Computer-Aided Design, Manufacturing, Modeling and Simulation II

Selected, peer reviewed papers from the 2nd International Conference on Computer-Aided Design, Manufacturing, Modeling and Simulation (CDMMS 2012)

Applied Mechanics and Materials Volumes 246-247

Chongqing, China
21-23 September 2012

Volume 1 of 2

Editors:

Fangyin Cheng **Yan Ma**

ISBN: 978-1-62276-793-9
ISSN: 1660-9336

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by Trans Tech Publications Ltd.
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact Trans Tech Publications Ltd.
at the address below.

Trans Tech Publications Ltd.
Laubisrutisr 24
CH-8712 Stafa-Zuerich
Switzerland

Fax: +41 (44) 922 10 33 Fax: +1 (603) 632-5611
e-mail: sales@ttp.net

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

Preface, Committees and Reviewers

Chapter 1: Mechanical Engineering, Analysis and Applications

The Performance of Steel Beams in the High Temperature
X.Y. Yang, Q. Qin and Y.Y. Cui 3

The Development of a New Drum Washing Machine with Universal Motor
C.H. Huang and M. Li 7

Contact Fatigue Analysis of Mine Helical Cylindrical Gear Based on ANSYS Workbench
X.Y. Li, C.C. Li, B.B. Huang and S.S. Li 12

Optimization Analysis of Exhaust Muffler for a Hybrid Car by GT-Power
Z.D. Liu, Y. Guo, L. Chen and Y. Gao 17

Research of Intelligent Localization of Target for Manipulator Based on the Monocular Vision
Z. Zhang, X.W. Liu and G.Y. Yang 22

Interference Uniformity Analysis Based on the Clearance between the Hole and Rivet
K. Liang, L.P. Jiang, H.Y. Wei, W.L. Chen, H.Y. Jiang, R.W. Xu, Y.B. Wang and L. Yu 28

Development of New Enerfy-Saving Apparatus on Domestic Gas-Cooker
L. Liu, L.Y. Zhao and Z.X. Tian 33

Study on Mechanical Fault Diagnosis Based on IMF Complexity Feature and Support Vector Machine
W.D. Liu and H.S. Wu 37

A Study on Performance and Emissions of a DI Diesel Engine Using Oxidation of Diesel Additive Blends
Q. Li, Y.F. Liu and X.Y. Xu 43

Fatigue Analysis of Band Sintering Machine Trolley Grate Bars
Y.P. Wei, C.L. Hu and X.J. Liu 47

Vehicle Horizontal Hollow Stabilizer Bar's Stiffness Calculation and Fatigue Life Prediction
K. Huang, H. Cao, J.W. Li and Z.F. Zhang 52

A Basic Analysis of the Application on Linux and μC/O Dual-Core Embedded Operating System in Engineering Practice
L. Li, C.J. Shan, J. Luo and N. Xu 57

Study on the Lifting Weight Detection of Tower Crane
J. Shang 62

Analysis the Results of TOFD Inspection in Butt Joint Welds
P.L. Zhang, J. Dong and L. Cao 66

Analysis on the Contact Interaction between Thresher and Corn Ears Based on the DEM
Y.J. Yu, J.Y. Yu, Q.L. Li, J.Q. Yu and H. Fu 71

Analysis of Split Torque Transmission System Load Sharing
R.F. Wang, N. Zhao, Q.J. Jia and L. Tao 78

Optimization of Hybrid Turbocharger Applied on Common Rail Diesel Engine with Exhaust Gas Recirculation
F. Tian, G.F. Ren, B. Yan, G.Q. Ao and L. Yang 84

In-Depth Analysis of Bocce Backhand Throw and Hitting Technology Based on Mechanics Mechanism
Q.Y. Shi 89

Analysis on High Jump Technique Based on the Movement Mechanics Analysis Method
S.F. Yang, P. Pu and Y. Cui 94

The Study of the Rotor Dynamic Balance Caculation for Engine
Y.H. Jiao and Z.G. Ren 99

Analysis on Hybrid Effects of Parallel Pneumatic Hybrid Vehicle
P.L. Chen and J. Xu 103

Fatigue Life Prediction of Vehicle Transmission Shaft Assembly without Intermediate Support
K. Huang, J.W. Li, H. Cao and T.H. Industries 108

Study on the Influence of Pitch Diameter Ratio on Contact Mechanics Parameters between the ACSR Strand
H.L. Wu, H. Ding, C.L. Zhu and H. Dou 113

First-Order Proportional Modification Parameters for Spiral Bevel Gears Manufactured by Spread Blade Method
S.Q. Yu, Z.Y. Wang and J. Tang 118

Analysis on Fatigue for Aircraft Riveting Thin-Walled Components
W.L. Chen, Y. Yang, H.Y. Wei, H.Y. Jiang, Z.X. Huang, Y.B. Wang and L. Yu 122

