

CONTENTS

Part I: LECTURES¹

Stochastic Processes from Deterministic Dynamics	
<i>Ch. Beck</i>	3
The Interplay of Classical and Quantum Stochastics: Diffusion, Measurement and Filtering	
<i>V.P. Belavkin</i>	21
Event Enhanced and Piecewise Deterministic Quantum Theory or the Right Jump at the Right Place	
<i>Ph. Blanchard and A. Jadczyk</i>	41
Wave Mechanics: The Interplay Between Stochastics and Quanta	
<i>A.M. Cetto and L. de la Peña</i>	51
Lévy Processes and Relativistic Quantum Dynamics	
<i>P. Garbaczewski</i>	75
Quantum Coherence and Decoherence in a Classically Chaotic Experimentally Accessible Quantum Optical System	
<i>R. Graham</i>	87
Anomalous Diffusion, Spontaneous Localizations and the Correspondence Principle	
<i>P. Grigolini</i>	101
Quantum Open Systems as Random Classical Dynamical Systems	
<i>Z. Haba</i>	121
Large-Scale Structure of the Universe and Asymptotics of Burgers' Turbulence with Heavy-Tailed Dependent Data	
<i>Y. Hu and <u>W.A. Woyczynski</u></i>	135

Convergence of Iterative Methods in Perturbation Theory <i>H.R. Jauslin, M. Govin and M. Cibils</i>	151
Eigenfunction Expansions for Time Dependent Hamiltonians <i>H.R. Jauslin, S. Guerin, A. Deroussiaux</i>	161
Strange Attractors in Higher-Dimensional Phase Space <i>T. Kapitaniak and J. Wojewoda</i>	169
Mathematical Classification of Complete Chaos <i>M. Keane</i>	179
Anomalous Diffusion and Lévy Statistics in Intermittent Chaotic Systems <i>J. Klafter, G. Zumofen and M.F. Shlesinger</i>	189
Classical and Quantum Chaotic Scattering <i>Ying-Cheng Lai</i>	211
From Fractals to Stochastic Differential Equations <i>A. Lasota</i>	235
Dissipative Structures and Weak Turbulence <i>P. Manneville</i>	257
Entropy and Quantum Characteristic Exponents. Steps Towards a Quantum Pesin Theory <i>R. Vilela Mendes</i>	273
Rigorous Numerics of Chaotic Dynamical Systems <i>M. Mrozek</i>	283
The Effect of Symmetry Breaking on Random Walks and Brownian Motion <i>L.E. Reichl and P. Alpatov</i>	297
Quantum Dynamical Entropy <i>G. Roepstorff</i>	305

Strange Attractors in Nonlinear Oscillators	
<i>W. Szemplińska-Stupnicka</i>	313
Wave Packet Propagation, Nonlinear Dynamics, and Constructing Chaotic Eigenstates	
<i>S. Tomsovic</i>	331
Chaotic Dynamics of Weakly Nonlinear Systems	
<i>D.M. Vavriv</i>	355
Computer Simulation of Lévy α-Stable Variables and Processes	
<i>A. Weron and R. Weron</i>	379
From Quantum Physics to Probability Theory and Back	
<i>J.C. Zambrini</i>	393
 <i>Part II: SEMINARS¹</i>	
Stochastic Approach to Many Bosons Physics	
<i>R. Gielerek and R. Olkiewicz</i>	435
Ionization of Rydberg Atoms in a Low Frequency Field: Modelling by Maps of Transition to Chaotic Behavior	
<i>B. Kaulakys and G. Vilotis</i>	445
Periodic Perturbations of Chaotic Dynamics	
<i>A.L. Kawczyński</i>	451
p-adic Stochastics with Applications to the Einstein–Podolsky–Rosen Paradox	
<i>A. Khrennikov</i>	457
Quantum Chaos: Double Resonance Model and Its Physical Applications	
<i>A.R. Kolovsky</i>	461
Asymptotic Behavior of Generalized Lévy Walks	
<i>M. Kotulski</i>	471

Stochastic Moore Loop Space	
<i>R. Léandre</i>	479
Relativistic Chaos in Time-Driven Linear and Nonlinear Oscillators	
<i>Hai-Woong Lee</i>	503
Applications of Quantum Characteristic Exponents	
<i>W.A. Majewski</i>	507
Asymptotic Properties of the Fokker–Planck Equation	
<i>R. Rudnicki</i>	517
Spacetime Distortion as a Reason for Quantum Stochasticity	
<i>Y.A. Ryllov</i>	523
Divergences of the Semiclassical S-matrix – Beyond Hyperbolic Systems	
<i>K. Stefański</i>	531
Disturbance Propagation in Coupled Map Lattices	
<i>A. Torcini</i>	537
Lévy-Stable and Extreme Value Distributions in Modelling of Dynamical Phenomena in Complex Physical Systems	
<i><u>K. Weron</u>, K. Kosmulski, A. Jurlewicz and S. Mercik</i>	545
Wigner or Non-Wigner: That Is the Question	
<i><u>J. Zakrzewski</u>, K. Dupret and D. Delande</i>	559
Random Matrices of Circular Symplectic Ensemble	
<i>K. Życzkowski</i>	565