

CONTENTS

M. Zakrzhevsky (Latvia) Bifurcation Theory of Nonlinear Dynamics and Chaos. Periodic Skeletons and Rare Attractors	1
M. Zakrzhevsky, V. Frolov (Latvia) ABC NDC: New Software for Global Analysis of Nonlinear Dynamics and Chaos	11
A. Klokov, M. Zakrzhevsky (Latvia) Nonlinear Dynamics and Rare Attractors of the Pendulum with the Vertical Vibrating Point of Suspension	16
M. Zakrzhevsky, I. Schukin, V. Frolov, A. Klokov, V. Yevstignejev, R. Smirnova, D. Pikulin, (Latvia) Rare Attractors in Discrete Nonlinear Dynamical Systems	21
D. Pikulin (Latvia) Smooth and Nonsmooth Nonlinear Phenomena in DC-DC Converters	26
R. Smirnova, M. Zakrzhevsky, I. Schukin, V. Yevstignejev (Latvia) The Influence of Nonlinear Dissipation on the Birth of Rare Attractors in Dynamic Systems	31
V. Yevstignejev, M. Zakrzhevsky (Latvia) Clusters of Submerged Subharmonic Isles with Rare Attractors in Two Parameters Bifurcation Diagrams	35
V. Yevstignejev (Latvia), M. Zakrzhevsky (Latvia), A. Toporensky (Russia) On the Possibility of Rare Attractors in Scalar Field Cosmology	39
I. Ario (Japan) Multiple Duffing Problem for a Symmetric Folding Structure with Hill-top Type of Symmetry-breaking	43
V. Astashev, E. Semenova (Russia) Constrained Oblique Impact in Models of the High-Frequency Processes and Systems	48
Y. Aushev, A. Bogorosh, S. Voronov (Ukraine) Jet Clustering Algorithms as Tools for Analyzing Data from Colliders	53
V. Beresnevich, A. Klokov (Latvia) Some Characteristic Features of Nonlinear Parametric Oscillations of Flexible Elements	57

I. Blekhman, K. Ivanov (Russia) On a Vibroimpact System in Which Chaos is Caused by the Rare Attractor Packing	65
A. Bolsinov (UK), I. Basak (Spain) Bifurcation Analysis of Rubanovskii System via bi-Hamiltonian approach	70
A. Bubulis, V. Jurenas, V. Maciukiene, S. Navickaite (Lithuania) Magnetorheological Fluids for Motion Control of Cantilever Piezoelectric Unimorph for Laser Beam Chopper	74
A. Bubulis (Lithuania), V. Jurenas (Lithuania), D. Stepanenko (Belarus), V. Minchenya (Belarus) Evidence for Low Dimensional Chaos in Grain Production System of Ukraine	78
I. Bula, V. Duka, I. Liepina (Latvia) Molecular Modeling of Protein as Nonlinear Dynamical System	81
C. Douskos, M. Markakis, E. Perdios (Greece) Exotic Equilibrium Points of Restricted Three-Body Problem Variants and Fractal Basins of Convergence	85
V. Gaiko (Belarus) Attractors of the Fitzhugh-Nagumo Neuronal Model	89
O. Gendelman (Israel) Attractors of Forced Systems with Nonlinear Energy Sinks	93
A. Gorobtsov, E. Ryzhov, A. Churzina (Russia) Qualitative Researches of Processes of Lame in the Ring	97
O. Grigoryeva, E. Ryzhov (Russia) Control Systems with Andronov-Hopff's Bifurcation on Even Dimensional Spheres	100
H. Hosham (Germany) Bifurcations in Nonsmooth High-Dimensional Brake System	104
D. Indeitsev, D. Vavilov (Russia) Nonlinear Interaction of Inclusion with Elastic Medium	108
K. Ivanov (Kazakhstan) Effect of Force Adaptation in Nonlinear Mechanical Systems	112
T. Kupper (Germany) Bifurcation of Periodic Orbits for Nonsmooth Systems	116
N. Kuznetsov, O. Kuznetsova, G. Leonov (Russia) Lyapunov Quantities and Limit Cycles Computation in Two-Dimensional Dynamical Systems	120

A. Luo (USA)	
Dynamical System Interactions and Synchronization	124
A. Luo (USA)	
Singularity and Flow Passability in Discontinuous Dynamical Systems	125
K. Lurie (USA)	
Limit Cycles and Focusing of Disturbances in Linear Dynamic Structures	126
N. Magnitskii (Russia)	
On Topology of Singular Attractors of Nonlinear Differential Equations	129
V. Ostasevicius (Lithuania)	
Vibration Peculiarity of Defected Impacting Cantilever Structure	134
G. Panovko, O. Volokhovskaya (Russia)	
Transient Process Development of the Turbine Unit Rotor After Instantaneous Imbalance	138
L. Patasiene, K. Ragulskis, A. Fedaravicius (Lithuania)	
Dynamics Processes in Exciting Vibration of Piezoactuators	142
P. Perlikowski, K. Czolczynski, A. Stefanski, T. Kapitaniak (Poland)	
Synchronization and Rare Attractors in Coupled Non-Identical Clocks	146
O. Ryabkov (Russia)	
On the Gilmore-Lefranc Method Application to the Yang-Mills-Higgs System of Ordinary Differential Equations	150
V. Ryabov (Japan), D. Nerukh (UK)	
Quantifying Dynamic Traps in High-Dimensional Phase Space of Molecular Ensembles	154
E. Ryzhov (Russia)	
Control Systems with Orbital Stable Torus in the Problem of Amplitude Stabilization	158
V. Serov (Finland)	
Inverse Scattering Problems with Fixed Energy for Nonlinear Schrödinger Equations	162
T. Ventslavovich, V. Kazakevich (Russia)	
Nonlinear Riddles in Behavior of EBCD Carbon Monoxide Laser Radiation Pulses and Their Decisions	166
A. Verisokin, D. Verveiko, E. Postnikov (Russia)	
The Residual Method to Selkov Model in the Modified Rayleigh Form	169

D. Verveiko, A. Verisokin, E. Postnikov (Russia) Stochastic Simulation of Single-Particle Diffusion in Ultrathin Layered Liquid Film	173
J. Viba (Latvia), E. Kovals (Latvia), I. Tipans (Latvia), G. Kulikovskis (Latvia), J.-G. Fontaine (Italy), M. Kruusmaa (Estonia), W. Megill (UK) Nonlinear Dynamics of Robot Fish Flexible Tail Motion	177
A. Zlenko (Russia) The Motion of Two Viscously - Elastic Balls in the Central Force Field as a Model of Double Planet	188
Index of Authors	