

Table of Contents

Preface and Conference Organization

Chapter 1: Machine Design and Analysis

Research on Modeling and Simulation of Electric Power Steering System for Electric Power Bus R.W. Shen and X.H. Tai	3
Kinematic Characteristics and Optimization Analysis of Oval Geared Hoeken Mechanism Z.D. Huang, Y.P. Du, W.N. Yu, X.B. Qi, Z.Q. Yang and Q.Y. Lang	9
Modeling and Analysis of Joint Motion of the Rope and Trolley in Crane System H.C. Zhou, C.G. Zheng, H.Z. Zhang, X.Q. Zhang, Y.Y. Huang and Y.L. Wen	14
Design and Performance Analysis of Yielding Anchor Bolt with Large Deformation Z.M. Jiang, C.J. Wang and T. He	21
Design of a Hybrid Magnetic Bearing Based on Equivalent Magnetic Circuit Method Y. Liu	27
Study on the 4-PTT Variable Topology Parallel Chinese Massage Manipulator S.H. Sun	33
Study on Oblique Cam Type Mechanical Torsional Vibrator F.Q. Han, Z.Z. Li and D.Y. Zhang	37
The Improved Research of the Defrosting of an Automobile Windshield T.M. Huang, W.K. An, J.Y. Tan and Y. Zhou	42
Study on Magnetic Suspension-Type Needle Driving Model for a New Knitting Device X.G. Wu, L. Zhu, S. Li, Y.Q. Wu, C. Zhang, C.J. Zhang and J. Fu	46
Optimizing Design System of Four Linkage Mechanism in Hydraulic Support Based on VC++ W.A. Gao and J.L. Wang	50
Optimum Design for Improvement of Roller Bearing Load Distribution in a Medium Scale Mill M. Li and L.N. Sun	54
Design Optimization of the Flexspline in Harmonic Drive J. Dai, L.Z. Chen and X.B. Pang	59
Design of Three-Dimensional Parallel Vibration Casting Machine C.J. Wang, T. He, X. Yang and J.S. Chen	64
Structure Analysis to the Rotary Wheel of a Tire Testing Machine F. Tian, G.M. Liu and K. Tao	70
The Research for the Piezoelectricity Rain-Removing System of Rearview Mirror J.J. Liu, X.Y. Jiao, Z.G. Yang and J.F. Liu	74
Finite Element Analysis and Optimizing Design of the Bus Body S.Y. Zhi and H.J. Liu	78
Assembly Planning Method Based on Design Structure Matrix G.B. Zhang, D.Y. Li, L. Peng and J.H. Lou	82
Optimal Design of the Rubber Chain Attached Board Used in Steel Wire Knitting Machine Based on ANSYS Workbench Q.L. Zeng, Z.C. Wu, J. Lu and B. Zhang	89
Reliability Analysis of Over-Center Locking of Mechanism Q. Qin, Y.W. Feng and Y.S. Feng	95
Application of Orthogonal Experiments in Simulation and Optimization of Jaw Crusher on Traveling Characteristic Value of Moving Jaw L.Z. Zhang, X.Q. Shen, S.Q. Cao and C. Lv	101
Optimization Design and Simulation of Negative-Pressure Removing-Chip Mechanism of Deep Hole B. Wang, L.Q. Zhao and Q.Y. Ma	105

