

Contents

Part I Vehicle Performance Development

A New Approach to Improve the Design Quality of Chinese National Brand Vehicle	3
F2012-E01-004	
Du Cao, Jing Deng and Fengfei Fu	
The Process of Vehicle Dynamics Development	13
F2012-E01-011	
Zhanglin Cai, Stephen Chan, Xiaofeng Tang and Jiang Xin	
Development of Methodologies for Evaluation, Simulation and Improvement of Cross-Wind Sensitivity.	23
F2012-E01-014	
Guido Tosolin, Jonathan Webb, Alex Català, Alfonso Escuer and Young Jin Hyun	
Maneuvering Experiment of Personal Mobility Vehicle with CVT-Type Steering Mechanism	35
F2012-E01-016	
Yoshihiro Suda, Hirayama Yuki, Masahiko Aki and Takafumi Takagi	
Vehicle Performance Objective Management in Automotive R&D . . .	45
F2012-E01-018	
Xuezhen Wu, Haiqiang Han, Liqiang Dai, Linghua Zou and Fuquan Zhao	
Improving Energy Efficiency of Heavy-Duty Vehicles: A Systemic Perspective and Some Case Studies	51
F2012-E01-024	
Juhani Laurikko, Kimmo Erkkilä, Petri Laine and Nils-Olof Nylund	

Study on the Active Front Steering System with Steady Gain	65
F2012-E01-025	
Youkun Zhang and Baohui Liu	
 Design Optimization of Full Vehicle Suspension Based on Ride and Handling Performance	 75
F2012-E01-026	
Tey Jing Yuen, Ramli Rahizar, Zainul Abidin Mohd Azman, Alias Anuar and Dzakaria Afandi	
 Improve Fuel Economy of Commercial Vehicles Through the Correct Driving	 87
F2012-E01-029	
Ping Guo, Zhenlei Li, Zhiwu Zhang, Jun Chi, Shuai Lu, Ye Lin, Zhengfa Shi and Jingcai Shi	
 Research on Test Method of Off-road Vehicle Trafficability	 97
F2012-E01-031	
Wenhu Qin, Zhanjun Guo and Weigong Zhang	
 Part II Vehicle Integration Platformized and Universal Design	
 A Design Method for Future Automobiles	 109
F2012-E02-003	
Zhifeng Wang, Wu Yang, Zhiguo Le and Fuquan Zhao	
 Effect of Engineering Materials for Vehicle Collision Simulation.	 123
F2012-E02-005	
Yanling Huang, Gaoji Yin, Zhitao Wang, Juanli Ni, Li Li, Qiang Liu, Anzhi Yang and Fuquan Zhao	
 Part III Development of CAD/CAE/CAM and CF Methods in Automotive Practice	
 Simulation of Leaf Spring Balanced Suspension Based on Virtual Test-Rig	 135
F2012-E03-002	
Xinpeng Tang and Kun Liu	
 A Simulation Analysis and Optimization of Mode and Stiffness of BIW	 145
F2012-E03-004	
Qiuxia Zhang, Leyi Zhang and Mingtao Guo	

Vehicle Wading Simulation with STRA-CCM+	157
F2012-E03-005	
Xin Zheng, Xin Qiao and Fanhua Kong	
 Developing Low-Noise Low Back Pressure Intake System by CAE Technology	 167
F2012-E03-006	
Yue Chang Chen, Haotian Shi and Yang Guang	
 Study on Vehicle Modeling and Steering Performance	 177
F2012-E03-009	
Minglun Cao and Cai Yang	
 Surrogate Model for Aerodynamic and Handling Stability Optimization of a Tractor-Trailer in Crosswinds	 189
F2012-E03-010	
Xu Gong, Zhengqi Gu, Jian Ye, Xu Yan and Zhiming Zhao	
 Calculation of Drum Brake Temperatures in Ten-Cycle Braking	 201
F2012-E03-013	
Kun Zhang and Cai Yang	
 Solution of the Glare Risk in Vehicle Inner Trim Designing	 209
F2012-E03-014	
Mengdong Mi, Yongqing Liu, Congwen Yu, Sujuan Peng, Bin Feng, Jian Shi and Pin Wang	
 Topology Optimization Design of a Heavy Truck Frame.	 219
F2012-E03-015	
Jingxin Wang, Tie Wang, Yanchao Yang, Zhaohui Peng, Zhi Li and Na Wang	
 Bridging the Gap Between CAD and CAE in Composite Structures Development Process for the Automotive Industry	 229
F2012-E03-016	
Samouil Saltiel, Michalis Giannakidis and Nikos Toulas	
 Ensuring Reliability of Automotive Electronics by Using Thermal Analysis	 241
F2012-E03-019	
Boris Marovic and Alexandra Francois-Saint-Cyr	

