

Contents

Part I Fractional Dynamics and Nonlinearity

1	Nonlinear Self-Adjointness for some Generalized KdV Equations ...	3
	M.L. Gandarias and M. Rosa	
2	Weak Self-Adjointness and Conservation Laws for a Family of Benjamin-Bona-Mahony-Burgers Equations.....	23
	M.S. Bruzón	
3	Some Analytical Techniques in Fractional Calculus: Realities and Challenges	35
	Dumitru Baleanu, Guo-Cheng Wu, and Jun-Sheng Duan	
4	Application of the Local Fractional Fourier Series to Fractal Signals	63
	Xiao-Jun Yang, Dumitru Baleanu, and J. A. Tenreiro Machado	
5	Parameter Optimization of Fractional Order $PI^\lambda D^\mu$ Controller Using Response Surface Methodology	91
	Beyza Billur İskender, Necati Özdemir, and Aslan Deniz Karaoglan	
6	Dynamical Response of a Van der Pol System with an External Harmonic Excitation and Fractional Derivative	107
	Arkadiusz Syta and Grzegorz Litak	
7	Fractional Calculus: From Simple Control Solutions to Complex Implementation Issues	113
	Cristina I. Muresan	
8	Emerging Tools for Quantifying Unconscious Analgesia: Fractional-Order Impedance Models	135
	Amélie Chevalier, Dana Copot, Clara M. Ionescu, J. A. Tenreiro Machado, and Robin De Keyser	

Part II Chaos and Complexity

9	1D Cahn–Hilliard Dynamics: Coarsening and Interrupted Coarsening	153
	Simon Villain-Guillot	
10	Nonlinear Analysis of Phase-locked Loop-Based Circuits	169
	R.E. Best, N.V. Kuznetsov, G.A. Leonov, M.V. Yuldashev, and R.V. Yuldashev	
11	Approaches to Defining and Measuring Assembly Supply Chain Complexity	193
	V. Modrak and D. Marton	
12	Non-commutative Tomography: Applications to Data Analysis	215
	Françoise Briolle and Xavier Leoncini	
13	Projective Synchronization of Two Gyroscope Systems with Different Motions	255
	Fuhong Min and Albert C. J. Luo	
14	Measuring and Analysing Nonlinearities in the Lung Tissue	273
	Clara M. Ionescu	

Part III Discontinuous Dynamics

15	Drilling Systems: Stability and Hidden Oscillations	287
	M.A. Kiseleva, N.V. Kuznetsov, G.A. Leonov, and P. Neittaanmäki	
16	Chaos in a Piecewise Linear System with Periodic Oscillations	305
	Chunqing Lu	
17	Basins of Attraction in a Simple Harvesting System with a Stopper	315
	Marek Borowiec, Grzegorz Litak, and Stefano Lenci	
18	Analytical Dynamics of a Mass –Damper –Spring Constrained System	323
	Albert C. J. Luo and Richard George	

Part IV Engineering and Financial Nonlinearity

19	Formations of Transitional Zones in Shock Wave with Saddle-Node Bifurcations	347
	Jia-Zhong Zhang, Yan Liu, Pei-Hua Feng, and Jia-Hui Chen	
20	Dynamics of Composite Milling: Application of Recurrence Plots to Huang Experimental Modes	359
	G. Litak, R. Rusinek, K. Kecik, A. Rysak, and A. Syta	

21 The Dynamics of Shear-Type Frames Equipped with Chain-Based Nonlinear Braces	369
Enrico Babilio	
22 In-Plane Free Vibration and Stability of High Speed Rotating Annular Disks and Rings	389
Hamid R. Hamidzadeh and Ehsan Sarfaraz	
23 Patent Licensing: Stackelberg Versus Cournot Models	409
Oana Bode and Flávio Ferreira	
24 Privatization and Government Preferences in a Mixed Duopoly: Stackelberg Versus Cournot	421
Fernanda A. Ferreira and Flávio Ferreira	
Index	431

Discontinuity and Complexity in Nonlinear Physical
Systems

Machado, J.T.; Baleanu, D.; Luo, A.C.J. (Eds.)

2014, XIII, 433 p. 166 illus., 87 illus. in color., Hardcover

ISBN: 978-3-319-01410-4