models for
 Earthquake Scaling Laws
 Earthquake Source Parameters, Rapid Estimates for Tsunami Warning
 Earthquake Source: Asymmetry and Rotation Effects
 Earthquakes, Dynamic Triggering of
 Earthquakes, Electromagnetic Signals of
 Earth's Crust and Upper Mantle, Dynamics of Solid-Liquid Systems in
 Geo-Complexity and Earthquake Prediction
 GPS: Applications in Crustal Deformation Monitoring
 Ground Motion: Complexity and Scaling in the Near Field of Earthquake Ruptures
 Infrasound from Earthquakes, Tsunamis and Volcanoes
 Pressure Impulses Generated by Bubbles Interacting with Ambient Perturbation
 Seismic Wave Propagation in Media with Complex Geometries, Simulation of
 Seismic Waves in Heterogeneous Earth, Scattering of
 Seismicity, Critical States of: From Models to Practical Seismic Hazard Estimates Space
 Seismicity, Statistical Physics Approaches to
 Slug Flow: Modeling in a Conduit and Associated Elastic Radiation
 Submarine Landslides and Slow Earthquakes: Monitoring Motion with GPS and Seafloor Geodesy
 Tomography, Seismic
 Tsunami Earthquakes
 Tsunami Forecasting and Warning
 Tsunami Inundation, Modeling of
 Tsunamis, Inverse Problem of
 Volcanic Eruptions, Explosive: Experimental Insights
 Volcanic Eruptions: Cyclicity During Lava Dome Growth
 Volcanic Eruptions: Stochastic Models of Occurrence Patterns
 Volcanic Hazards and Early Warning
 Volcano Seismic Signals, Source Quantification of
 Volcanoes, Non-linear Processes in
 Wedge Mechanics: Relation With Subduction Zone Earthquakes and Tsunamis

Computational and Theoretical Nanoscience, Section Editor: Yong Suk Joe

Carbon Nanotubes, Thermo-mechanical and Transport Properties of
 Charge Based Solid-State Flying Qubits
 Computational and Theoretical Nanoscience, Introduction to
 Field Computation in Natural and Artificial Intelligence
 Geometric Phase and Related Phenomena in Quantum Nanosystems
 Multimillion Atom Simulations with Nemo3D
 Nanoscale Processes, Modeling Coupled and Transport Phenomena in Nanotechnology
 Quantum Dot Spin Transistors, Self-consistent Simulation of
 Quantum Dots: Fano Resonances in Aharonov-Bohm Ring
 Quantum Impurity Physics in Coupled Quantum Dots
 Quantum Phenomena in Semiconductor Nanostructures
 Quantum Simulations of Ballistic Nanowire Field Effect Transistors
 Resonances in Electronic Transport Through Quantum Wires and Rings
 Semiclassical Spin Transport in Spin-Orbit Coupled Systems
 Spin Dependent Exchange and Correlation in Two-Dimensional Electron Layers
 Spin Dynamics in Disordered Solids
 Spin-polarized Quantum Transport in Mesoscopic Conductors: Computational Concepts and Physical Phenomena

Tight-Binding Molecular Dynamics for Carbon and Applications to Nanostructure Formation
 Tunneling Through Quantum Dots with Discrete Symmetries
 Viral Protein Nano-Actuators, Computational Studies of Bio-nanomachines

Data Mining and Knowledge Discovery, Section Editor: Peter Kokol

Data and Dimensionality Reduction in Data Analysis and System Modeling
 Data-Mining and Knowledge Discovery, Introduction to
 Data-Mining and Knowledge Discovery, Neural Networks in
 Data-Mining and Knowledge Discovery: Case Based Reasoning, Nearest Neighbor and Rough Sets
 Decision Trees
 Discovery Systems
 Genetic and Evolutionary Algorithms and Programming: General Introduction and Application to Game Playing
 Knowledge Discovery: Clustering
 Machine Learning, Ensemble Methods in
 Manipulating Data and Dimension Reduction Methods: Feature Selection