The Design of Slope Mower J.M. Yi, D.Q. Gao, H. Lin and Z.G. Chang	111
Optimization Design of Rolling Bearing Based on Reliability Assessment J.H. Zheng, Y.C. Liu and M. Li	115
Structural Design of Banana-Stem Shattering and Returning Machine Y. Huang, Q.G. Mo, C.K. Wei and R.Z. Li	119
Low Cost CPM Machine for Knee Joint S.S. Metan, P. Krishna and G.C. Mohankumar	125
Optimization Design of Trusses Based on Covariance Matrix Adaptation Evolution Strategy Algorithm G.S. Su, Y. Zhang, Z.X. Wu and L.B. Yan	133
A General Method for Synthesizing Straight-Line Linkage with Ball and Burmester Points L.R. Yin, J.Y. Han, J. Huang and T. Yang	138
Study on Field Seedling Raising Vacuum-Vibration Tray Precision Seeder's Horizontal Adjustment Mechanism Z.Q. Gong, J. Chen, Y.M. Li, C.J. Wang and C. Hang	142
Comparison Research on Two Luffing Mechanisms of Lemniscate Type Crane K.Q. Li and C.X. Jiang	146
Design and Realization of the Optimization System for ZLZ/ZLY Reducer R.M. Qin and S.Y. Li	150
Instance Analysis on Designing Method of the Transmission Multi-Cones Synchronizer X.C. Huang, Y. Zhang and H.B. Zhang	155
Simulation Analysis of the Working Process of the Corn Seed Metering Device with Combination Inner-Cell Q.L. Li, J.Y. Yu, Q.Q. Zhang, J.Q. Yu and H. Fu	160
Finite Element Analysis of Portable Exoskeleton Based on Ergonomics Parameters Model F. Liu, W.M. Cheng and L. He	168
Optimization Analysis Based on the Articulated Structure of Cement Floor All-Terrain Vehicle Z.L. Meng, F.Q. He, Q.M. Guan and H.D. Wang	174
Minimizing Surplus Parts in Selective Assembly Using GA J.F. Fei, C. Lu and S.L. Wang	178
Simulation Analysis and Optimization Study on Automotive Air Suspension Y. Ding and B. Zhang	182
Structural Parameters Optimization of Parallel Stable Platform Based on Physical Programming Z.H. Dong, H.S. Ding, F. Jiang, Z.C. Huang and T. Fu	187
Design Parameters Optimization of Cutting Head of Cantilever Roadheader Based on Genetic Algorithm G. Liu, D.S. Mu, S.X. Duan and D.C. Song	193
Research on the Design Method of Component-Based Modular Fixture H. Guo, S.Q. Pang, X.G. Yan, R. Zhang, Z. Liu, C.G. Xu and J.W. Li	197
Analysis on Load Distribution of Needle Bearing Considering Misalignment X.B. Bai, X.M. Ji and L. Guo	202
A Novel Radial Telescopic Tire Building Drum and its Kinematics Design Y.L. Wang, L. Zhang and Y.H. Yang	207
New Approach for Spatial Mechanism Synthesis with the C-S Binary Crank by Adaptive Saddle-Fitting Z.G. Shi, S.F. Wang and Y.G. Li	212
Structural Design of the Vermicelli Strapping Machine S.J. Wang and R.Z. Wei	217
A Study on the Automatic Feeding Device for Optical Fibre Adapter Base L. Han, Y.T. Pang and M. Lei	221
A Conceptual Design of the Knee Rehabilitation Device L. Han, Y.Y. Li and Q. Zhang	225
Propellant Filling Equipment Simulation for Virtual Assembly J.Z. Chen, Y.X. Zhang and C. Ning	229

The Design and Preparation Process of Aluminum Silicate Fiber Paperboard Machine C.S. Zhao, W.J. Han, D.M. Yu and J.J. Pang	235
Design Optimization for Double-T Root and Rim of Turbine Blade with Three-Dimensional Finite Element Method M.H. Zhang, D. Zhang and Y.H. Xie	239
Research on Verifiable Design Model for Design Defect of Mechanical Assembly Y.S. Su and S.W. Fan	244
Numerical Investigation to the Impact of the Shape of the Front Part on the External Flow Field for a Heavy Duty Vehicle in Crosswind X.J. Hu, P. Guo and B. Yang	249
Analysis and Optimization Design of Raking Coal Manipulator Based on ANSYS B.H. Fan, F. Min and C.Z. Yuan	254
The Kinematics Analysis of Double Crank-Slider Mechanism Based on Simulink Q.W. Su and X.K. Wang	258
Study on Design of Ratchet-Pawl Clutch in Winder G.Q. Zhou, R.W. Yuan and X.M. Jiang	263
Similarity Assessment for Assembly Model Based on Component Attributed Relational Graph Matching S.Q. Tao and W. He	270
Optimization Design and Numerical Simulation for Aerodynamics Shape of an Aircraft H. Tang, G.G. Chen and H.Z. He	275
The Innovation Design of the Molding Method and Machine about Non Spherical Sweet Dumpling S.Y. Li and Y.P. Yang	279
Type Synthesis of Torsional Mass Dampers as Anti-Galloping Devices by Using Planar Four-Bar Mechanisms J.L. Yang, K.J. Zhu and B. Liu	285
Aerodynamic Optimization of Variable Pitch Wind Turbine Blade Based on Adaptive Genetic Algorithm D. Tian, G.H. Chen and Q. Li	289
A Novel Two Degrees of Freedom Rotational Decoupled Parallel Mechanism Y.L. Hou, D.X. Zeng, Z.Y. Zhang, C.M. Wang and X.Z. Hu	293
Design of the Lower Extremity Rehabilitation Robot Communication System Q. Guo and D. Jiang	297
Study on Interference Fit of Composite Flywheel Rotor S.B. Wen	302
A Multiply Function Device for Self Protection (Especially for Females) Y. Zhai, Y. Zhang and J. Tang	307
Parametric and Optimum Design of Cylinder Mechanism Based on Statics and Modal Analysis F.Q. Yang, H.T. Zhang, R. Zong and D.G. Chang	311
The Data Analysis and Decision of Designation and Optimization on Incline Car Brake Equipment G.S. Tang and Q.M. Wang	315
High Efficient Viscoelastic Damper for Heavy Trucks S.F. Zhang, X.L. Liu and Y. Liu	318
A New Method of Gear-Position Decision for Automatic Manual Transmission of Parallel Hybrid Electric Bus H.K. Zhang, W.J. Li and F.G. Hua	322
Simulation Study of Kinematic Characteristic for Torsion-Beam Rear Suspension of Automobile J. Gao and J.F. Xie	327
Study on the Vibration Lamella Thickener and its Application in Mineral Processing Plant X.L. Zhou, Z.Y. Long, W.Y. Hu, X.M. Zhang, Z.X. Shi, D.Y. Sun and W.B. Zhang	333
Principle and Approach for Determining the Reasonable Cross-Section of the Solid-Web Double-Beam Component A.F. Li	342