Study on Influence of Nozzle Structure on Flow in Diesel Nozzle Orifice
B. Li, X.S. Hu, X.F. Cao, G.Q. Jia, F.X. Xie and W. Hong 127

Seismic Response Analysis of Long Span Cable-Stayed Bridge under Non-Uniform Excitation
B.F. Wang, Z.R. Feng, X.J. Wang and B.B. Chen 131

Research of Global Boundary Optimization for Automobile Engine
L.F. Kong, D.Q. Liao and X.B. Liu 136

Study on the Basic Configurations of Crank-Group Driving Mechanism
J.J. Cao and Y.Q. Wang 141

42CrMo Hard Surface Gear Intensity Tests and Modified Parameter Correction
N.G. Li, N. Xu, N.J. Zhang and M.G. Zhu 145

Study on Making of the Motor Test Cycle and Evaluation Criterion of Hybrid Electric Vehicle
J. Wen, L. Chu, J.N. Wang, J.K. Yin and Y.B. Wang 149

Motor Parameters Matching Based on Motor Loss Model and the Actual Drive Cycle of Hybrid Electric Vehicle
J. Wen, L. Chu, J.N. Wang, J.K. Yin and Y.B. Wang 154

Weaken Polygon Effect and Improve Chain Drive Performance
X.H. Zhu and J.M. Huang 159

Improved Genetic Optimization of Electric Motorcycle Planetary Transmission
P.L. Yu and W. Yong 164

Experimental Study of the Influence of Impact Mass on Damping Performance of Impact Dampers
Y. Zhu, S.S. Zhu, W.Q. Liu and S.T. Hu 169

Chapter 2: Devices and Instruments for Detection, Monitoring and Measuring

A Frequency Measuring Method with Photoelectric Coupling Apparatus
Y.Q. Ren, G.L. Dai, L. Zhang, X.X. Ma and T. Liu 175

Adaboost-Gaze Based Multi-Stage Object Tracking
Y.B. Yang, J.J. Gu, X.Y. Zhang and Z. Liu 179

MMW Radiometric Image Feature Extraction Method of Concealed Objects Based on Watershed Algorithm
Q. Wang and G.F. Zhang 184

Structure Analysis of FTIR Infrared Spectrometer Based on ANSYS/Workbench
Z.M. Chen, G.T. He, J.M. He, Z.Y. Xu, Y.C. Lin and S.X. He 189

Noninvasive Heart Rate Variability Detection Device for Fatigue Driving Detection System
N. Ye, Y.G. Sun and D. Yang 194

A Real-Time Microseismic Monitoring System Based on Virtual Instruments
J.L. Cai, W. Yu and F.P. An 199

Study on a Rotary Self-Check Phase Unwrapping Algorithm
G.T. He, Y.C. Ran, L. Song and Z.X. Wang 204

Visual Saliency Detection Based on Deredundancy and Global Contrast
H. Shen, X.D. Miao and Y.S. Tan 208

High Resolution Retinal Imaging Based on Ocular Aberration Measurement and Compensation
C. Liang, J.X. Shen and S.S. Niu 213

Study on Image Detection Method of Navigation Route for Cotton Harvester
J.B. Li, B.Q. Chen, Y. Liu and T. Zha 219

Study on Detection Technique of Complex Profile for High Speed Cutting
S.C. Li, R.Q. He, J.M. Huang and F. He 225

The Design and Realization of a Spectrum Acquisition Unit Based on the MSP430F149 MCU
J.J. Song, B. Ren and L. Song 230

Detection for Weak Navigation Line for Wheat Planter Based on Machine Vision
Y. Liu and B.Q. Chen 235

Design and Simulation of a Novel Micro-Mixer for Detecting Cell Status in Bio-Artificial Liver
Y. Cao, C.Z. Wu, X.L. Huo and M. Li 241

On the Automatic Equipments and Network Controls in Electric Power Communication
Z.P. Li 246

Quality Disturbance Recognition Based on the Generalized-S Transform
B. Liu and X. Wang 251

Simulation of the Space Turntable Angular Velocity Measurement
K. Cui, Z.H. Liu, Z.G. Li, H. Yuan and D.S. Liang 257

Research on the Power-Frequency Electric Field Measuring System Based on GPRS
X.Y. Zhu, Y. Xu, T.B. Jin, J.H. Wu and H.W. Hu 262

Real-Time Multiple Points Tracking and Localization Using Wide Angle Cameras for Indoor Flying Robot
G.T. Yang, S. Wang, T. Liu, C. Liu and H. Wu 268

Experimental Characterization of APD and Design of Quenching Circuit for Single-Photon Detection
H. Lü 273

Quantity Detection of Kernels in an Ear Corn Based on Machine Vision
C.Q. Liu, B.Q. Chen, Y. Liu and T. Zha 279