Ecological Complexity, Section Editor: Bai-Lian Li

Ecological Complexity
 Ecological Topology and Networks
 Entropy Maximization and Species Abundance
 Human-Environment Interactions, Complex Systems Approaches for Dynamic Sustainable Development

EiC Selections, Section Editor: Robert A. Meyers

Catastrophe Theory
 Coordination Dynamics
 Infinite Dimensional Controllability
 Philosophy of Science, Mathematical Models in
 Self-organizing Systems

Ergodic Theory, Section Editor: Bryna Kra

Chaos and Ergodic Theory
 Entropy in Ergodic Theory
 Ergodic Theorems
 Ergodic Theory on Homogeneous Spaces and Metric Number Theory
 Ergodic Theory, Introduction to
 Ergodic Theory: Basic Examples and Constructions
 Ergodic Theory: Fractal Geometry
 Ergodic Theory: Interactions with Combinatorics and Number Theory
 Ergodic Theory: Non-singular Transformations
 Ergodic Theory: Recurrence
 Ergodic Theory: Rigidity
 Ergodicity and Mixing Properties
 Isomorphism Theory in Ergodic Theory
 Joinings in Ergodic Theory
 Measure Preserving Systems
 Pressure and Equilibrium States in Ergodic Theory
 Smooth Ergodic Theory
 Spectral Theory of Dynamical Systems
 Symbolic Dynamics
 Topological Dynamics

Finance and Econometrics, Section Editor: Bruce Mizrach

Bayesian Methods in Non-linear Time Series
 Corporate and Municipal Bond Market Microstructure in the U.S.
 Econometrics: Models of Regime Changes
 Econometrics: Nonlinear Cointegration
 Econometrics: Panel Data Methods
 Econophysics, Observational
 Finance and Econometrics, Introduction to
 Finance, Agent Based Modeling in
 Financial Economics, Fat-Tailed Distributions
 Financial Economics, Non-linear Time Series in
 Financial Economics, Return Predictability and Market Efficiency
 Financial Economics, The Cross-Section of Stock Returns and the Fama-French Three Factor Model
 Financial Economics, Time Variation in the Market Return
 Financial Forecasting, Non-linear Time Series in
 Financial Forecasting, Sensitive Dependence
 GARCH Modeling
 Macroeconomics, Nonlinear Time Series in
 Market Microstructure
 Market Microstructure, Foreign Exchange
 Microeconometrics
 Nonparametric Tests for Independence
 Stochastic Volatility
 Treasury Market, Microstructure of the U.S.

Fractals and Multifractals, Section Editor: Daniel ben-Avraham and Shlomo Havlin

Anomalous Diffusion on Fractal Networks
 Dynamics on Fractals
 Fractal and Multifractal Scaling of Electrical Conduction in Random Resistor Networks
 Fractal and Multifractal Time Series
 Fractal and Transfractal Scale-Free Networks
 Fractal Geometry, A Brief Introduction to
 Fractal Growth Processes
 Fractal Structures in Condensed Matter Physics
 Fractals and Economics
 Fractals and Multifractals, Introduction to
 Fractals and Percolation
 Fractals and Wavelets: What can we Learn on Transcription and Replication
 from Wavelet-Based Multifractal Analysis of DNA Sequences?
 Fractals in Biology
 Fractals in Geology and Geophysics
 Fractals in the Quantum Theory of Spacetime
 Fractals Meet Chaos
 Phase Transitions on Fractals and Networks
 Reaction Kinetics in Fractals

Game Theory, Section Editor: Marilda Sotomayor

Bayesian Games: Games with Incomplete Information
 Cooperative Games
 Cooperative Games (Von Neumann–Morgenstern Stable Sets)

Correlated Equilibria and Communication in Games
 Cost Sharing
 Differential Games
 Dynamic Games with an Application to Climate Change Models
 Evolutionary Game Theory
 Fair Division
 Game Theory and Strategic Complexity
 Game Theory, Introduction to
 Implementation Theory
 Inspection Games
 Learning in Games
 Market Games and Clubs
 Mechanism Design
 Networks and Stability
 Principal-Agent Models
 Repeated Games with Complete Information
 Repeated Games with Incomplete Information
 Reputation Effects
 Signaling Games
 Static Games
 Stochastic Games
 Two-Sided Matching Models
 Voting
 Voting Procedures, Complexity of
 Zero-sum Two Person Games