Chapter 2: Product Design and Development

‘Practical Utility’: A Design Concept of Immaterial Society L.Y. Tian, J.Z. Yuan and X. Li	353
The Study on the Smart Reference of Movie Arts Applied in Dress Design Y.J. Zhang, Y.N. Liu, D. Tang, T.J. Shao, X.C. Wu and D.M. Wang	358
Method of Genetic Algorithm Optimization Design of Permanent Magnet Retarder Y.Q. Huang, G.W. Cai, Y. Jiang and Z.Y. Luo	362
A New Technology of Producing Color Gradient Products W.Y. Li, X.Q. Ren and Y. Sun	368
A Design Method Based on Extraction of Key Points of the Contours of Agricultural Machinery’s Internal Structure: A Case Study on the Design of a Small Self-Propelled Square Baler S. Liu, Y.Q. Wang, X.G. Ma and D.C. Wang	372
Application of Ergonomics Principles in the Packaging Machinery Design N.B. Yang	378
An Optimal Design Procedure for Golf Clubhead Considering Impedance Matching Z.Q. Wu, Y. Sogabe, Y. Arimitsu and T. Tamaogi	382
Design and Parameterized Virtual Simulation Test of a Kind of Seat Bench for Ergonomic Test S. Liu, Y.Q. Wang, W.J. Wei, L. Wei and T.X. Che	388
Optimum Design of Planar Four-Bar Linkage for Scheduled Tracks T.X. Liu and C. Wang	395
Cab Conceptual Design for the Equipment System Used for Passenger Car Ergonomic Design and Evaluation X.M. Du, J.D. Ren, Y.Q. Liu, Z.X. Chen, S.H. Li and C.L. Sang	399
A New Algorithm for Determining the Optimal Parameters of the Spring of a Slider Cell-Phone C.T. Lee, H.C. Kuo and J.L. Wu	407
Aircraft Product Data Traceability Technology Based Workflow X.L. Yang and G.R. Yan	419
Uneven Granular Module Clustering and Intelligent Optimization for Customizable Products M. Zhang, G.X. Li, W. Li and J.Z. Gong	426
Optimization Design on Vibration and Noise Reduction of Damping Sandwich Circular Saw T. Wang, T. Yao and G.L. Duan	433
An Aero-Thermo-Elasticity Method Applied on the Supersonic Aircraft Model H. Tang, G.G. Chen and H.Z. He	438
Research on Sprayer Innovative Design Based on Ergonomics and Rapid Prototyping S.Y. Zhang, T.H. Zhang, L.C. Gu, L. Guo, Y.Q. Tan and R.P. Xu	443
Optimized Design and Experiment of the Jatropha-Nut Huller L.H. Zhang, C. Wang and T.T. Liu	447
The Effects of Background upon Engineering Design Expertise – A Sino Occidental Comparison A. Newing, S.v.d. Waal and C. Steele	452
Study on Development & Design of Product Service System Y.X. Yu, Z.G. Liu, X. Li and C.Y. Chen	468
The Application of the Expansion Lever Method Q.Q. Cheng and J.J. Li	475
Gravity Torque Balancing Device’s Optimization Design of Prosthesis’s Shoulder Based on Nonlinear Programming Genetic Algorithm B.H. Fan, C.Z. Yuan and F. Min	479
Users’ Requirements and Preferences in the Success of a New Product: A Case Study of Automotive Design Z. Taha, H. Alli and S.H. Abdul Rashid	484
Product Evaluation in Stages Based on Robust Design X.C. Lu and H.X. Zhang	489

