ISBN(softcover): 978-3-03785-389-4 ISBN(eBook): 978-3-03813-735-1

Table of Contents

Preface, Committees and Reviewers

Chapter 1: Advanced Intelligent Structure

Thermal Analysis and Cooling Optimization of the Built-In Micro Projector
W. Wei, P. Yang, Q.H. He and Q.L. Chen 3

The Oxygen-Ion Diffusion and Phase Transition in the $La_2Mo_{2-x}W_xO_9$ Samples Measured by Internal Friction Method
D. Li and X.H. Li 8

Research and Analysis on Electrolytic Preparation of High Purity Potassium High-Speed Rail Technology
D.M. Sun 12

A Simplified Method for Calculating Ultimate Strength of Pressure Hull in Deep-Sea Manned Submersible
L.H. Yuan, Z.X. Xiong, L. Song and Z.H. Dong 17

A Novel Approach of Multiscale Feature Extraction for Gearbox Condition Monitoring
W.G. Huang, Z.K. Zhu, C. Li and P. Li 25

Vibration Suppression of Flexible Parallel Manipulator Based on Sliding Mode Control with Reaching Law
J.F. Hu, X.F. Cui and P. Li 30

Dynamic Characteristics Analysis for Fluid-Solid Coupling of Vertical Lifting Pipe in Transporting Coarse Particles
Z.J. Zhou, Z. Wang, H. Lu and Y.M. Xia 35

Analysis of Loads at Crankshaft Bearing for Scroll Compressor
C. Li, Y. Yu and M. Zhao 42

A Way to Improve Eddy Current Sensor Measurement Accuracy
E.M. Miao, Y.Y. Gong, T.J. Cheng and P.C. Niu 47

An Obstacle Recognition Method Based on Improved PSO-WNN for Deicing Robot on Voltage Transmission Line
S.W. Zhang, W. Sun and S.Y. Miao 53

An Approximate Algorithm for Shakedown on Gear Contact
Y. Yuan, K. Shi and K. Liu 59

Self-Vibration Characteristics of Plane Gate in Inverted Siphon Project
H.F. Xue and Y. Wang 64

The Stress Analysis of Pressurized Cylindrical Shell with a Surface Crack under Laser Irradiation
L.P. Du, H. Wang and Y.X. Tong 69

Chapter 2: Bio-Inspired Smart Materials and Applications

Experimental Study of Kick up Phenomenon in Thermosonic Wire-Bonding
J.J. Tian and L. Han 77

Research Development and Application of Green Cutting Technology
Y. Liu, X.J. Li and P.X. Qu 82

Nonlinear Seismic Response Analysis of Concrete Perforated Brick Masonry Building
W.J. Yang, M.S. Duan and M.J. Yin 87

Transportation of Droplets within Two Substrates by Help of Surface Acoustic Wave
A.L. Zhang and Y. Zha 92

Influences of Heat Treatment on Spinning Process with Large Thinning Rate and Performance of 30CrMnSiA
D. Han, H. Yang, M. Zhan, M.Y. Yang, S.Z. Mou and T. Li 97

The DNA Genetic Algorithm Applied for Solving Optimal Placement of Sensors
X. Liu, Z.R. Feng, X.J. Wang and B.F. Wang 103

Research on an Improved Cellular Automata Model
H. Wang, Y.Q. Liu and L.H. Zhou 109

Control Algorithm Research of Electric Actuator Based on Switched Reluctance Motor
J. Gao, H.X. Sun, B. Gao and L. He 115

Study on Structure Including Interface Based on Interface Stress Element Method
K. Shi, Y. Yuan, L. Song and F.T. Wei 120

A Probability Assessment Method for Degradation of Bridge Power MOSFET Circuit Based on Common Turn-On State
X.F. Wang, G.C. Fu, C. Gao and J.Y. Yao 125

Determining the Soil Water Characteristic Curve in Term of Van Genuchten Parameters by the Particle Swarm Optimization
X. Yang, X.Y. You and M. Ji 130

A Novel Peak-Seek Algorithm Used in FBG Sensor Demodulation System for Vibration Monitoring
L.J. Cai, Z.Y. Li, Z.H. Tang, W. Meng and Q. Liu 135

Nonlinear Vibration Analysis of Viscoelastic Isolator
C. Zhou and C.M. Zhong 140

Automatic Recognition of Aircraft Noise with PLP Method
J.L. Ding and Y. Yang 145

Test Analysis on the Model of Expression Based on the Thematical Statistic Method
J.H. Yu 150

Research on Suppression Technology of OFDM Peak-to-Average Power Ratio
X.L. Zhu 154

Reduction Algorithms for Multi-Covering Information System
S.P. Zhang and T. Feng 159

Development and Application of Four Typical Rapid Prototyping Technologies
X.L. Yang, D. Wang and D.M. Yu 165

Hydromechatronics Simulation Based on Proe/Adams/Matlab for Crane
C. Qin, X.Q. Zhai, S.L. Shi and Z.G. Wang 170

Band Gaps of Lamb Waves Propagating in One-Dimensional Different Quasi-Periodic Composite Thin Plates
J. Gao, M. Zhao, Y.Z. Xie and X.G. Zhang 175

Research of Robot of Obstacle Avoidance and Navigation
X.C. Lai, S.M. Lu, X. Chen, P.F. Qiu and L.K. Li 180

Computer Simulation Analysis for Material Mechanics
Z.Y. Wang, X.J. Li and D.M. Yu 185

Research on Life Cycle Engineering Based on the Onstraint-Satisfaction Method
D.Q. Zhou 190

The Lifetime Model of the One-Unit-System with Two Kinds of Wear-Out
C.W. Zhang and W.R. Lin 195