Effects of Frequency Response Spacing on Vibration Fatigue Analysis 253
F2012-E03-020
Jasuk Koo

CAE Supported ESC Development/Release Process 267
F2012-E03-021
Yiqin Mao, Johannes Wiessalla, Jan Meier, Wolfgang Risse,
Guy Mathot and Manfred Blum

Application of Optimization Algorithm to HVAC Configuration Design 277
F2012-E03-023
Tatsuro Kyuto, Motohiro Kitada and Hideo Asano

Research of Flow Field Simulation for Lubrication System and Effect Evaluation on a 7-Speed Dual Clutch Transmission 285
F2012-E03-033
Yinhui Lin, Zhihua Hu, Chaoqiang Xiong, Mengyan Zang, Yuan Jia,
Yong Chen, Daguo Luo and Fuquan Zhao

Application of Stiffness Estimation and Structure Optimization in Rubber Component Development. 299
F2012-E03-036
Min Sun, Yuan Qu, Youfeng Qiu and Shenrong Wu

Brake Cooling Simulation: A Combined Procedure of CFD, Thermal and 1D Software 309
F2012-E03-037
Enric Aramburu and Roger Calvo

BIW Optimization by Means of an Automated CAE Process for the Reduction of Welding Points 321
F2012-E03-038
Pérez Mario, Calvo Roger and Hirschbeck Bernhard

Establishing a Carbon Fiber Material Database for Crashworthiness Structural Development 329
F2012-E03-039
Pablo Cruz and Raúl Ureña

Full Vehicle Durability Analysis by Means of the IDIADA Virtual Proving Ground 337
F2012-E03-040
Jordi Arbiol, José Antonio Muñoz, Xavierl Armengo and Enric Aramburu

The Parametrical Design and Optimization of Body Frame Based on Crashworthiness and Lightweight	349
F2012-E03-042	
Yongxin Men, Guojun Zheng, Huicai Zelong Lu and Zelong Wang	
Development of Concept Analysis and Multi-Objective Optimization Platform for Body-In-White Structure	361
F2012-E03-046	
Yiwen Li, Hongjian Li, Zuofeng Pan and Tao Xu	
Fatigue Life Prediction of Spot-Weld for Auto Body Based on Multiple Load Cases	373
F2012-E03-049	
Liling Zhang, Qing Jiang, Xuefeng Chen and Xu Wang	
Acoustic Isolation Analysis of Weatherstrip Considering Door Opening Condition	383
F2012-E03-050	
Tae Hyung Kim, Hak Jin Kim, Heon Young Kim, Joon Chul Park, Byung-Kwon Min and Chang-Kuk Yim	
Assessment of Modeling Individual Physiological Differences when Predicting Thermal Comfort	393
F2012-E03-053	
Curran Allen and Hepokoski Mark	
The Multi-Physics Coupling Analysis Based on Electro-Magnetic, Structural and Acoustic Characters for a Drive Motor in EV	399
F2012-E03-057	
Jinling Zeng, Yingzi Piao, Bingwu Lu, Fuxiang Huo and Qun Zhang	
Modular Car Body Design and Optimization by an Implicit Parameterization Technique via SFE CONCEPT	413
F2012-E03-058	
Fabian Duddeck and Hans Zimmer	
A New Approach for Vibro-Acoustic Optimization Using Discrete and Continuous Shape Variables Applied to a Car Body	425
F2012-E03-059	
Hans Zimmer, Arnold Gross-Thebing, Manohar Prabhu and Fabian Duddeck	