Conception of Innovation of the Electric Vehicles J.Q. Zhang, F.H. Zhao and J.Y. Huang	493
Finite Element Analysis of Bicycle Saddle Based on Ergonomics Y. Xin, X.P. Yang and L. Zhang	497
On Auto Brand Mark Design L.M. Fu and J. Li	501
Mechanical Products Conceptual Innovation Design by Application of Enhanced Genetic Algorism Z.H. Yuan, H.L. Jiang, Z.J. Wang and K.P. Ma	506
Optimizing Study of Top Beam Structure of Electrostatic Precipitator Casing X.M. Ji, D.F. Wang, Y.Q. Wang and Y.J. Shi	510
Application Research on TRIZ Technical Contradiction Solving Principles in Tank's Protective Armor Y.L. Cui, C.M. He and S.X. Zhang	518
The Modeling Design of Health Bedding H.X. Zhang, Q.D. He, L.X. Fan and X.L. Shi	522
Maintenance for the Mirror Systems of LAMOST Telescope J.F. Zhang, J.J. Zhou and H.L. Shi	526
Analysis of Cold Protective Clothing's Design and Market - Functional & Structural Design C.Y. Wu, C.F. Qu, G.W. Song, L.B. Xu and Y.J. Zhang	532
The Study of the Furniture Design Based on Product Morphological Semantics X. Li and Z.H. Ye	536
Resource Configuration for the Collaborative Development of Product F.H. Zeng and L.H. Zhou	540
The Suit Pattern Optimal Design Based on the Features of Middle-Aged Women's Body Shape B. Lin	544
Research of Product Form Design Based on Comprehensive Product Processes M.L.C. Cao and N.B. Yang	547
Carbon Reduction Technique Used in Panel Furniture Design & Manufacturing Z.G. Hong	551
Diagnostic Strategy Optimization Based on Particle Swarm Algorithm Y.S. Zhang, Z.T. Qiao and J.H. Jing	555
The Conceptual Design of Exercise Washing Machine Based on Trimming E.H. Zhang, C.Q. Gao, B. Yang and H.H. Su	561
The Research and Application of Innovative Approaches Based on Cognitive Processes H.H. Su, C.Q. Gao, B. Yang and E.H. Zhang	566
The Analysis Technology of Parameters Change Impact Based on the Product Interface Coupling Network Model L. Wang and A.M. Wang	571
Modulus Packaging Design of the Cylindrical Ceramic Furnishings L. Xu, D.G. Li, C.Y. Xu, S.G. Zhang and Y.X. Shi	577
Evaluation Model for Product Green Design Based on Active Remanufacturing L.L. Wang, Z.M. Zhang and C. Chen	583
Study on Evaluation System Based on the Reconfigurable and Modular Design R. Shang, Y.F. He and Z. Zhang	588
Study on Mix-Variable Collaborative Design Optimization L. Gao and R.R. Wang	592
Pedigree Based Product Conceptual Design K. Yao, B. Yang, X.Z. Wang and C.Q. Gao	597
Prototyping in the Product Interface Design Z.S. Li and C.Q. He	602
Finite Element Analysis and Optimization of Wave-Frame Based on ANSYS S.J. Wang, X. Xiong and X.P. Yang	607
Product Pedigree Based Conceptual Structure Evolutionary Design X.Z. Wang, B. Yang, K. Yao and C.Q. Gao	612
Research on Product Cooperation Design for Knowledge Management Q. Feng, S.H. Yu, Q. Zhang and W.W. Wang	616

Research on Multi-Objective Decision-Making of Materials Selection for Green Manufacturing J.J. Xi, H.Y. Liu and J.Q. Liu	621
An Analysis of Apparel Products Development Process Model: From the Prospective of Integrated Design H.L. Zhou, R. Yuan and L. Dong	626

Chapter 3: Reverse Engineering

Sorting of Section Contour Data Based on Linear Quadtree J. Liu	635
An Integrated Reverse Modeling Approach Based on Reconstruction of Features and Constraints L. Kang, Y. Li and Z.M. Chen	639
The Reconstruction of Model and Analysis for Vortex Disk of Scroll Compressor Base on Reverse Engineering X.W. Dong, Y.F. Zhai, D. Ren and K. Mu	643
Rapid Prototyping Design of 3D Models by Reverse Engineering D.S. Wang and X.F. Wang	648
Study on Surface Refactoring Based on Reverse Engineering Software - Imageware L.Y. Chen, Y. Li and W. Jian	652
Surface Reconstruction Based on the 3D Laser Scanner L.Y. Chen	656
A Novel Mesh Segmentation Method for Conventional Engineering Parts in Reverse Engineering P.X. Liu, X. Liu and P. Liu	660
Modeling and Numerical Control Machining of the Mould of a Rearview Mirror of a Motorcycle Based on the Reverse Engineering Technology Y.X. Gao	664
Multi-Degree Reduction of DP Curves with Constraints of Endpoints Continuity H.H. Cai, Y. Cheng and Y.H. Zhu	669
An Image Fusion Assessment Metric Based on Multi-Scale Structure Similarity Z.S. Xiao	674