Online Browsing Service of Scenic Based on 3G Wireless Video Network System
F.Q. Hou, W.Z. Zeng and A.K. Kan 286

Pressure Information of Bridges Collection System Based on the IoT
L. Zhao, J.S. Ma, F.Y. Liu and Z.K. Chen 291

The Reflection of Measuring Method about the Volume of Coagulation-Water in the Compress-Air Bottle
J. Zhao and Z.L. Zhao 296

Chapter 3: Virtual and Computer Design, Modeling and Simulation Technology

The Modeling of Dust Bulk behind Shock Wave
B. Zheng 303

The E-Supply Chain Management Solutions for the Automobile Marketing
J.W. Hai 307

Subspace-Based Indirect Adaptive State-Space Model Predictive Control
X.S. Luo 311

Research on Simulation for the Mechanism of Knowledge Potential Difference between Enterprises in the Industrial Cluster on Knowledge Transfer
M.H. Han 317

The Study on Automobile Engine Visual Simulation Based on Vega Prime
K. Liu, W.W. Ren, Y. Dong, X.T. Han and Y. Lin 322

Numerical Simulation and Calculation of Freezing Time of Soil
Y.H. Jiao and Z.G. Ren 327

Task Allocation of Multi-Robot Systems Based on a Novel Explosive Immune Evolutionary Algorithm
M.X. Yuan, Y.F. Jiang, Y. Shen, Z.L. Ye and Q. Wang 331

Grid Generation and Airwake Simulation on Ship
C.M. Liu and Y. Gao 336

Robust Process Design for Continuous Casting Based on Numerical Simulation and Experimental Study
S.L. Zuo 341

Channel Modelling for WBANs
Y.H. Yang 346

Based on the PRO-E Embedded a Type Plastic Mould Modeling Analysis
Y.M. Liu 351

Flow Field Numerical Simulation on a Continuous Powder Surface Modifying Machine for Non-Metallic Material
C.P. Wu, S.L. Zheng and J.J. Luo 355

Effect of Building Materials on Numerical Simulation of the District Heating within the Typical Building in Beijing
F. Feng, X. Li, D.P. Ding and Z. Xie 360

Analysis of Numerical Simulation and Engineering Examples of Drawing-Bulging Forming Parts
K. Chen, C.Y. Peng and H. Liu 365

Slope Displacement Prediction Model Based on LMD and BP Neural Network
W. Yu, J.L. Cai and F.P. An 370

Design of a Multi-Core System for Cipher Processing Base on NoC
X.N. Li, Z.B. Dai, Y.Y. Zheng, X.H. Wu and Z.H. Wu 377

Modeling File Distribution Process and Simulation Influencing Factors in P2P Networks
B.G. Chen and J.L. Hu 381

Resolution of DWG Files Based on Dwgdirect and 3D Modeling
D. Zhao, C.W. Pan and H.Y. Li 385

Decoupling IPv7 from Replication in Link-Level Acknowledgements
Y.H. Shen and H.Z. Hao 390

Simulation Based on OPNET and within IPv6 Real Source Address Authentication
Z.Y. Zhu 394

A Scheme on Fault-Tolerant Broadcasting for Directed Communication Network with Time Bounds
X.F. Zhu, L.J. Yang and F.Y. Zhou 398

Study of Three-Phase Full Bridge Spwm VSI
Z.W. Gai, S.S. Yan and A.Q. Wei 403

Research and Realization of Virtual Assembly Environment of Armored Vehicle Transmission Based on Dual-Channel Projection
F. Liu, Q.D. Yan and S.W. Yao 408

Design of Visual Light and Middle Infrared Zoom Optical System
Y.J. Du, M. Gao, W.J. Xin and Y.H. He 413

Research on MongoDB Design and Query Optimization in Vehicle Management Information System
Y. Zhao 418

Numerical Simulation and Improved Design of Inner Flow Field on Single Function Shower
J. Huang, J. Zhang, H.Z. He, M.F. Lu and X. Liu 423

The Study on Building Energy Conservation Technology Based on Four-Layer Neural Network
W.Z. Li 428

Combining a Radial Basis Function Neural Network with Improved Genetical Gorithm for Vulcanizing Process Parameter Optimization
S.L. Zuo 433

Chapter 4: Structure and Dynamics of Miscellaneous Systems

Discrete Interval-Valued Stress-Strength Interference Model Based on the Extended Universal Generating Function
H.X. Guo, X.B. Pang, X.F. Yang and L.Z. Cheng 441

Aerodynamic Design Investigation on Inlet-Exhaust System Using Super-Ellipse Method
Y.F. Li, Q.Z. Yang and X.J. Deng 446

Prediction of Braking Force under Ship-Tugboat Interaction
L.J. Yang, L. Rong, B.G. Hong and X.H. Wang 451

Effect of Unstable Motion on the Braking Performance of a Tugboat
L. Rong, L.J. Yang, J.H. Cui and X.H. Wang 456