Part IV Advanced Chassis, Body Structure and Design

Integrated Architectures for Third Generation Electric Vehicles: Technical Challenges Meeting Customer Requirements	437
F2012-E04-001	
Micha Lesemann, Leif Ickert, Lutz Eckstein, Sven Faßbender, Michael Funcke and Jac Wismans	
The Ring-Shaped Route Body Structure Design and Evaluation Method	447
F2012-E04-002	
Feng Xiao and XinHua Gao	
The Study of Wheeled Semi-trailer Design and Development Based on Scale Model	463
F2012-E04-003	
Xiong Xin, Xuexun Guo and Libo Wang	
The Concept and Methodology of Creating the Universal Life-Saver with Rotary-Screw Mover	477
F2012-E04-004	
Maxim Krashennnikov, Anatoly Kulashov, Viktor Shapkin and Alla Koshurina	
Research on the Development Procedure of Light-Weight New Body Architecture	491
F2012-E04-005	
Xiangyang Fu, Guohong Shi, Xin Jiang, Yunhui Duan and Zhengchao Song	
Control and Simulation of Regenerative Suspension Using Permanent Magnetic Synchronous Motor	505
F2012-E04-007	
Weihua Wang and Songshan Liu	
The Application of Tolerance Analysis During Engineering Process . . .	515
F2012-E04-009	
Wei Wang and ZhiHan Zhou	
Synchronized Design Optimization Method of Body Joints and Major Cross Sectional Members	531
F2012-E04-010	
Jie Xiang, Yong Chen and Youmin Guo	

Design and Development of Contractive Suspension in Hill-Climb Races	539
F2012-E04-014	
Antonini Pierluigi and Cibrario Valerio	
Modularized Design of the Engine Compartment Design Based on the Theory of CBR	553
F2012-E04-016	
Honghua Li, Wei Li and Fuquan Zhao	
Development of First Order Analysis for Torsion Beam Suspension (FOA/TB) Corresponding to Modular Design	561
F2012-E04-017	
Kazuaki Chiku, Hideki Sugiura, Takaaki Uno and Toshiji Hirotni	
A Pillar Structure Optimization Design of Driving Safety	571
F2012-E04-018	
Guolin Li, Jun Sui, Xiang Zheng, Honghua Li and Fuquan Zhao	
A New Body Concept for Electric Vehicle: PBC-EV	579
F2012-E04-020	
Jaehyun Kim, Hongwoo Lee, Kyunghwan Chung, Hyounyoung Lee, Yeonsik Kang and Jaebok Nam	
The Study on Development of High Security and High Comfort Commercial Vehicle Cab	593
F2012-E04-021	
Yuhai Chang and Xiaojun Yang	
The Design and Simulation Analysis of Electromagnetic Energy Regenerative Suspension System	601
F2012-E04-023	
Hongbin Ren, Sizhong Chen and Zhanzong Feng	
Optimization of the Magnetic Property of a Magnetorheological Squeeze Mount	611
F2012-E04-024	
Xinjie Zhang, Fangwu Ma, Fuquan Zhao, Konghui Guo and Mehdi Ahmadian	
Semi-Active Suspension Adaptive Control Strategy Based on Hybrid Control	625
F2012-E04-025	
Xinjie Zhang, Wuhui Yu, Fangwu Ma, Fuquan Zhao and Konghui Guo	

Optibody Project: Optimizing Vehicle Structures for Electric Light Trucks and Vans 633
F2012-E04-026
Eduardo del Pozo de Dios, Arturo Dávila,
Juan José Alba and Massimiliano Avalor

Linear Quadratic Gaussian Optimal Control Strategy for Four-Wheel Steering Vehicle 641
F2012-E04-028
Yan Chen, Wenqiang Chen, Xingmin Wei and Fuquan Zhao

Design and Validation of a Race Car with Respect to Aerodynamics and Body Styling. 651
F2012-E04-029
Abdul Vaseem Akram, M. Ajay Kumar,
K.C. Vora and Mohammad Rafiq

Part V Automotive Ergonomic, Interior and Exterior Trim Design

Driver Accommodation Assessment Using Physics-Based Posture Prediction Model 665
F2012-E05-001
Ozsoy Burak and Jingzhou (James) Yang

Design of the Adjustable Vehicle Seating Buck for Ergonomics Verification. 677
F2012-E05-002
Hongfang Ling, Li Wu and Gang Li

