

Contents

Electromechanical Systems and Nonlinear Dynamics of RNIS	
A Tutorial on the Simplification of Electromechanical Dynamic Models	3
Rafael Henrique Avanço, Danilo Antonio Zanella, Americo Cunha Jr., Angelo Marcelo Tusset, and Jose Manoel Balthazar	
Cardiorespiratory System as the System with Limited Power	15
Evgeniy D. Pechuk, Tatyana S. Krasnopol'skaya, and Oleh A. Savitskyi	
Slow Oscillations in Systems with Inertial Vibration Exciters	29
Nikolay P. Yaroshevich, Oleksiy S. Lanets, and Olha M. Yaroshevych	
Bifurcations “Cycle–Chaos–Hyperchaos” in Some Nonideal Electroelastic Systems	43
S. V. Donetskyi and A. Yu. Shvets	
Nonlinear Dynamics of Self and Parametrically Excited Systems with Non-ideal Energy Source	53
Jerzy Warminski	
A Study of the Sommerfeld Effect in a Rotor Machine Foundation Model with 4 DOF	73
Sara Prates Lima and Reyolando Manoel Lopes Rebello da Fonseca Brasil	
Three Kinds of Sommerfeld Effect in Rotor Dynamics	85
A. K. Samantaray	
Nonlinear Modal Analysis of Vibrating Systems with Limited Power Supply	127
V. Piccirillo, A. M. Tusset, Jose Manoel Balthazar, and A. G. Martinez	
Resonance Dynamics of the Non-ideal System Having the Pendulum as Absorber of Elastic Vibrations	139
Y. O. Lebedenko, Y. V. Mikhlin, and M. A. Pinsky	

On a Vehicular Suspension for a Non-ideal and Nonlinear Orchard Tower Sprayer Through an Inverted Pendulum Using Reologic Magneto (MR)	151
R. N. Silva, J. L. P. Felix, Jose Manoel Balthazar, A. M. Tusset, M. A. Ribeiro, W. B. Lenz, and A. Cunha	
On the Use of Synchrosqueezing Transform for Chaos and Nonlinear Dynamics Analysis in Fractional-Order Systems	175
M. Varanis, C. Oliveira, M. A. Ribeiro, W. B. Lenz, A. M. Tusset, and Jose Manoel Balthazar	
On the Stability and Long-Term Behaviour of Structural Systems Excited by Nonideal Power Sources	191
Javier González-Carbajal, Daniel García-Vallejo, and Jaime Domínguez	
Nonlinear Dynamics of RNIS, Control of RNIS and Harvester Energy of RNIS	
Nonlinear Control Applied in Jump Attenuation of a Non-ideal System	241
A. M. Tusset, A. Kossoski, A. M. Bueno, Jose Manoel Balthazar, J. L. P. Felix, A. Cunha Jr, and R. H. Avanço	
Chaos Control in a Nonideal Vibrating Systems	253
A. M. Tusset, V. Piccirillo, S. L. T. de Souza, A. M. Batista, Jose Manoel Balthazar, R. M. L. R. F. Brasil, C. Oliveira, and M. Varanis	
Nonlinear Control of Rotating Flexible Structures Considering Aerodynamic Effects and Non-ideal Interactions	263
André Fenili	
Control of the Dynamics of Mechanical Structures Supporting DC Motors with Limited Power Supply	311
A. A. Nanha Djanan, B. R. Nana Nbendjo, and P. Woafô	
Dynamic Analysis and PID Control of a Double Pendulum Arm Excited by a Nonideal Source	343
A. M. Tusset, P. L. Paula Filho, V. Piccirillo, G. G. Lenzi, Jose Manoel Balthazar, C. Oliveira, and M. Varanis	
Fractional Dynamics of Harvester with Nonideal Source Excitation	357
M. A. Ribeiro, W. B. Lenz, A. M. Tusset, Jose Manoel Balthazar, C. Oliveira, and M. Varanis	
Piezoelectric Energy Harvesting from a Non-ideal Portal Frame System Including Shape Memory Alloy Effect	369
A. M. Tusset, V. Piccirillo, I. Iliuk, G. G. Lenzi, M. E. K. Fuziki, Jose Manoel Balthazar, G. Litak, and D. Bernardini	

LQR Optimal Control Applied in an Energy Harvesting System with Non-ideal Excitation Operating with Uncertain Parameters	381
Estevão Fuzaro de Almeida and Fábio Roberto Chavarette	
A Hybrid PID-LQR Control Applied in Positioning Control of Robotic Manipulators Subject to Excitation from Non-ideal Sources	393
A. M. Tusset, J. J. De Lima, F. C. Janzen, P. L. Paula Filho, J. A. G. Luz Junior, Jose Manoel Balthazar, and A. Kossoski	