

Contents

1	Network Control Analysis for Time-Dependent Dynamical States	1
	D.A. Rand	
2	Renormalization and Focal Decomposition	25
	Carlos A.A. de Carvalho, Mauricio M. Peixoto, Diogo Pinheiro, and Alberto A. Pinto	
3	Micro-Foundations of the Social Change	41
	Elvio Accinelli and Leobardo Plata	
4	Singularities, Walrasian Economies and Economic Crisis	55
	Elvio Accinelli and Martín Puchet	
5	Probabilistic Methods in Dynamical Analysis: Populations Growths Associated to Models Beta(p, q) with Allee Effect	79
	Sandra M. Aleixo, J. Leonel Rocha, and Dinis D. Pestana	
6	Power Indices Applied to Portuguese Parliament	97
	José M. Alonso-Meijide, Flávio Ferreira, Mikel Álvarez-Mozos, and Alberto A. Pinto	
7	A Methodological Contribution in the Theory of the Firm Under Uncertainty	107
	Alberto A. Álvarez-López and Inmaculada Rodríguez-Puerta	
8	Explosion of Smoothness for Conjugacies Between Unimodal Maps	115
	José F. Alves, Vilton Pinheiro, and Alberto A. Pinto	
9	Multidimensional Rovella-Like Attractors	121
	Vítor Araújo	

10 Robust Heteroclinic Behaviour, Synchronization, and Ratcheting of Coupled Oscillators	125
Peter Ashwin and Özkan Karabacak	
11 An Economical Model For Dumping by Dumping in a Cournot Model	141
Nilanjan Banik, Fernanda A. Ferreira, J. Martins, and Alberto A. Pinto	
12 Fractional Control of Dynamic Systems	155
Ramiro S. Barbosa and J.A. Tenreiro Machado	
13 A Dynamical Point of View of Quantum Information: Discrete Wigner Measures	161
A.T. Baraviera, C.F. Lardizabal, A.O. Lopes, and M. Terra Cunha	
14 Dynamics on Spectral Solutions of Forced Burgers Equation	187
Mário Basto, Viriato Semiao, and Francisco Lage Calheiros	
15 Area-Preserving Diffeomorphisms from the C^1 Standpoint	191
Mário Bessa	
16 A Theoretical, Multidisciplinary View of Catastrophic Regime Change	223
Juan Gabriel Brida, Audrey L. Mayer, Christopher McCord, and Lionello F. Punzo	
17 General Relativistic Elasticity: Statics and Dynamics of Spherically Symmetric Metrics	237
Irene Brito and E.G.L.R. Vaz	
18 Post-Inflationary Scalar Field Phase Dynamics	243
T. Charters, A. Nunes, and J.P. Mimoso	
19 An Application of the SIR Model to the Evolution of Epidemics in Portugal	247
António M. Correia, Filipe C. Mena, and Ana J. Soares	
20 Poissonian Tree Constructed from Independent Poisson Point Processes	251
Jesus Carvalho Diniz and José Carlos Simon de Miranda	

21	Hamiltonian Systems on Polyhedra	257
	Pedro Duarte	
22	Bankruptcy Boundaries Determined by Patents	275
	M. Ferreira, B.M.P.M. Oliveira, and Alberto A. Pinto	
23	Computation of Genus and Braid Index for Renormalizable Lorenz Links	301
	Nuno Franco and Luís Silva	
24	Statistical Stability for Equilibrium States	317
	Jorge Milhazes Freitas and Mike Todd	
25	Dynamic Games of Network Effects	323
	Filomena Garcia and Joana Resende	
26	Exit Times and Persistence of Solitons for a Stochastic Korteweg–de Vries Equation	343
	Eric Gautier	
27	Optimization Approach to a Simulation Algorithm of a Mixer-Settler System in the Transient State	349
	E.F. Gomes and G.A. Pinto	
28	Duality Theory, Representation Formulas and Uniqueness Results for Viscosity Solutions of Hamilton–Jacobi Equations	361
	Diogo A. Gomes and Enrico Valdinoci	
29	Microscopic Dynamics for the Porous Medium Equation	387
	Patrícia Gonçalves	
30	A Stochastic Model for Wolf’s Sunspot Number	393
	Rui Gonçalves and Alberto A. Pinto	
31	On Topological Classification of Morse–Smale Diffeomorphisms	403
	Viacheslav Grines and Olga Pochinka	
32	Isentropic Dynamics and Control in an Economic Model for Capital Accumulation	429
	Cristina Januário, Clara Grácio, Diana A. Mendes, and Jorge Duarte	

33	Hydrodynamic Limit of the Exclusion Process in Inhomogeneous Media	449
	Milton Jara	
34	Application of Fractional Order Concepts in the Study of Electrical Potential	467
	Isabel S. Jesus and J.A. Tenreiro Machado	
35	Economics of Bioenergy Crops for Electricity Generation: Implications for Land Use and Greenhouse Gases	471
	Madhu Khanna, Hayri Onal, Basanta Dhungana, and Michelle Wander	
36	An H-Theorem for Chemically Reacting Gases	503
	Gilberto M. Kremer, Filipe Oliveira, and Ana Jacinta Soares	
37	Dynamics, Systems, Dynamical Systems and Interaction Graphs	507
	Maurício Vieira Kritz and Marcelo Trindade dos Santos	
38	The Dynamics of Scalar Fields in Cosmology	543
	José Pedro Mimoso	
39	The Dynamics of the Nash Map for 2 By 2 Games.....	549
	R.A. Becker, S.K. Chakrabarti, W. Geller, B. Kitchens, and M. Misiurewicz	
40	Resort Pricing and Bankruptcy	567
	Alberto A. Pinto, Marta Faias, and Abdelrahim S. Mousa	
41	On the Hannay–Ozorio De Almeida Sum Formula.....	575
	M. Pollicott and R. Sharp	
42	A Fourier Transform Method for Relaxation of Kinetic Equations	591
	Manuel Portilheiro	
43	Bethe Ansatz Solution of the Finite Bernoulli Matching Model of Sequence Alignment.....	599
	V.B. Priezzhev and G.M. Schütz	
44	Fitness Function Evaluation Through Fractional Algorithms.....	607
	Cecília Reis and J.A. Tenreiro Machado	

45	An Exponential Observer for Systems on $SE(3)$ with Implicit Outputs	611
	Sérgio S. Rodrigues, Naveena Crasta, António Pedro Aguiar, and Fátima Silva Leite	
46	Stability of Polydeuces Orbit	635
	Dulce C. Pinto and Filipe C. Mena	
47	Peixoto Classification of 2-Dim Flows Revisited	639
	Antonio R. da Silva	
48	Fractional Control of Legged Robots	647
	Manuel F. Silva and J.A. Tenreiro Machado	
49	Evolutionary Dynamics of the Spatial Prisoner's Dilemma with Single and Multi-Behaviors: A Multi-Agent Application	651
	Carla Silva, Welma Pereira, Jan Knotek, and Pedro Campos	
50	Euclidean Jordan Algebras and Strongly Regular Graphs	689
	Lúís Vieira	
51	Parameter Estimation in Stochastic Differential Equations	703
	G.-W. Weber, P. Taylan, Z.-K. Görgülü, H. Abd. Rahman, and A. Bahar	
52	Stochastic Saddle Paths and Economic Theory	735
	A.N. Yannacopoulos	