

Acoustics & Vibration of Mechanical Structures

Selected, peer reviewed papers from the XII-th International Symposium Acoustics & Vibration of Mechanical Structures (AVMS 2013), May 23-24, 2013, Timisoara, Romania

von

Nicolae Herisanu, Vasile Marinca

1. Auflage

[Acoustics & Vibration of Mechanical Structures – Herisanu / Marinca](#)

schnell und portofrei erhältlich bei beck-shop.de DIE FACHBUCHHANDLUNG

Thematische Gliederung:

[Statik, Dynamik, Kinetik, Kinematik](#)

Trans Tech Publications 2014

Verlag C.H. Beck im Internet:

www.beck.de

ISBN 978 3 03785 877 6

Table of Contents

Preface and Committees

Chapter 1: Analytical Approaches to Nonlinear Vibrations

On the Van Der Pol Oscillator: an Overview L. Cveticanin	3
Nonlinear Oscillators with a Power-Form Restoring Force: Non-Isochronous and Isochronous Case I. Kovacic	14
Approximate Solutions to a Cantilever Beam Using Optimal Homotopy Asymptotic Method V. Marinca, N. Herişanu and T. Marinca	22
Optimal Homotopy Asymptotic Approach to Self-Excited Vibrations N. Herişanu and V. Marinca	27
Physical Instability and Functional Uncertainties of the Dynamic Systems in Resonance P. Bratu	32
Approximate Analytical Solutions to Nonlinear Vibrations of a Thin Elastic Plate R.D. Ene, V. Marinca and B. Marinca	40
The Study of the Pendulum with Heavy Neo-Hookean Rod N.D. Stanescu and D. Popa	45
The Vibrations of the Engine with Neo-Hookean Suspension N.D. Stanescu and D. Popa	53

Chapter 2: Damage Assessment of Structures

Multiple Fault Identification Using Vibration Signal Analysis and Artificial Intelligence Methods N. Zuber, D. Cvetkovic and R. Bajrić	63
Rolling Element Bearings Fault Identification in Rotating Machines, Existing Methods of Vibration Signal Processing Techniques and Practical Considerations N. Zuber and D. Cvetkovic	70
Recent Advances in Vibration Signal Processing Techniques for Gear Fault Detection-A Review R. Bajrić, N. Zuber and S. Isić	78
Methods of Interpreting the Results of Vibration Measurements to Locate Damages in Beams P.F. Minda, Z.I. Praisach, A.A. Minda and G.R. Gillich	84
Evaluation of Crack Depth in Beams for Known Damage Location Based on Vibration Modes Analysis Z.I. Praisach, G.R. Gillich, C. Protocsil and F. Muntean	90
Assessment of Corrosion Damages with Important Loss of Mass and Influences on the Natural Frequencies of Bending Vibration Modes G.R. Gillich, Z.I. Praisach, D. Bobos and C. Hatiegan	95
Vibration Tests for Determination of Longitudinal Elasticity Modulus and Shear Modulus of some Structures Welded with Tubular Wire R. Moisa, T. Medgyesi, L. Bereteu, G. Drăgănescu, D. Simoiu and M. Sava	101
Monitoring the Behaviour of Fireworks to Vibrations and the Establishment of the Mechanical Conditioning Influence E. Gheorghiosu, E. Ghicioi, A. Kovacs, C. Jitea, S. Ilici and C. Cioara	108
Acoustical Methods Used in the Study of Concrete Durability E. Jebelean, C. Badea, L. Iures, C. Jiva and I. Borza	113
Testing of Level of Vibration and Parameters of Bearings in Industrial Fan D. Jovanovic, N. Zivkovic, M. Raos, L. Zivkovic, M. Jovanovic and M. Praščević	118

Chapter 3: Modeling and Simulation Techniques with Applications

Influence of Heavy Data Transmission Losses on Spectra of Signals Z. Soskic, J. Tomić, N. Bogojević and S. Ćirić Kostić	125
Compensations of the Discontinuous Nonlinearities in the Independent Joints Control of an Articulated Robot D. Receanu	135
Modeling and Testing of a New Dynamic Balancing System Based on Magnetic Interaction C. Ilie, D.C. Comeaga and O.G. Donțu	143
Analytic-Experimental Method for Determining the Eccentricity of a Cantilever Rotor A. Costache, A. Craifaleanu and N. Orășanu	148
Study on Vibration Transmission, with Application to the Calibration of a Measuring Stand A. Craifaleanu, C. Dragomirescu, N. Orășanu and A. Costache	153
Vibrations Modeling and Simulation Using Stochastic Bondsim Elements B.M. Zlatkovic and B. Samardzic	158
Considerations on Kinematics and Dynamics of Gravitational Separators with Non-Balanced Eccentric Masses Used for Cereal Seeds Cleaning C. Bracacescu, I. Pirna and S. Popescu	165
Impact of a Kinematic Link with MATLAB and SolidWorks J. Ragan and D.B. Marghitu	170
Active Synthesis of Machine Drive Systems T. Dzitkowski and A. Dymarek	178
Random Excitation of a Car Component from the Road R. Curtean and I. Lupea	184
Study of a Half Car Suspension Model R. Nagy and K. Menyhardt	191
An Analysis of Forced Vibrations to Railway Vehicles E. Ghita and L. Bucur	195