Granular Computing, Section Editor: Tsau Y. Lin

Cooperative Multi-Hierarchical Query Answering Systems
 Dependency and Granularity in Data Mining
 Fuzzy Logic
 Fuzzy Probability Theory
 Fuzzy System Models Evolution from Fuzzy Rulebases to Fuzzy Functions
 Genetic-Fuzzy Data Mining Techniques
 Granular Model for Data Mining
 Granular Computing and Data Mining for Ordered Data: The Dominance-Based Rough Set Approach
 Granular Computing and Modeling of the Uncertainty in Quantum Mechanics
 Granular Computing System Vulnerabilities: Exploring the Dark Side of Social Networking Communities
 Granular Computing, Information Models for
 Granular Computing, Introduction to
 Granular Computing, Philosophical Foundation for
 Granular Computing, Principles and Perspectives of
 Granular Computing: Practices, Theories and Future Directions
 Granular Neural Network
 Granulation of Knowledge: Similarity Based Approach in Information and Decision Systems
 Multi-Granular Computing and Quotient Structure
 Non-standard Analysis, An Invitation to
 Rough and Rough-Fuzzy Sets in Design of Information Systems
 Rough Set Data Analysis
 Rule Induction, Missing Attribute Values and Discretization
 Social Networks and Granular Computing

Intelligent Systems, Section Editor: James A. Hendler

Artificial Intelligence in Modeling and Simulation
 Intelligent Control
 Intelligent Systems, Introduction to
 Learning and Planning (Intelligent Systems)
 Mobile Agents
 Semantic Web

Non-Linear Ordinary Differential Equations and Dynamical Systems, Section Editor: Ferdinand Verhulst

Center Manifolds
 Dynamics of Hamiltonian Systems
 Dynamics of Parametric Excitation
 Existence and Uniqueness of Solutions of Initial Value Problems
 Hyperbolic Dynamical Systems
 Lyapunov–Schmidt Method for Dynamical Systems
 Non-linear Ordinary Differential Equations and Dynamical Systems, Introduction to
 Numerical Bifurcation Analysis
 Periodic Orbits of Hamiltonian Systems
 Periodic Solutions of Non-autonomous Ordinary Differential Equations
 Relaxation Oscillations
 Stability Theory of Ordinary Differential Equations

Non-Linear Partial Differential Equations, Section Editor: Italo Capuzzo Dolcetta

Biological Fluid Dynamics, Non-linear Partial Differential Equations
 Control of Nonlinear Partial Differential Equations
 Dispersion Phenomena in Partial Differential Equations
 Hamilton-Jacobi Equations and weak KAM Theory
 Hyperbolic Conservation Laws
 Navier-Stokes Equations: A Mathematical Analysis
 Non-linear Partial Differential Equations, Introduction to
 Non-linear Partial Differential Equations, Viscosity Solution Method in
 Non-linear Stochastic Partial Differential Equations
 Scaling Limits of Large Systems of Nonlinear Partial Differential Equations
 Vehicular Traffic: A Review of Continuum Mathematical Models

Percolation, Section Editor: Muhammad Sahimi

Bootstrap Percolation
 Conduction and Diffusion in Percolating Systems
 Continuum Percolation
 Correlated Percolation
 Elastic Percolation Networks
 Invasion Percolation
 Networks, Flexibility and Mobility in
 Percolation and Polymer Morphology and Rheology
 Percolation in Complex Networks
 Percolation in Porous Media
 Percolation Lattices, Efficient Simulation of Large
 Percolation Phase Transition
 Percolation Thresholds, Exact
 Percolation, and Faults and Fractures in Rock

Percolation, Introduction to
Scaling Properties, Fractals, and the Renormalization Group Approach to Percolation