Shakedown on Thermal Barrier Coating and Simply Analytic Model
Y. Yuan, K. Liu and K. Shi 200

Rolling Disk Model and its Application to Tool Path and Envelope Generation for Profile Machining
Y.F. Rao, G.L. Zheng, B.R. Du and H.Z. Chu 206

Fabrication of Paper-Based Device Using Printing Circuit Technology
A.L. Zhang and Y. Zha 211

Research on Application of Nano-TiO_2 in Automotive Coating
P.J. Cao, H.D. Wu and J.L. Dong 216

A New Delay-Based Congestion Control for Ad-Hoc Wireless Network
C. Yuan and Y.Q. Li 223

Chapter 3: Active Materials, Mechanics and Behavior

Displacement Amplification Analysis for Parallel Four-Bar Mechanism
X.F. Yang, W. Li and Y.F. Liu 229

The Research of Integration Technology of Heterogeneous Data Sources on Campus
X.X. Liang 234

Rain-Wind-Induced Vibration Control for Long Span Transmission Tower
L. Tian, S. Jin and Z.L. Wang 240

Analysis on Buckling Restrained Brace Used for a Steel Structure Damping
P. Wang 245

The Dynamic Response Analysis for Frame Structure in Consideration of Soil Structure Interaction under Explosive Load
Z.P. Kuang, Q.H. Yang, L. Xie and H. Xu 251

Active Transient Vibration Control Using a Novel Repetitive Algorithm
Y.L. Zhou, Y.X. Yin, Q.Z. Zhang and W.S. Gan 258

Analysis of Nonlinear Seismic Response and Stability for Tunnel Portal Slope
Y.S. Li and T.B. Li 263

The Rotor System Balance Design of Scroll Fluid Machinery
M. Zhao, S.R. Yu, C. Li and Y. Yu 268

The Trend of Reconfigurable Pin-Type Fixture with Vacuum Suction Cups
H.S. Zhang 273

Modeling and Simulation of 8/6 SRM Control System
L. He, J. Bai, H.X. Sun and J. Gao 277

The Brief Analysis of Digital Modeling Techniques in Architecture and Related Fields
X.J. Liu and Y. Zou 282

IGA-Based User Evaluation Driven Optimization Design of Forklift Styling
C.F. Lu, Y. Li, X.J. Liu and H.H. Ren 287

Vibration Analysis of a Stepped Beam by Using Adomian Decomposition Method
Q.B. Mao, Y.P. Nie and W. Zhang 292

Research on Information Security Algorithm of Wireless Communication System
C. Chen 297

Study of Aerodynamic Interactions of Dual Flapping Airfoils in Tandem Configurations
B.L. Zhu, H.P. Wu and T.H. Xiao 301

Damage Diagnosis in Self-Compacting Concrete Beams Base on Eigenfrequencies and Mode Shape Derivatives
R. Zhang, Z.F. Chen, Y.C. Gan and Q.W. Tao 307

Application of SVM in Predicting the Strength of Cement Stabilized Soil
X.C. Shi, Q.X. Liu and X.J. Lv 313

Intermittent Faults Diagnosis in Wireless Sensor Networks
Y.Q. Sun and H.L. Feng 318

An Improved Edge Antialiasing Method for 3D Graphics Pipeline
F.F. Zhou and Y. Sun 323

Projective Synchronization for Brushless DC Motor (BLDCM) with Fractional-Order
S.H. Huang 327

Response of Shallow-Buried Circular Lining Tunnel to Incident PWave
Y.S. Li, T.B. Li and X. Zhang 331

Online Test Technology for Reversible Circuits
J. Hu and D.Z. Wen 337

An Ideal Schema Design of an Industrialized PL-ISEE Database Platform
J.L. Dong 341

Research on Selection and Matching Optimization of Automobile Drive Train
G.H. Zhang 346

Modeling and Simulation of Aligning Process for Alignment Mechanism of Large Aircraft Component
Z. Ying and Y.L. Ke 351

Dynamic Analysis of Planetary Mechanism for the Cutting Part of Coal Shearer
W.D. Wu, H.L. Li and H.R. Xue 356

Research Status of Several Key Technologies for the Development of Electric Vehicles
H. Zhao, G.F. Li, N.H. Wang, S.L. Zheng, L.J. Yu and Y. Gao 361

Investigation into the Noise Characteristics Based on Rotating Instabilities Mechanism in a Multi-Stage Axial Compressor
Y.D. Sha, X.Z. Cui, F.T. Zhao and X.C. Luan 366

Order Decision by Difference Method for Least Square in Trend Fitting
Y.H. Dong and X.M. Zhou 373

Analysis of the Residual Stress in Multi-Layer Materials
K. Shi, Y. Yuan and F.T. Wei 377

Structural Design and Model Establishment of Reducer Device
H. Guo, Z.H. Gao, X.J. Li and P.X. Qu 381

Simulated High-Pile Dock Construction on the Impact of Coastal Erosion Based on Theoretical Models and Dou Theory - A Case of Suanshan Dock
D.Y. Luo, L. Huang and X. Gao 386

Ionic Conductivities and Phase Transition of $La_2Mo_{2-x}Al_xO_{9-\delta}$
X.H. Li and D. Li 391

Ambiguity-Function-Based Methods for Near-Field Source Localization
X. Sun, H. Jiang and B. Wang 395

Image Compression Technology Based on the Analysis Theory of Wavelet
H. Guo and J. He 400

Study on the Indiscrete Tuned Mass Damper for Buffeting Control of Long Span Cable-Stayed Bridges
X.J. Wang, J.Y. Xu and J. Chen 405