The Effects of Different Support Forms on the Aerodynamic Characteristics of the High-Speed Train Model
B.Y. Li, X.Z. Shan and Z.G. Yang 461

Program Evaluation Model of Bridge Blasting of Engineer Corps Based on Intuitionist Fuzzy Sets and TOPSIS Method
C.X. Tian, C.Q. Fu, L. Zhou and J. Guo 466

The Impact of Irreducible Water on Stress-Sensitivity of Gas Reservoir Rocks
H. Xu, Z.P. Li and H.J. Hu 472

Research on Optimization of Kinematic Parameters of Pectoral Fin
Q. Liu and Z.C. Ji 476

Research on the Dynamic Characteristics of a Sphere Material
Y.C. Wang 482

Analysis on Rotating Dynamics of Tennis
Y.Q. Qian and Z.J. Qiu 487

Study on the Structural Dynamics of the Elevated Station in Rail Transportation
J.H. Mao 492

The Forecasting of Short-Term Wind Speed on Wind Farm Based on Phase Space Reconstruction and Neural Network
Y.Y. Su, F. Ma, H.Y. Zhang, Z.Q. Liao and P. Jun 496

Research and Application of Produduct Design & Manufacturing and MIS Integration for Automobile Generator
J.Q. Chen and D.H. Wan 501

Exergy Analysis of 330MW Thermal Power Unit
J.M. Yang, W. Wei and N.Z. Qi 505

Primary Study on the Model of Dispersal of the Thermobaric Explosive
B. Zheng and Z.F. Wang 509

The Unsteady Dynamic Analysis of Football during Rotation
J. Ma 514

Accurate Calculation of the Differential Cross Section of Compton Scattering in Quantum Electronic Dynamics
H.Y. Tang, J.W. Zhang, X.W. Chen and X.Y. Wang 519

Investigation into Attenuation of Underwater Shock Wave by Air Interlayer Using Material Point Method
W.D. Chen, W.M. Yang and X.K. Liu 527

Analysis on the Flutter Stability of Span Overpass
Y. Yang and H.Y. Li 532

Dynamics and Control of a Flexible Flapping Wing Aircraft
Z. Zhao, H.Y. Jiang, H. Chang and J. Guo 537

The Influence of Rotating Wheels on Vehicle Aerodynamics
T. Li, Q. Jia and Z.G. Yang 543

Chapter 5: Power, Energy and Environment Engineering

Decision of the Wind Power Projects Based on Cost-Efficient Method
H. Gao, W. Gao and G. Lu 551

Auction Methods of Homogeneous Goods such as Mine and Energy Material
C.J. Rao 556

Difference of Soil Nutrient between Topsoil and Subsoil and its Influencing Factors
X.B. Liu, X. Song, J. Chen and P.F. Liu 561

Heavy Metal Accumulation Characteristics of 3 Pioneer Plants in Wasteland of Coalmine Tailing in Mingshan
D.L. Liu, K.F. Wang and Q.H. Yang 566

Heavy Metal Pollution Analysis in Topsoil Based on BP and GA
X.F. Wang and H.K. Wang 571

Influence of Dust Emission on Xi'an Atmospheric Organochlorine Pesticide Pollution
B.H. Zhou, C.Z. Zhang and J.H. Gao 576

The Study on Ecological and Environmental Applications to Coastal Wetland Park Planning
L. Yu 581

Research on Settlement and Deformation Characteristics of Peat Soil Roadbed
Y.M. Han, Y.L. Liu and G.W. Che 586

Physical Properties and Main Controlling Factors of Low-Permeability Sandstone Gas Reservoir
Z.J. Li and S.Q. Li 592

Petroleum Contaminated Soil Remediation Using Six Wild Plant Species in the Yellow River Delta
H. Xu, W.J. Xie and Z.H. Lu 598

Research and Realization of Mineral Resources and Reserves Dynamic Calculation Module Based on MapGIS
J.K. Zhang, Q.H. Wu, W.R. Wu and S.Q. Chen 602

Study and Prevention on the Diffusion Rule of Dust Pollution in the Coal Mine Whole-Rock Fully Mechanized Workface
W.M. Cheng, W. Nie, G. Pan, S. Cao and X.H. Zhang 608

The Baer Depression Tuffaceous Sandstone Reservoir Characteristics and Logging Response Research Status, Problems
S.Y. Su, C.W. Zhang, H.F. Chen, Q.T. Zou and P.F. Li 614

Study of a Numerical Control DC Power
Z.L. Zhang, W.T. Han and J. Chen 619

Regularity of Dust Distributing in Fully Mechanized Caving Face and Negative Pressure Spray Dust-Settling Technology
W. Nie and W.M. Cheng 624

A Review of the Present Status of Hydraulic Accumulator
X.T. Ma 629

Progress in the Application of Refractory Dyeing Wastewater Treatment Processes
J. Yang 635