Perturbation Theory, Section Editor: Giuseppe Gaeta

Diagrammatic Methods in Classical Perturbation Theory
Hamiltonian Perturbation Theory (and Transition to Chaos)
Kolmogorov-Arnold-Moser (KAM) Theory
N-body Problem and Choreographies
Nekhoroshev Theory
Non-linear Dynamics, Symmetry and Perturbation Theory in
Normal Forms in Perturbation Theory
Perturbation Analysis of Parametric Resonance
Perturbation of Equilibria in the Mathematical Theory of Evolution
Perturbation of Systems with Nilpotent Real Part
Perturbation Theory
Perturbation Theory and Molecular Dynamics
Perturbation Theory for Non-smooth Systems
Perturbation Theory for PDEs
Perturbation Theory in Celestial Mechanics
Perturbation Theory in Quantum Mechanics
Perturbation Theory, Introduction to
Perturbation Theory, Semiclassical
Perturbative Expansions, Convergence of
Quantum Bifurcations

Probability and Statistics in Complex Systems, Section Editor: Henrik Jeldtoft Jensen

Bayesian Statistics
Branching Processes
Complexity in Systems Level Biology and Genetics: Statistical Perspectives
Correlations in Complex Systems
Entropy
Extreme Value Statistics
Field Theoretic Methods
Fluctuations, Importance of: Complexity in the View of Stochastic Processes
Hierarchical Dynamics
Levy Statistics and Anomalous Transport: Levy Flights and Subdiffusion
Probability and Statistics in Complex Systems, Introduction to
Probability Densities in Complex Systems, Measuring
Probability Distributions in Complex Systems
Random Matrix Theory
Random Walks in Random Environment
Record Statistics and Dynamics
Stochastic Loewner Evolution: Linking Universality, Criticality and Conformal Invariance in Complex Systems
Stochastic Processes

Quantum Information Science, Section Editor: Joseph F. Traub

Quantum Algorithms
Quantum Algorithms and Complexity for Continuous Problems
Quantum Computational Complexity
Quantum Computing Using Optics

Quantum Computing with Trapped Ions
 Quantum Cryptography
 Quantum Error Correction and Fault Tolerant Quantum Computing
 Quantum Information Processing
 Quantum Information Science, Introduction to

Social Network Analysis, Section Editor: John Scott

Network Analysis, Longitudinal Methods of
 Positional Analysis and Blockmodelling
 Social Network Analysis, Estimation and Sampling in
 Social Network Analysis, Graph Theoretical Approaches to
 Social Network Analysis, Large-Scale
 Social Network Analysis, Overview of
 Social Network Analysis, Two-Mode Concepts in
 Social Network Visualization, Methods of
 Social Networks, Algebraic Models for
 Social Networks, Diffusion Processes in
 Social Networks, Exponential Random Graph (p^*) Models for

Social Science, Physics and Mathematics Applications in, Section Editor: Andrzej Nowak

Agent Based Modeling and Neoclassical Economics: A Critical Perspective
 Agent Based Models in Economics and Complexity
 Applications of Physics and Mathematics to Social Science, Introduction to
 Cities as Complex Systems: Scaling, Interaction, Networks, Dynamics and Urban Morphologies
 Consciousness and Complexity
 Development, Complex Dynamic Systems of
 Development, Evolution, and the Emergence of Novel Behavior
 Dynamics and Evaluation: The Warm Glow of Processing Fluency
 Dynamics of Language
 Evolution of Culture, Memetics
 Extreme Events in Socio-economic and Political Complex Systems, Predictability of
 Human Behavior, Dynamics of
 Intermittency and Localization
 Investment Decision Making in Finance, Models of
 Marketing: Complexity Modeling, Theory and Applications in
 Minority Games
 Moral Dynamics
 Opinions Dynamics and Sociophysics
 Physics and Mathematics Applications in Social Science
 Rational, Goal-Oriented Agents
 Social Cognitive Complexity
 Social Coordination, from the Perspective of Coordination Dynamics
 Social Organizations with Complexity Theory: A Dramatically Different Lens for the Knowledge Economy
 Social Processes, Physical Models of
 Social Processes, Simulation Models of
 Social Psychology, Applications of Complexity to
 Traffic and Crowd Dynamics: The Physics of the City