Chapter 4: Structural Strength and Robustness

Pre-Reinforcement Technology in Broken Roof Side Condition Y.S. Shen and L.J. Zeng	681
Simple Nonlinear Static Analysis Using Truss Models for Modeling Snap-through of Thin Shallow Arches H. Xenidis, K. Morfidis and P.G. Papadopoulos	685
Modal and Structural FEM Analysis of a 50 ft Pleasure Yacht A. Alaimo, A. Milazzo and D. Tumino	692
Fatigue Analysis and Simulation on Engine Case F.W. Meng	698
The Optimal Method of Structural Reliability and Implementation of MATLAB X.F. Liu and Y. Li	704
Structure Analysis of the Subframe in ZJZ3250 Self-Dumping Truck Base on Finite Element Method X.Y. Liu and Y. Zhang	708
Vibration Analysis of Main Shaft of Paper Advance Mechanism Based on Laser Doppler Vibrometer R.L. Zhao, X. Chen, K.T. Li and Z. Chang	712
Finite Element Analysis of Drive Axle Housing with ANSYS Workbench N.S. Bai, A.Y. Jiao and S.M. Liu	717
The Co-Simulation and Experimental Study of Truck Crane Telescopic System T.J. Wang, C.X. Lv, W. Chen and B.B. Xi	721

The Kinematic Analysis and Simulation of the Large-Scale Linear Vibration Screen X. Du	726
Vibration Analysis of Needle-Punching Machine Slider-Crank Mechanism J.H. Xie and J.C. Yuan	730
Multi-Objective Optimization of a Large-Span Wing Analog Beam with Variable Cross-Sections K. Li, Y.Y. Qiu and Y. Sheng	735
Experiments on the Vibration Control of Flexible Rotor Using Shear Mode MR Elastomer Damper J.X. Wang and S.W. Wang	741
One Dimensional Finite Element Method for Continuous Curved Box Girder Including the Shear Lag Effect Y.M. Wu	746
Fatigue Reliability Analysis of Turbine of Turbocharger Based on the Endurance Test Profile of Engine W. Zheng, W.D. Xing, Z. Wang and L. Xin	750
Simulation-Based Reliability Analysis for Kinematic Accuracy of Retracting Mechanism of Landing Gear J. Zhang, B. Zhang and R.G. Yu	754
The Finite Element Analysis of Derrick of Coal-Bed Methane Rigs L. Zhi, D. Wu and B.S. Sun	758
K Value Calculation of Central Crack Plane Using FRANC2D D.L. Ren, S. Wan and Z.P. Zhong	762
Development of Central Minute Cavity in the Workpiece of Cross Wedge Rolling C.P. Yang, K.S. Zhang and Z.H. Hu	766
A Type of Bomb Falling Analysis and Reliability Verification Q.X. Chang	771
Design and Analysis of Anchor Pegs in Cemented Acetabular Cup C.J. Wang, D.J. Mynors and T. Sihra	775
Theoretical Research on Deformation of Porous Material in Air Bearing X.F. Zhang and B. Lin	779
Design of a Dynamic Stall Test Rig S. Shun and N.A. Ahmed	785
The Ultimate Bearing Capacity of Partial Concrete Encased Steel Strengthened Column Z.Z. Yin, Q. Wang, Y.X. Liang and Z.R. Hu	796
Modal and Local Modal Analysis of High Speed Train Car-Body T.L. Chen, Y.H. Lu, J. Zeng and L.M. Zhang	800
Reliability-Based Robust Design for Mechanical Components under Small-Sample Information X.D. He and J.P. Chu	804
Fuzzy Reliability Analysis on the Kinematic Precision of Mechanism W.X. Wang, C.M. He and T. Liu	808
Study on Fault Diagnosis of Gear Transmission which is Based on ADAMS S.M. Wang, X.Z. Ai, C. Lv and L.N. Ma	812
Research on Modeling Method for Equipment Maintenance Strategy Based on Reliability and Residual Life Y.L. Chen, Y.X. Ma, D. Zhang and J. Tang	817
The Fatigue Reliability Evaluation & Improvement of the Single-Arm Subway Current Collector Y. Chen, Z.M. Liu and Q. Li	826
Experimental Investigation of Mechanical Press Dynamic Behaviors by Ram Displacement Waveform Curves C. Zhang, H.F. Xiao, M. Wang and B. Li	832
The Finite Element Analysis on Can Coiler of Gilling Machine B. Lin, X.F. Dong and G.W. Zhang	837
The Analysis and Research on the Influence of Machining Center Stiffness because of the Bolt-Connection G.X. Zhang, B.B. Han and X.K. Shen	842