An Energy Efficient Power Control Model for Wireless Communication Systems
Y. Liu 640

Modeling of Automatic Power Output Prediction for Wind Mechanical Generator
L. Shi, Y. Zhuo and L.J. Kang 644

Research on the Effect of Rape Seed Germination Based on Environment Friendly Seed Coating Mixing Different Potassium Fertilizers
E.W. Wang 648

Total Amount Control of Pollutant and Allocation of Total Permitted Pollution Discharge Capacity
C.J. Rao, Q. Zhang and J.P. Gan 653

Chapter 6: Mechanical Design, Simulation, Modeling and Applications

A Realization Method for Wheel Cylinder Pressure Fine Regulation
Y.B. Wang, L. Chu, F.W. Qi, J.W. Cai and C. Chen 661

A Design of Intelligent Car Based on STC89S52 Single Chip Microcomputer
Y.Q. Wang and G. Wang 666

Design and Realization of Desktop Balance Reflection Ball System
G. Wang and Y.Q. Wang 671

Design and Simulation of the Inverter on Subway Based on DSP
P.B. Ren, S.S. Yan and H.W. Li 676

The Experiment Design and Research of a Special Liner Wear
L.G. Qu, J. Li and D.D. Su 682

Formation Flying Configuration Design for Highly Elliptical Orbit Satellites
X.K. Zhang, C. Yuan and X.J. Wu 687

Finit Element Analysis and Optimum Design of Time-Sharing 4WD Vehicle Main Reducer
F. Hu, L.Q. Chen, B. Qi and W.W. Chen 692

The Automatic Up-Down Material Manipulator Wrist 3d Design
B. Zhang 697

Three-Dimensional Design and Analysis of Multi-Spindle Drilling Device
Y.P. Chang and L. Duan 702

Application of 2^3 Factorial Design Experiments for Gas Tungsten Arc Welding Parameters on ASTM A36 Steel Welds
P. Peasura 707

4WID In-Wheel Motor EV Driving State Estimation Based on UKF
G. Li, C.F. Zong, Q. Zhang and W. Hong 712

The Effect of Different Multi-Point Initiation on the Formation and Penetration of Annular EFP
J. Liu and Z.H. Du 718

The Application of Graph Theory Method in the Problem of Traffic Patrol Police Service Platform's Site Selection
J.X. Meng and X.Z. Lu 723

Design of the Compact Ultra-Wide-Band Filter Based on Composite Right/Left Handed Transmission Line
W. Pan, G.X. Li, T.T. Li and S.L. Huang 728

An Analysis of Machanical Properties about the Fracture and Deformation Exiting in the Section of Round Steel with Software-SW/Simulation
S.K. Chen and R.F. Li 733

Turbo-Shaft Engine Model Compensation Based on LSSVR
F. Lu, Y.Q. Lv and W. Lin 738

Study of the Spatio-Temporal Data Model in Sea Battlefield
Y.L. Sun, L. Bao and Y.H. Peng 744

Simulation Solving Active Force and Passive Force of a 3UPU-II Type Spatial Parallel Manipulator
Y. Ye 749

Research and Design for Relief Valve with Level 2 Pressure Regulating Based on AMEsim
R.Y. Feng, H.L. Wang and Z.J. Hao 754

Design and Analysis on Pneumatic System of 2RZ-J200 Air-Suction Precision Seeder
J.Y. Luo, Q.G. Li, X.F. Wu, K.S. Xu, X.M. Cao and S.F. Li 759

Study on the Online Diagnosis System of Induction Motor with Broken Bar Fault Based on LabVIEW
X.W. Tan 765

Parametric Modeling of the Tooth-Surface of Spiral Bevel Gears with Spherical Involute
B.C. Wang, Z.J. Yang, Z.B. Hong, J.S. Liu and Y. Wang 772

Improved Fuselage Design for Crashworthiness
L. Peng, X.P. Wan and M.Y. Zhao 777

Design for Incline Impact Testing Machine
L. Cao and Y. Yuan 782

Mechanical Analysis of the Gear Based on the UG Parametric Modeling
L.M. Wu, Y.R. Wang, Y.Z. Li and F. Yang 786

Non-Linear Unstability Model and Analysis of the Engine Main Journal Bearing
K. Shao, C.W. Liu, F.R. Bi, X. Wang and J. Zhang 790

Chapter 7: Control, Automation and Sensors

SVPWM Control of Cascaded H-Bridge Multilevel Inverters
Z. Lu and J.X. Chen 797

Control Performance Analysis of SR S/G System Based on FEM
S.J. Song, M. Zhang, W.J. Liu and Z.X. Han 801

Collision Based Time Synchronization for Underwater Sensor Networks
Y. Guo and Y.T. Liu 806