Chapter 4: Biomechanics

Particularities of Upper Limb Movements of Healthy and Pathologic Subjects M. Toth-Tașcău, F. Balanean and D.I. Stoia	203
Plantar Pressure Improvement after Correction of Hallux Valgus Condition — Static and Dynamic Approach D.I. Stoia, M. Toth-Tașcău, O. Pasca and C. Vigaru	208
The Internal Fixator Principle Applied to Proximal Tibial Fractures - An Early Gait Analysis Study D. Crisan, D.I. Stoia, R. Prejbeanu, D. Vermeșan and H. Haragus	213
Biomechanical Modeling of Human Finger P.L. Radu	217
Mechanical Properties of Hydroxyapatite Doped with Magnesium, Used in Bone Implants O. Suciu, T. Ioanovici and L. Bereteu	222
Dynamic Analysis of a Lower Limb Prosthesis L. Rusu, M. Toth-Tașcău and C. Toader-Pasti	230

Chapter 5: Environmental and Occupational Noise and Vibrations

Application of the Prediction Model "SCHALL 03" for Railway Noise Calculation in Serbia M. Prašćević, A. Gajicki, D. Mihajlov, N. Zivkovic and L. Zivkovic	237
Acoustic Zoning and Noise Assessment M. Prašćević, D. Mihajlov, D. Cvetkovic, A. Gajicki and N. Holecek	244
Noise Control in an Industrial Hall V. Bacria and N. Herișanu	251

Some Effects of Rubberized Asphalt on Decreasing the Phonic Pollution N. Herișanu and V. Bacria	257
Noise Source Monitoring in Industrial and Residential Mixed Areas R. Nagy, D. Simoiu, K. Menyhardt and L. Bereteu	262
Analysis of the Sound Power Level Emitted by Portable Electric Generators (Outdoor Powered Equipment) Depending on Location and Measuring Surface E. Postelnicu, V. Vladut, C. Sorica, P. Cardei and I. Grigore	266
Model for Forecasting the Exposure Risk of Workers to Hand-Arm Occupational Vibrations G.D. Vasilescu, E. Ghicioi, S. Simion and V. Pasculescu	276
Exposure of Workers to Noise in Mining Industry S. Simion, C. Vreme, M. Kovacs and L. Toth	281
Experimental Research and Modeling of the Underwater Sound in Marine Environment D. Arsene, C. Borda, L. Butu, M. Marinescu, V. Popovici and M. Arsene	285
Influence of Vibrations on Grain Harvesters Operator V. Vladut, S. Biris, S.T. Bungescu and N. Herișanu	290
Troubleshooting Technics to Identify the Airborne and Structure-Borne Noise Content inside an Electric Vehicle M.C. Morariu, I. Lupea and C. Anderson	297

Chapte 6: Structural Vibration, Attenuators and Isolation

Corrective Analysis of the Parametric Values from Dynamic Testing on Stand of the Antiseismic Elastomeric Isolators in Correlation with the Real Structural Supporting Layout P. Bratu	305
Modification of the Dual Kelvin-Voigt/Maxwell Rheological Behavior for Antiseismic Hydraulic Dampers P. Bratu	312
Analysis of the Dynamic Behavior of the Antiseismic Elastomeric Isolators Based on the Evaluation of the Internal Dissipated Energy C. Alexandru	317
Experimental Evaluation of the Hysteretic Damping of Elastomeric Systems at Low-Cyclic Harmonic Kinematic Displacements V. Ovidiu	323
Experimental Evaluation of the Damping Variation of an Elastomeric Device Harmonically Excited V. Ovidiu	329
Calibration of the Ground Motion Model Using a Simplified Stochastic Model in the Case of the Central Exhibition Pavilion ROMEXPO P. Murzea	335
The Computer Aided Passive Reduction of Vibration to Desired Vibration Amplitude A. Dymarek and T. Dzitkowski	342
Theoretical and Experimental Studies on Magnetic Dampers N. Orășanu, A. Craifaleanu and C. Dragomirescu	351
Some Models of Elastomeric Seismic Isolation Devices V. Iancu, G.R. Gillich, C.M. Iavornic and N. Gillich	356
Influence of Hysteretic Behavior on Seismic Strength Demands: An Analysis for Romanian Vrancea Earthquakes I.G. Craifaleanu	362
Strength Reduction Factors: A Unified Analytic Expression for Narrowband and Broadband Ground Motion Records I.G. Craifaleanu	367