Finite Element Analysis of the Nut-Supports Subassembly Based on ANSYS S.J. Wang, X. Xiong and H.J. Wang	847
Vibration Response Analysis and Experiment on 2.0 MW Wind Turbine Gearbox G.Y. Wu, Y.J. Liao and C.R. Jiang	851
Research on Roll Bending Forming Dynamic Linked List Model and Intelligence Deformation Analysis G.C. Li	857
Finite Element Analysis on Structure of a New Torsional Vibration Damper G.Y. Wu, J.J. Yang, C.R. Jiang, Y.S. Li and G.Y. Li	861
Study on Reliability-Based Optimal Design of Multi-Stage Planetary Gear Train in Wind Power Yaw Reducer W.Y. Wan, S.H. Zhang and X. Meng	867
The Mechanical Stress Analysis of the Converter Trunnion Ring Based on the Pro/E and ANSYS Y.D. Gao and Y.J. Zhang	873
The Structure Design of Special-Shaped PDC Reinforced-Cutter and its Finite Element Method Analysis D.R. Zhang, A. Chang, C.Y. Kong and X.F. Zhang	877
Research on the Influence of Hole Arrangement on Ring Die Strength Y.L. Wang, K. Wu, K. Yang, B.B. Peng and Y. Sun	885
Reliability Estimations for Liquid Rocket Engine under Asymmetric Loss Function H.B. Zhu, Z. Kou and Q. Liu	889
Analysis on Mechanical Properties of Instrumented Indentation Tester Frame J.H. Guo, D.J. Ma, W. Chen and Z.K. Song	895

Chapter 5: Dynamics of Mechanical System

Simulation of Dynamic Properties of ER Damper S.K. Tan, X.P. Song, Y.S. Zhang, Y.D. Zhao, S. Ji and H. Zhao	901
Stability Problems of Frequency-Converting Rotation Dynamics on Concrete Mixer J.Y. Tian, B.J. Hu, B.L. Yang and X.F. Wang	907
Dynamic Characteristic Research of Planar Four-Bar Mechanism with Joint Clearance S.J. Bo and R.B. Guo	912
Coupled Dynamic and Vibration Analysis of Beveloid Geared System R. Fan, C.S. Song, Z. Liu and W.J. Liu	917
Modeling and Optimization Research of a Planar Six Bar Mechanism Y. Wu and X. Zhou	921
Study on Dynamic Performance of Linear Direct Drive Based on Pole Placement C. Pan, J.M. Zuo and M.L. Wang	926
Redesign of Dynamic Balance of Impact Rammer and Study on New Type C.F. Sun, Z.S. Duan, K. Chen and L.J. Hu	930
An Analysis of the Lateral Dynamic Response of an Axially Moving Cantilever Beam under a Moving Mass Z.X. Zhang and Z.D. Hu	934
Finite Element Analysis of Motion Gesture for Four-Legged Walking Robot MiniQuad-1 J.C. Zou, L.G. Wang, Z.Q. Guo and W.H. Chen	941
Study on Dynamic Simulation Input Form of Locomotive Wheel Flat Y. Liu, J.X. Liu and Y.J. Guo	946
A Harmonic Response Analysis of Food Refrigeration Compressor Based on Abaqus L. Zhang, S. Zhang, Y.Y. Zhang and Y.M. Ma	950
Dynamics Simulation Study on 3-TPS/TP Parallel Robot J.M. Luo, Z.H. Xing, Y. Jiang, W.Z. Wang and X.T. Zhang	955
Feasibility Research of Crank-Group Driving Mechanism J.J. Cao and Y.Q. Wang	959
Study on the Tractive Ability of Lunar Rover Wheel by Discrete Element Method C.G. Wei, M. Zou, Z.J. Zhao, J.Q. Li and G.F. Zhou	964

Kinematic Matrix Method of Portal Crane Boom System Z.G. Li, Y.X. Qin and T.T. Bi	970
Dynamic Simulation Analysis of Asymmetric Involute Gear Drive System L.M. Lian and G.M. Liu	974
Estimating of Aerodynamic and Analysis of Aeroelasticity for Hypersonic Projectile Z.L. Peng and Z.J. Wang	978
Dynamic Simulative Study of Hoisting System of Mine Z.G. Li, Z.X. Wang, J.H. Chen and Y.N. Zhong	982
Dynamic Balance Analysis of Automobile Drive Shaft Based on Solidworks K. Huang, G. Chen, Q. Chen and Z.F. Zhang	986
Numerical Study on Aerodynamic Performances of CRH3 under Crosswind H.Y. Su, M. Li, D.P. Wang and F. Liu	992
Parametric Analysis of the Dynamic Response of Hot-Rolled H-Shaped Steel Beam under Lateral Impact Load C. Pei and R. Wang	998
Simulation Study on Planetary Bevel Gear CVT System Based on Virtual Prototyping Technology J.J. Liang, R.Q. Li and J.J. Ren	1003
Finite Element Simulation in the Dynamics Calculation of Bolted-Joint Interface Y.T. Ai, Y. Bai, X. Zhai and D. Zhao	1009
The Transmission System Dynamic Analysis Considering the Gear Installation Error of the Planet Gears for Ravigneaux Automatic Gearbox K. Huang, J. Zhang, Q. Chen and G.H. Feng	1013
Virtual Design of a New Type of Entertainment Machine and Dynamics Simulation of the Conveyor Track W. Bai, P.L. Li and J.L. Wang	1017
Research on Dynamics of Double-Mesh Helical Gear Set F.C. Yang, Q.L. Huang, Y. Wang and J.G. Wang	1021
Stress Solutions of some Axisymmetric and Non-Axisymmetric Cases with the Principles of Elasticity: A Review S. Ankalkhope, N. Jadhav and S. Bhat	1026
Design and Aerodynamic Assessment of Diffuser with Longitudinal Separators for Underbody of Sedan X.J. Hu, R. Zhang, J. Ye, X. Yan and Z.M. Zhao	1033
Analysis of the Damping Properties of High-Transmission-Ratio Cycloidal Drives N. Kumar, V. Kosse and A. Oloyede	1038
Study on Ride Comfort of Non-Linear Vehicle Vibration System H.Y. Jing, Y.P. Zheng and M.X. Fang	1043