The Application of CPLD in the Programmable Sample-Encoder of Telemetry System
Y. Wang and X.L. Zhang 811

A Gas Monitoring System Based on a Sensor Network
Q.R. Meng, C.W. Guo, J. Quan and Z.P. Hu 817

The Monitoring of the Belt Protection Switch Based on CANopen Protocal
M. Zong, J. Shi, Y.F. Zhou and Y.D. Sun 822

Dissipative Control of Singular Systems by Proportional Plus Derivative State Feedback
S.Y. Xing, X. Jing and Y. Cao 826

Research of the Control Strategy for Concurrency and Conflict of the CVM Based on the Predicted Retardation
Y.M. Wei, Q.H. Gao, Y. Long and X.Y. Li 832

The Brushless DC Motor Adaptive Fuzzy PID Servo Controller Design
G.S. Shi, L. Huang and W. Hu 838

Sliding Mode Control Scheme for Tele-Operation Manipulator
R. Tang 842

Direct Yaw-Moment Control through Optimal Control Allocation Method for Light Vehicle
B. Zhu, L.T. Guo, J. Zhao, F. Gao, Z. Pan and L.Q. Ren 847

Control Architecture and Control Laws Design for Multiple UAVs Formation Flight
G.L. Meng 853

The Research of Internal Control Evaluation Based on Fuzzy Comprehensive Evaluation Method
Z.H. Lin and T.T. Guo 858

Synchronization Control for an Uncertain Dynamical Network
H. Li, Z.T. Zhao and L.J. Li 862

One Approach for Direct Torque Control Switching Voltage Vector Selection
D.C. Wang, E.H. Liu and H. Lin 867

Overview of Fiber Optic Pipeline Monitoring Sensors
L.J. Li, R. Pan, W.H. Zhang and H. Li 872

Errors Control in NC Machining of Surface
R.Q. He, F. He, J.M. Huang and S.C. Li 877

Multi-Sensor Measurement Fusion via Decoupled Alpha-Beta-Gamma Filtering
L.W. Fong 882

The Research of Fuzzy-PID Control Based on Grey Predition for AUV
Q. Li, X.H. Shi and Z.Q. Kang 888

The Application of Fuzzy Control in the Foam Fire Extinguishing System
K.M. Lv, M.Y. Huo and F.Y. Li 893

Multi-Agent Based Modeling of Warship Combat Command and Control System
X.Z. Wang 898

Multi-Stage Health Diagnosis for Concrete Cable-Stayed Bridge Based on EWMA Control Chart
Z.B. Liang, M.L. Sheng and Y.R. Hu 903

Design of Goods Transport Control System Based on PLC
Y.L. Dong and H.H. Lan 908

Adaptive Control of Hybrid Electric Bus
B. Yan, Y.Q. Hu, S.M. Zhang, T. Yan and L. Yang 912

Quality Control System for Die Castings Based on Statistic Analysis
X.F. Ruan 918

The Quality Mode Control of New Air Conditioning Product-Service Systemdevelopment and its Application
H. Tian, Y. Yang, R. Miao and S. Wang 924

Lane Keeping Control of Vehicles with Tire Model
G. Tong, Q. Wang and X.X. Jin 929

An Intelligent Sliding Mode Control Scheme for Stabilized Platform of Rotary Steering Drilling Tool
Y.T. Zhang, T.F. Li and J. Yi 934

Chapter 8: Industry and Manufacturing Technology

Cognition on the Strategic Position of the Equipment Manufacturing Industry
H.Q. Rong 943

Fan Injecting Mold Design and CNC Process Based on Pro/Engineer
M. Lu 948

Study on DVR Based Fault Current Limiter
Y. Xu 952

Plastic Parts Die Design Analysis
Y.M. Liu 956

Mechanism Design of De-Icing Robot and its Auxiliary Equipment for High-Voltage Transmission Lines
Y. Zhang, J. Han, D.L. Zhu and F.Z. Ai 960

Research on the Technology of Order Change for Machine Manufacturing Enterprises Information
J.Q. Chen 966

Review on Airtight Fatigue Strength Research of the New Generation High-Speed Train
F. Qin, C. An, X.F. Gao and L.L. Zhang 970

Research and Application of Location Assignment and Routing Strategies in Block Storage Yard of Shipbuilding
N.R. Tao, X.F. Cui, Z.H. Jiang and Y. Chen 974

The Slipper Shoe Mounting Hole Calculation Method Limitation Analysis for Spherical Swashplate Type Axial Piston Pump
S.M. Su, C. Wang and Y.Q. Chen 979

Derivation of the Air-Fuel Ratio on the Mixing Burning Based on the Flow Series
P. Huo, Z.H. He and J.B. Jia 985

Dynamic Simulation of Concrete Pump Truck's Boom System Based on Rigid-Flexible Coupling Model
P. Yang, R. Wang, Y.H. Shao and P.M. Lv 989