Soft Computing, Section Editor: Janusz Kacprzyk

Aggregation Operators and Soft Computing
 Evolving Fuzzy Systems

Fuzzy Logic, Type-2 and Uncertainty
 Fuzzy Optimization
 Fuzzy Sets Theory, Foundations of
 Hybrid Soft Computing Models for Systems Modeling and Control
 Neuro-fuzzy Systems
 Possibility Theory
 Rough Sets in Decision Making
 Rough Sets: Foundations and Perspectives
 Soft Computing, Introduction to
 Statistics with Imprecise Data

Solitons, Section Editor: Mohamed A. Helal

Adomian Decomposition Method Applied to Non-linear Evolution Equations in Soliton Theory
 Inverse Scattering Transform and the Theory of Solitons
 Korteweg–de Vries Equation (KdV), Different Analytical Methods for Solving the
 Korteweg–de Vries Equation (KdV) and Modified Korteweg–de Vries Equations (mKdV),
 Semi-analytical Methods for Solving the
 Korteweg–de Vries Equation (KdV), Some Numerical Methods for Solving the
 Korteweg–de Vries Equation (KdV) History, Exact N-Soliton Solutions and Further Properties
 Non-linear Internal Waves
 Partial Differential Equations that Lead to Solitons
 Shallow Water Waves and Solitary Waves
 Soliton Perturbation
 Solitons and Compactons
 Solitons Interactions
 Solitons, Introduction to
 Solitons, Tsunamis and Oceanographical Applications of
 Solitons: Historical and Physical Introduction
 Water Waves and the Korteweg–de Vries Equation

Statistical and Nonlinear Physics, Section Editor: M. Cristina Marchetti

Anisotropic Networks, Elastomers and Gels
 Cell Biology: Networks, Regulation and Pathways
 Chaotic Dynamics in Nonequilibrium Statistical Mechanics
 Collective Transport and Depinning
 Complex Systems and Emergent Phenomena
 Cytoskeleton and Cell Motility
 Disordered Elastic Media
 Econophysics, Statistical Mechanics Approach to
 Fluctuation Theorems, Brownian Motors and Thermodynamics of Small Systems
 Glasses and Aging, A Statistical Mechanics Perspective on
 Granular Flows
 Jamming of Granular Matter
 Jerky Motion in Slowly Driven Magnetic and Earthquake Fault Systems, Physics of
 Microfluidics
 Monte Carlo Simulations in Statistical Physics
 Networks: Structure and Dynamics
 Neuronal Dynamics
 Noise and Stability in Modelocked Soliton Lasers
 Non-linear Fluid Flow, Pattern Formation, Mixing and Turbulence
 Optimization Problems and Algorithms from Computer Science

Polymer Physics
 Protein Mechanics at the Single-Molecule Level
 Quantum Chaos
 Statistical and Non-linear Physics, Introduction to
 Ultracold Atomic Gases: Novel States of Matter

Synergetics, Section Editor: Hermann Haken

Brain Pacemaker
 Fluid Dynamics, Pattern Formation
 Fluid Dynamics, Turbulence
 Intentionality: A Naturalization Proposal on the Basis of Complex Dynamical Systems
 Linear and Non-linear Fokker–Planck Equations
 Movement Coordination
 Patterns and Interfaces in Dissipative Dynamics
 Self-Organization and Clinical Psychology
 Self-Organization and the City
 Synergetics, Introduction to
 Synergetics: Basic Concepts