Chapter 6: Transmission Machinery

Parameter Design of Less-Teeth Gear Transmission B.M. Wang, L.Z. Dong and W. Cheng	1049
The Synchronizer Performance Test of a Manual Transmission Z.H. Wang, F.W. Yan and S.P. Tian	1054
Efficiency Sensitivity of Two-Stage Planetary Gear Transmission System Based on Graph Theory M. Chen	1058
Parametric Modeling for Spiral Bevel Gear Based on PRO/E X.H. Wu	1062
The Gap Nonlinear Characteristics of Gear Transmission System under External Excitation K. Huang, J. Li, X. Jin and Q. Chen	1067
Research on Modeling and Ratio Control Based on Axial Displacement Feedback for CVT F. Xie, J.H. Wang and Y.C. Wang	1071
Calculation Equation of Tooth Face of Shaping Gear for Logarithmic Spiral Bevel Gear Q. Li, G.W. Yang and H.B. Yan	1076

With the Backlash Dynamics Simulation of a Crank-Slider Mechanism of the Internal Combustion Engine S.J. Bo, K. Ji and J. Tian	1081
Development and Design on the Rubber Conversion Track Wheel Z.N. Hu and K. Yao	1085
Design and Simulation on the Rubber Conversion Track Wheel of the Loader Z.N. Hu, K. Yao and X.M. Tian	1089
The Mechanism Analysis of Horizontal Vibrated Conveyor with Inclination C.S. Song, Q.M. Huang, J. Xu and Z. Gao	1093
Research on Knowledge Representation in Choosing Mechanical Transmission Type R.F. Bo, R.Q. Li and X.Q. Shen	1098

Chapter 7: CAD/CAM/CAE

Research on the Connection Performance of Variable Pitch of Screw Threaded Casing Based on 3D Finite Element Simulation Model X. Guo, L.L. Zou, B. Lu, S.L. Zhang, X.R. Su and H. Xu	1105
Numerical Simulation on Induction Heating Process for Crankshaft Shrink Fitting Q.L. Zhang, B.Y. Zhao and J.K. Guo	1111
Application of ANSYS Program in Ductility Analysis of Reinforced Concrete Frame Structure with Specially-Shaped Columns K.B. Wang, C.A. You and L.M. Xin	1118
Numerical Simulation of Uprooting of Cassava Root W. Yang, G.W. Cai, J. Yang and Z.J. Li	1122
Numerical Simulation of Digging Shovel Operation of Cassava Root W. Yang, J. Yang and Z.J. Li	1126
Frequency Analysis and Optimization Design of Car Powertrain Mounting System Based on ADAMS Y.H. Wang, Y.B. Chen and G.C. Tsai	1131
The Analysis on the Typical Parts in F1 Race Car H.F. Lai and W.Z. Xiao	1136
Parametric Modeling of Whole Tower Crane Based on ANSYS B. Li, H. Zhang, S.S. Xu, J.S. Zhang and X. Zhao	1140
SolidWorks Chain Drive Design and 3D Modeling Techniques Y.L. Mo and X.X. Xu	1146
Calculation for 180 Ton Tilting Torque of Converter Based on SolidWorks Y. Sun and Y. Lan	1150
Numerical Simulation Study on Pipeline Corrosion Defects under Different Sizes and Pressures Based on FEM H.W. Liu, R.H. Dong and H.X. Lv	1154
Describing NC Smooth Path Based on the Adjustable Form of the Cubic Spline Interpolation Function A.P. Song, J. Huang, J.M. Tao and D.P. Yi	1158
Exploration of Revolved Parts Modeling Based on MBD and Pro ENGINEER L.X. Wang, M.Y. Guo and Y. Guo	1165
Research on the Recognition Method of Exploded Dimension Based on 2D Engineering Drawings L.X. Wang, Y. Wang, J. Zhou and H.L. Xue	1169
Computer Aided and Reversed Design of Auto Fans X.J. Zheng	1173
Fuzzy Finite Element Applications in the Waste Heat Boiler C. Li, C.H. Liu, X.C. Qin and Y.T. Li	1180
Modeling and Simulation Technology of Complex Mechanical Systems B. Lin, M.L. Zhu and X.G. Liu	1186
Numerical Simulation of Aluminum Alloy Wheel 13° Impact Test Based on Abaqus X.M. Yuan, L.J. Zhang, X.Y. Chen, B. Du, B.H. Li, L.G. Fan and Y. Pan	1191