Process Scheme Based NC Machining Chain Model for Aircraft Structural Parts
S.L. Chen, G.L. Zheng, B.R. Du and H.Z. Chu 994

Design and Research of Cam for Paper-Separation Mechanism
T.F. Xiong and C. Zhang 999

The Method Research of Auto-Generating Engineering Geology Histogram Based on MapGIS
L.X. Chen and L. Xu 1003

Experimental Evaluation of the Response Time of Magnetorheological Dampers Subjected to Impact Loading
L.J. Zhang, J.D. Chang and J. Wang 1007

A New Design of Signal Source for Crosstalk Test of Multi-Channel Data Acquisition System
Y.H. Shan, Y.F. Ren, G.Y. Zhen and X.Q. Jiao 1012

Experimental Study on PCB Micro Drilling Force
F. Gong, B.Q. Chen and J.B. Li 1017

Electromagnetic Compatibility Requirement of NC System-Research on Grounding Technology
L.L. Zheng and T.Y. Gao 1022

Research State of Combine Threshing Unit Monitoring System and Insufficiency and Emphasis in China
C.W. Zhang, C.Y. Wu and S.Z. Wang 1026

The Research of Heterogeneous CNC Machine Tool DNC Integration System Based on OPC Technology
M.Y. Ao and Y. Zhao 1031

Chapter 9: Electronic and Multifunctional Materials Technology

Study on Particle Breakage and Strength Characteristic of Different Coarse-Grain Contents
G.J. Wang, Y.T. Si and X.Y. Kong 1037

H-Shaped Electrically Resonant Terahertz Metamaterials
W. Pan, T.T. Li, G.X. Li and S.L. Huang 1042

New Route to Improve Thermal Property of Phenolic Resin
G.W. Cheng 1047

Study on Property of Fe_3Al Alloyed by Mn, Cr and V
Y.J. Wang, L. Liu and J.J. Wang 1052

Hydrogen Storage of Platinum Atoms Adsorbed on Graphene: First-Principles Plane Wave Calculations
Y.L. He and S.X. Wang 1057

Thermodynamic Performance of Ammonia Water Power Cycle (AWPC)
Y.L. Gong, C. Luo and W.B. Ma 1061

Research of Ceramic Raw Materials Classification Base on Multivariate Chart Method
Y.Z. Zhou, R.D. Ouyang, H.J. Wu and D.J. Kong 1066

Discussion on the Combination of the Modern Ceramic Art with Outdoor Environment
O.Y. Qi, O.Y. Tao and W.S. Liu 1071

Discussion on the Application of Computer Network in the Ceramic Industry
C.Q. Gao, Y. Gao and H.F. Gao 1075

Research on the Distribution of Resin Canals of *Cedrus deodara* Based on Wood Anatomy
B. Xu, T. Zhu and Z.H. Peng 1079

Mix Proportion Design of P (AA-co-MA)/PEG Polycarboxylic Copolymer and High Performance Concrete with Composite Admixture
B.F. Chen 1085

A Research on Magnetic Properties of Ferromagnetic Liquid γ–Fe_2O_3
A.R. Wang, H.Y. Huang and C.J. Shu 1091

The Research of Capacitance Characteristics of MRF
S. Wang, G.T. He, L. Song, Z.Y. Xu and Y.C. Ran 1096

Effect of Strain Rate on Mechanical Properties and Microstructures of Fe-23Mn-0.6C TWIP Steel
Y.L. Gao, S.Q. Yuan, Y. Lv, W. Chen and S.L. Hu 1102

Study on Mechanical Property of Sic Particulate Reinforced Magnesium Matrix Composites Prepared by Powder Metallurgy
J.X. Liu, Y.J. Zhou and X.Y. Zi 1106

The Study on Submersibles Magnetic Separation System
Y. Zhao and D.F. Cheng 1111

Explorative Study on the Application of Digital Interactive Technology in the Expression of Sculpture Shadow
Y.H. Wu 1117

Color Filter Based on Image ROI Extraction
S.H. Wang and J. Yin 1121

Feature Analysis of Advanced Radar Emitter Signals Based on Continuous Wavelet Transform
B. Zhu and W.D. Jin 1125

Test Unit Design of Magnetorheological Greases Conductivity Research Based on Labview
G.T. He, J.S. Chen, L. Song, Y. Ma, M. Li, Z.Y. Xu, D.S. Zhang and Y.C. Ran 1130

Molybdenum Mineralization Mapping Based on Hyperion Hyperspectral Image in Angou, China
G.X. Peng, F.R. Chen and Y. Pang 1135

Electrical Resistivity and Application of Cu_3N Thin Films
Y.Q. Ren, M. Liu, X.M. Yuan, T. Liu and N. Zhang 1140

Beam Width Performance of the Adaptive Beam Former Based on Pseudo-Interference Technique
Y. Chu, W.Y. Horng, S.F. Wang, Y.F. Chau and J.H. Wei 1144