Study on Preventing Dazzle of Meter. 691
F2012- E05-006
Luo Pan, Xiaolin Liao, Guozheng Luo, Jing Wang,
Dejian Cheng and Li Yu

A Study and Application of Optimization on Console Development. . . 701
F2012-E05-009
Ruiyan Zhang, Ni Cao and Miao Luo

Enhancing Vehicle Ingress/Egress Ergonomics with Digital Human Models 713
F2012-E05-010
Nanxin Wang, Ksenia Kozak, Jian Wan,
Gianna Gomez-Levi and Gary Strumolo

Preliminary Research on Muscle Activity in Driver's Steering Maneuver for Driver's Assistance System Evaluation	723
F2012-E05-011	
Ryouhei Hayama, Yahui Liu, Xuewu Ji, Takahiro Mizuno, Tomoyasu Kada and Liming Lou	
Color TFT Instrument Clusters in the Chinese Market.	737
F2012-E05-012	
Huubin Li, Gerhard Mueller, Karl Reich and Leo Glasenhardt	
Color and Texture Design of Chinese Automobile Brand	747
F2012-E05-014	
Yanhong Hao and Fuquan Zhao	
Development of Shock-Absorbing Grip-Handle Structures on the Headliner	761
F2012-E05-015	
Hee Sang Park, Yongsu Chang and Jun Ho Jung	
SEMG Based Recognition for Lumbar Muscle Fatigue During Prolonged Driving	773
F2012-E05-017	
Xin Tao, Bo Cheng, Bo Wang, Feiruo Zhang, Guofa Li and Chaoyang Chen	
 Part VI Vehicle Style and Aerodynamic Design	
Aerodynamic Investigations in Conceptual Vehicle Development Supported by Integrated Design and Simulation Methods	787
F2012-E06-004	
Mario Hirz, Severin Stadler, Martin Prenner and Johannes Mayr	
Research on Drag Reduction of Commercial Vehicle Based on Aerodynamics.	801
F2012-E06-007	
Shijie Fan, Qiang Fu, Jialin Zhang, Jinying Ma, Jing Zhao and Kelong Lu	
The State of Equilibrium in Car Body Design: The Application of Asymmetry for Enhanced Harmony.	811
F2012-E06-009	
Liming Fu, Mingyang Sun and Alvin Chan	

Part VII New Materials and Structures

The Analysis of Composite Leaf Spring by Finite Element Method and Experimental Measurements	823
F2012-E07-004	
Jiashi Wang, Zaike Li and Qibin Jiang	
Finite Element Analysis of Two Kinds of Dump Trunk.	831
F2012-E07-005	
Zhi Li, Tie Wang, Jingxin Wang, Zhaohui Peng and Na Wang	
Advanced Solid Lubricant Technology Improve Engine Performance	839
F2012-E07-006	
Yupeng An, Kejin Zhang, Dan Wang, Junyan Zhang and Bin Zhang	
Wrought Magnesium Alloy AZ31 Grain Refinement by Predeformation	851
F2012-E07-007	
Fei Xiong, Lichun Cui and Ping Wang	
Consideration of Biomimetics in Structural Design of Vehicle Side Intrusion Bars	859
F2012-E07-009	
Yan Rui, Aleksandar Subic and Chunhui Wang	
Development of High Performance FRP Crush Box: A Report of JSAE FRP Working Group Activity. Numerical Analysis of Fracture Behavior of FRP Crush Box with Tapered Trigger	869
F2012-E07-012	
Reika Akita, Atsushi Yokoyama, Asao Koike, Kouji Kawamura, Yoshihiro Sukegawa and Hiromichi Oohira	
Development of the High Performance FRP Crush Box: A Report of JSAE FRP Working Group Activity. Analysis of Collapse Mechanism of the Trigger Part of FRP Crush Box	879
F2012-E07-013	
Asao Koike, Atsushi Yokoyama, Reika Akita, Yoshiro Sukegawa, Koji Kawamura and Hiromichi Oohira	

**Research of Application of Crash Durable Adhesive
on a Chinese Domestic Car Body 889**
F2012-E07-020
Zhongying Yue, Xiukui Yuan, Chaoqian Gao, Liantai Yuan, Qiang Liu,
Fuquan Zhao, Yufei Wang, Xiaojun Yang and Jie Xu

