

Contents

Part I Complexity in Earthquake Dynamics

- 1 Geosystemics, Entropy and Criticality of Earthquakes:
A Vision of Our Planet and a Key of Access 3**
Angelo De Santis
- 2 Aftershock Cascade of the 3.11 Earthquake (2011)
in Fukushima-Miyagi Area 21**
Yoji Aizawa and Satoru Tsugawa

Part II Socio-, Econo- and Biophysics

- 3 Is It Necessary to Lie to Win a Controversial Public
Debate? An Answer from Sociophysics 37**
Serge Galam
- 4 Anticipating Stock Market Movements with *Google* and *Wikipedia* .. 47**
Helen Susannah Moat, Chester Curme, H. Eugene Stanley,
and Tobias Preis
- 5 Nonequilibrium Quantum Dynamics of Biomolecular Excitons 61**
Cesar A. Mujica-Martinez, Peter Nalbach,
and Michael Thorwart
- 6 Fractal Dimensions and Entropies of Meragi Songs 79**
Adnan Aydemir and Güngör Gündüz

Part III Network Dynamics in Macroscale Systems

- 7 Large-Scale Connectivity vs. Spreading Efficiency:
Spectral Analysis on Explosive Percolation 91**
N.N. Chung, L.Y. Chew, and Choy Heng Lai

8	Power Grids, Smart Grids and Complex Networks	97
	Antonio Scala, Guido Caldarelli, Alessandro Chessa, Alfonso Damiano, Mario Mureddu, Sakshi Pahwa, Caterina Scoglio, and Walter Quattrociocchi	
9	A Spectral Approach to Synchronizability of Interdependent Networks	111
	Gregorio D’Agostino	
10	Theoretical Approaches to the Susceptible-Infected-Susceptible Dynamics on Complex Networks: Mean-Field Theories and Beyond	133
	Claudio Castellano	

Part IV Quantum Network Dynamics

11	Physics on Graphs	149
	Robert Schrader	
12	Resonances in Quantum Networks and Their Generalizations	159
	Pavel Exner	
13	Quantum Graph and Quantum Filter	179
	Taksu Cheon	
14	From Continuous-Time Random Walks to Continuous-Time Quantum Walks: Disordered Networks	189
	Oliver Mülken and Alexander Blumen	
15	Excitations Transfer and Random Walks on Dynamic Contacts Networks	199
	Raffaella Burioni, Elena Agliari, and Davide Cassi	
16	Ballistic Soliton Transport in Networks	215
	Zarif A. Sobirov, K.K. Sabirov, Davron Matrasulov, A.A. Saidov, and K. Nakamura	

Part V Complexity in Nanoscale Systems

17	Symmetry Breaking in Open Quantum Nonlinear Systems	235
	Almas F. Sadreev, Evgeny N. Bulgakov, Dmitrii N. Maksimov, and Konstantin N. Pichugin	
18	Charge Separation and Transport in Third Generation Hybrid Polymer-Fullerene Solar Cells	253
	B.L. Oksengendler, Oksana B. Ismailova, M.B. Marasulov, N.N. Turaeva, Davron Matrasulov, and J.R. Yusufov	

19 Complex Antenna Optimization 269
Haojiong Liu, Ibrahim Tekin, Oksana Manzhura,
and Edip Niver

**20 Complex Nonlinear Riccati Equations as a Unifying Link
in Fundamental Physics**..... 289
Dieter Schuch

Index..... 309

Nonlinear Phenomena in Complex Systems: From Nano
to Macro Scale

Matrasulov, D.; Stanley, E.H. (Eds.)

2014, XIII, 310 p. 130 illus., 92 illus. in color., Softcover

ISBN: 978-94-017-8707-9