Study of Siloxane Injection Technology on XLPE Cables for Water Tree Aging
F. Liu, P. Liu, L. Yang, K. Zhou and W. Zhao 1149

Design of LED Integrated Package Devices
Y. Jiang, Z.H. Xiong and Q. Xiang 1154

Effect of Aging Treatment on Damping Capacity in Mncunife Alloy
X. Fu, N. Li, Y.H. Wen, J. Teng and Y. Zhang 1158

Chapter 10: CAD for Systems and Simulation

The Application of an Improved Genetic Algorithm in the AUV Global Path Planning
Q. Li, X.H. Shi and Z.Q. Kang 1165

Motion Simulation and Optimization Study of Manipulator with 4-Dof Based on Hydraulic Driving
X. Tang 1170

Simulation Analysis of Coating at Uniform Velocity of Robotic Spray Gun
Y. Chen, K. Chen, H. Yan, L.Q. Wang and L.B. Zheng 1175

Instrument Landing System Error Analysis and Simulation of Calibration Flight
Y.H. Zhang 1181

Design of Substation Protection Device Based on IEC61850 MMS
J.H. Song, Y. Kang and X. Zhang 1186

The Modeling and Simulation of Vehicle Transmission Watt Loss Based on Principal Component Regression
L. Gong, Y.C. Dong, S.N. Cao and L.H. Yi 1190

Analysis and Simulation on Cutting Morphology of Dry Hobbing
J.L. Zhou, R.M. Xie, D. Hu, Y.X. Wu and C.F. Feng 1194

Design and Implementation of the PPS System Simulation Platform PPS-CICQ-SIM Based on CICQ
X.Q. Li and X.L. Yang 1199

Simulation Research on Bonded Microchannel Deformation of Polymer Microfluidic Chip
L. Huang, Z. Wang, C.P. Chu and B.Y. Jiang 1204

Visual Simulation of Mobile Channel Model
Y.H. Yang 1209

The Model and Simulation of Magnetorheological Grease Characteristics
L. Song, G.T. He, Z. Zeng, Y. Ma, M. Li, D.S. Zhang, S. Wang and Y.C. Ran 1214

Design of Synchronous Machine Model Based on PRO/E and Dynamic Simulation
Y.K. Zhong 1220

Labview Based Experimental System Design for the Investigation of Magnetorheologic Fluids Inductance
G.T. He, J.S. Chen, L. Song, Y. Ma, M. Li, D.S. Zhang, S. Wang and Y.C. Ran 1226

Study of Nonspherical Particle Magnetorheological Greases with Computer Simulation Technology
J. Wei, G.T. He, L. Song, M. Yan, M. Li, Z.Y. Xu, Y.C. Ran and D.S. Zhang 1231

Accurate Modeling for Plate Cam with Autocad and other Software Combined
F.W. He 1237

The Design and Implementation of 3D Visualization Pipeline Information System Based on 2D Figures
H.Y. Li, Y. Chen and D. Zhao 1241

Visual Simulation Research of Hovercraft Base on EPX-500 IG
L.H. Yuan, L. Song, E. Zheng and Z.H. Dong 1246

Application of CAD Secondary Development Technology in the 3D Parametric Design of Mechanical Parts
M. Lu 1251

Computer Aided Design Technology in the Application of Modelling Design of Shaft Parts
M. Lu 1255

Chapter 11: Friction and Vibration

Vibration Tests of the Processing Shaft Cascading Structure in High Speed and High Precision PCB Drilling Machine
F. Gong, Y.P. Tan and J.B. Li 1263

Effect of Design Parameters on the Reduction of Top Piston Ring Friction
B. Wu, Z.N. Zhang and P. Wang 1268

Study on the Coupled Bending and Torsional Vibrations of Turbo-Generator Unit with Rub-Impact
C.B. He and S.C. Wang 1273

US-FE-LSPIM TRI3 Element for Free Vibration Analysis
H.H. Chen and C. Jia 1278

Development of Vibration Excitation and Control System for High Frequency Application
T. Chen and D.W. Zhang 1283

Identification Method of Tool Wear Based on Locally Linear Embedding and Support Vector Machine
Z.Q. Li, P. Nie and S.G. Zhao 1289

Research on Frictional Roller's Strength of Endless-Rope Winch
Q.R. Meng, J. Quan and Z.P. Hu 1294

Simulation of Mould Hydraulic Vibration System Based on MATLAB
X.B. Liu and Z. Liu 1299

Interdependence between High-Speed Mill Chatter and Unsteady Lubrication of Metal Rolling Process
Q.Y. Wang, Y. Zhu and Y. Zhao 1304

The Characteristic Analysis of Double Vibration Isolation Model Based on MRF and Piezoceramics
D.S. Zhang, G.T. He, M. Li and L. Song 1309