Finite Element Analysis for Cycloid Gear and pin Teeth of FA Cycloid Drive Based on ANSYS	
L. Lei, X.C. Shi and T.M. Guan	1197
Further Exploring CFD-Based Gust Response of the Powered Parachute	
H. Zhang and Z.L. Chen	1201
A Multiresolution Fairing Approach for NURBS Curves	
A.M. Li and H.B. Tian	1205
The Development Style for Overhead Crane CAD System	
Y.F. Tao and X.F. Shi	1209
Modeling and Simulation of Aircraft Nose Landing Gear Emergency Lowering Using Co-Simulation Method	
X.H. Wei, Y. Yin, H. Chen and H. Nie	1213
Modeling of 2D Layout Design System Based on Convex Hull Plus Rubber Band Analog	
X.P. Liao, J. Lu, J.Y. Ma, J.H. Xue and X.M. Yu	1219
Design and Simulating Analysis of Compressed Garbage Transport Truck Lifting Mechanism Based on ADAMS	
W.H. Xu, C.S. Zhang and S.Y. Wang	1224
Study on Numerical Simulation of Bench Blasting and its Elevation Amplification Effect	
Y.J. Zhang, G.Z. Wang and H.J. Zhang	1228
A Connecting Method for Offset Contour of Planar Polygon	
H.B. Wang, W.J. Liu and H.Y. Bian	1232
Design of Turning Area for LNG Terminal Base on Computer Simulation	
Y.T. Fan	1236
The Design and Analysis of Closed-Coupled Exhaust Manifold	
R.S. Xu, X.F. Yan, L. Niu and Z.W. Dong	1241
The Modeling of Rubber Sealing Ring of Fluid Dynamic Pressure and Finite Element Analysis about Stress Based on SolidWorks and ANSYS	
J. Zhu, L.Q. Zou and S.J. Han	1246

Chapter 8: Complex Electro-Mechanical System Design

A Novel Real-Time Algorithm for Torsional Vibration Mode of Generator Sets Based on Rotation IIR Filter	
J. Li, Y.H. Yang and S.H. Jiao	1253
The Synthetic Evaluation Method of the Dynamic Performance and Economic Performance of Battery Electric Vehicle Based on Principal Component Analysis	
M. Chen and L.X. Guo	1259
Research on Automatic Verification Device for Vehicle Sideslip Tester	
J.W. Shao, F. Lin and Z.Z. Ye	1263
Research on Complex Precision Mechanical System Assembly Parallel Control System	
B.Z. Wu, J. Qiu, G.X. Li and J.Z. Gong	1267
Research of Phase Compensation Technology in Electronic Instrument Transformer	
Y.P. Huang, R.M. Chen, Y. Xiao, W.M. Sun and F. Pan	1276
Robust Suboptimal Control of an Electro-Hydraulic System with Variable Supply Pressure	
M. Zhang, J. Wang and G.B. Huang	1283
Terramechanics Model and Motion Control Strategy Simulation for down-Slope Travel of a Lunar Rover	
W.D. Huang, J.S. Bao and Y.S. Xu	1291
Effect of Mean Wind Speed Variations on Power Generation of Wind Farm	
C. Guo and Y. He	1298
The Electric Field Characteristics Analysis of Converter Transformer Considering Anisotropic	
Y.H. Gao, X.M. Hou, H. Gao and X.M. Liu	1308
Study on Case Library of Parameterized Aero-Engine Overall Structure	
J. Fan, J.R. Zhang, R. Zhang, X.L. Shen and R.Q. Wang	1312
A Study on Parameter Design of Powertrain for Extended-Range Electric Vehicle	
C.H. Xu	1318

Experimental Study of Vertical Axis Wind Turbine with Wind Speed Self-Adapting

M.W. Xu, J.J. Qu and H. Zhang

1323

Research on Simulation of SRM Drive System Based on Simulink

X.Z. Meng and J.H. Wang

1327