**The Study of Aluminum Alloy Application
on Automotive Control Arm 901**
F2012-E07-021
Juanli Ni, Li Li, Qiang Liu, Fuquan Zhao, Yi Xu, Shijie Guo
and Bowen Changhai

Using Shape Memory Alloys in Automotive Safety Systems 909
F2012-E07-023
Viorel Gheorghita, Paul Gümpel, Joachim Strittmatter, Chiru Anghel,
Thomas Heitz and Mathias Senn

**Study on Electro Rheological Fluid Shock Damper
and Adjustable Damping Performance. 919**
F2012-E07-024
Jianhua Wang, Fei Xie, Yuncheng Wang and Chunbao Guo

**Cyclic Tension–Compression Test of Mg Alloy Sheet
at the Elevated Temperature 927**
F2012-E07-029
Oh Suk Seo, Heon Young Kim, Myoung-Gyu Lee,
Ji Hoon Kim and Dae Yong Kim

The Third Generation Auto Sheet Steel: Theory and Practice. 933
F2012-E07-030
Shanqiang Ying and Han Dong

Part VIII Automotive Reliability Technology

**Vehicle Usage Measurement and Analysis Based
on the Random Retail Customer 951**
F2012-E08-001
Yaozeng Pan, Feng Yang and Chenyang Li

Part IX Lightweight Design Technology

Design, Evaluation Methods and Parameters of Automotive Lightweight	965
F2012-E09-001	
Mingtu Ma and Hongzhou Lu	
Body Light Weight and Cost Control	977
F2012-E09-006	
Dazhou Guo	
Lightweight Design and Formability Analysis of Auto Body Aluminum Trunk Lid	987
F2012-E09-007	
Zhao Liu, Ping Zhu and Xiaojing Zhu	
Geometric Parameters Optimal Design of Variable Cross-Section Rim	1003
F2012-E09-009	
Hongyu Wang	
Lightweight Design for a FSC Car Based on Modal and Stiffness Analysis	1009
F2012-E09-012	
Liman Jiang, Guoquan Wang, Guoqing Gong and Ruiqian Zhang	
Application of Comprehensive Optimization into Bus Structure Lightweight Improvement in 3-Section Chassis Frame	1023
F2012-E09-014	
Congcheng Ma and Fengchong Lan	
Applying Agile Software Principles and Practices for Fast Automotive Development	1033
F2012-E09-015	
David Socha, Tyler C Folsom and Joe Justice	
Multi-Objective Evaluation Regulation Study of Automotive Lightweight	1047
F2012-E09-016	
Hongzhou Lu, Zhiwen Wang, Ma Mingtu, Yilong Cheng and Guimin Lu	
Future Mobility Requires Advanced Car Concepts and Power Train	1057
F2012-E09-025	
Sven Augustin	

A Lightweight Optimization Method of Vehicle Body Structure Design.	1063
F2012-E09-026	
Zhixiang Li and Jifa Mei	
Analysis of the Transient Thermomechanical Behaviour of a Lightweight Brake Disc for a Regenerative Braking System. . . .	1075
F2012-E09-028	
S. Sarip, A. J. Day, P. Olley and H. S. Qi	
Concept Analysis of Automotive Aluminium Alloy Bumper	1089
F2012-E09-030	
Xinming Wan, Xiao Zhi, Qingjiang Zhao, Guangyao Wang and Xiaofei Xu	
Study on Lightweight of Vehicle Body Structure Based on Implicit Parametric Model	1101
F2012-E09-031	
Jiyou Zhang, Shudan Liu, Hong Peng, Yongxin Men and Fuquan Zhao	
Lightweight Design and Evaluation for Cab-in-White of Heavy-Duty Truck	1109
F2012-E09-034	
Xinyu Wang, Dengfeng Wang, Wanlai Sun and Peiwu Liu	
Research on Parameterized Structural Modeling for Carbody Lightweighting.	1119
F2012-E09-038	
Xin Chen, Fangwu Ma, Dengfeng Wang, Yongxin Men, Qiang Liu, Zaiqi Yao, Junlong Zhou and Chen Xie	
Reliability-Based Topology Optimization of Control Arm of Suspension for Lightweight Design.	1129
F2012-E09-039	
Qinghai Zhao, Xiaokai Chen and Yi Lin	
Structural Lightweight Design of Engine Connecting Rod.	1139
F2012-E09-042	
Fuxiang Huo, Jun Li, Yu Xu, Bing Wu, Yepeng Han, Peng Li and Qun Zhang	
Part X Design for Recycling	
Development of Environmental Assessment System of Vehicle	1151
F2012-E10-001	
Moosang Yu and Yunjong Kim	