System Dynamics, Section Editor: Brian Dangerfield

Business Policy and Strategy, System Dynamics Applications to
 Delay and Disruption in Complex Projects
 Diffusion of Innovations, System Dynamics Analysis of the
 Dynamics of Income Distribution in a Market Economy: Possibilities for Poverty Allevation
 Group Model Building
 Health Care in the United Kingdom and Europe, System Dynamics Applications to
 Health Care in the United States, System Dynamics Applications to
 Public Policy, System Dynamics Applications to
 Scenario-Driven Planning with System Dynamics
 System Dynamics and Its Contribution to Economics and Economic Modeling
 System Dynamics and Organizational Learning
 System Dynamics in the Evolution of the Systems Approach
 System Dynamics Modeling: Validation for Quality Assurance
 System Dynamics Models of Environment, Energy and Climate Change
 System Dynamics Models, Optimization of
 System Dynamics Philosophical Background and Underpinnings
 System Dynamics, Analytical Methods for Structural Dominance Analysis in
 System Dynamics, Introduction to
 System Dynamics, The Basic Elements of

Systems and Control Theory, Section Editor: Matthias Kowski

Chronological Calculus in Systems and Control Theory
 Discrete Control Systems
 Finite Dimensional Controllability
 Hybrid Control Systems
 Learning, System Identification, and Complexity
 Maximum Principle in Optimal Control
 Mechanical Systems: Symmetries and Reduction
 Nonsmooth Analysis in Systems and Control Theory
 Observability (Deterministic Systems) and Realization Theory

Robotic Networks, Distributed Algorithms for
 Stability and Feedback Stabilization
 Stochastic Noises, Observation, Identification and Realization with
 System Regulation and Design, Geometric and Algebraic Methods in
 Systems and Control, Introduction to

Systems Biology, Section Editor: Timothy P. Galitski

Biological Data Integration and Model Building
 Biological Models of Molecular Network Dynamics
 Biomolecular Network Structure and Function
 Boolean Modeling of Biological Networks
 Ecological Systems
 Functional Genomics for Characterization of Genome Sequences
 Genome Organization
 Metabolic Systems Biology
 Stochastic Models of Biological Processes
 Systems Biology of Human Immunity and Disease
 Systems Biology, Introduction to
 Systems Genetics and Complex Traits

Traffic Management, Complex Dynamics of, Section Editor: Boris Kerner

Air Traffic Control, Complex Dynamics of
 Complex Dynamics of Traffic Management, Introduction to
 Evacuation as a Communication and Social Phenomenon
 Evacuation Dynamics: Empirical Results, Modeling and Applications
 Freeway Traffic Management and Control
 Pedestrian, Crowd and Evacuation Dynamics
 Traffic Breakdown, Probabilistic Theory of
 Traffic Congestion, Modeling Approaches to
 Traffic Congestion, Spatiotemporal Features of
 Traffic Networks, Optimization and Control of Urban
 Traffic Networks: Dynamic Traffic Routing, Assignment, and Assessment
 Traffic Prediction of Congested Patterns
 Travel Behaviour and Demand Analysis and Prediction

Unconventional Computing, Section Editor: Andrew Adamatzky

Amorphous Computing
 Analog Computation
 Artificial Chemistry
 Bacterial Computing
 Cellular Computing
 Computing in Geometrical Constrained Excitable Chemical Systems
 Computing with Solitons
 DNA Computing
 Evolution in Materio
 Immunecomputing
 Mechanical Computing: The Computational Complexity of Physical Devices
 Membrane Computing
 Molecular Automata
 Nanocomputers

Optical Computing
Quantum Computing
Reaction-Diffusion Computing
Reversible Computing
Thermodynamics of Computation
Unconventional Computing, Introduction to
Unconventional Computing, Novel Hardware for

Wavelets, Section Editor: Edward Aboufadel

Bivariate (Two-dimensional) Wavelets
Comparison of Discrete and Continuous Wavelet Transforms
Curvelets and Ridgelets
Multivariate Splines and Their Applications
Multiwavelets
Numerical Issues When Using Wavelets
Popular Wavelet Families and Filters and Their Use
Statistical Applications of Wavelets
Wavelets and PDE Techniques in Image Processing, A Quick Tour of
Wavelets and the Lifting Scheme
Wavelets, Introduction to



<http://www.springer.com/978-0-387-30440-3>

Encyclopedia of Complexity and Systems Science

Editor-in-chief: Meyers, R.A.

2009, eReference.,

ISBN: 978-0-387-30440-3