**Research on Hydraulic Regenerative Braking System
for Pure Electric Vehicle Based on AMESim 1161**
F2012-E10-002
Junping Jiang, Xiaobin Ning, Yaoting Xu, Qiucheng Wang,
Wei Liu, Zhijie Pan and Fuquan Zhao

Part XI Dynamic Modeling

**Main Problems of Creating Surface Traction-Transport
Vehicles with Mechatronic Systems 1173**
F2012-E11-001
Belousov Boris and Ksenevich Tatiana

Wheelbase Filtering Effect on Vehicle Ride Dynamics. 1183
F2012-E11-007
Kang Song, Xiaokai Chen and Yi Lin

Part XII Simulation and Experimental Validation

**Modeling and Experimental Research About a New Type
of Vehicle Active Suspension Electromagnetic Actuator 1199**
F2012-E12-001
Lai Fei and Huang Chaoqun

**Research on Nonlinear Characteristics of Hydro-Pneumatic
Spring and Impact to Ride Performance of Vehicles. 1211**
F2012-E12-002
Junwei Zhang, Sizhong Chen, Zhicheng Wu, Lin Yang and Bin Zhang

**Simulation Research on Car Suspension Durability Enhancement
Test Based on Virtual Proving Ground 1223**
F2012-E12-003
Zhenglin Cao, Jun Li and Konghui Guo

**Simulation Research on Strong Fluid–Solid Interaction
of Hydraulic Engine Mount. 1235**
F2012-E12-004
Zhenglin Cao, Jun Li, Konghui Guo and Qun Zhang

A Study on Battery Model Verification Using Battery HILS 1249
F2012-E12-008
Hyun-Sik Song, Tae-Hoon Kim, Jin-Beom Jeong, Byoung-Hoon Kim,
Dong-Hyun Shin, Baek-Haeng Lee and Hoon Heo

Extended Flexible Environment and Vehicle Simulation for an Automated Validation	1263
F2012-E12-010	
Albert Albers, Rolf Hettel, Matthias Behrendt, Tobias Düser and Alexander Schwarz	
Application of Energy Distribution Analysis During the Vehicle Development	1275
F2012-E12-012	
Yongsheng Long, Jianpeng Shi, Li Xin, Xueen Zhang, Jun Wang and Shaoju Qu	
Simulation and Correlation of Commercial Axle Banjo Housing Fracture Under Braking Fatigue Test	1287
F2012-E12-013	
Ajay Guddeti and Abhijit Nilangekar	
Development of a Vehicle Simulator Based on a Real Car for Research and Education Purposes	1301
F2012-E12-015	
Zsolt Szalay, Péter Gáspár, Zoltán Kánya and Dávid Nagy	
Early Verification of Complex Distributed Systems Using Model Driven Development and Virtual Engineering	1313
F2012-E12-020	
Lance Brooks, Jun Wu and Darrell Teegarden	
Research in the Impact of Curtain Airbag Deployment on Interior	1327
F2012-E12-021	
Shuyuan Zhou, Liangming Xiang, Jie Lou, Wenwei Zhang and Min Xu	
Multi-Domain Modeling and Simulation of Automotive Air Conditioning System Based On Modelica	1337
F2012-E12-024	
Jing Li, Yunqing Zhang and Wei Chen	
Predictive Energy Management Strategies in Virtual Driving Tests: Early Evaluation of Networked Controller Functions in Realistic Use Cases	1351
F2012-E12-027	
Andreas Kunz, Bernhard Schick and Steffen Lange	

Evaluation of Video-Based Driver Assistance Systems with Sensor Data Fusion by Using Virtual Test Driving	1363
F2012-E12-028	
Bernhard Schick and Steffen Schmidt	
Vehicle Warm-Up Analysis with Experimental and Co-Simulation Methods.	1377
F2012-E12-029	
Daniel Ghebru, Christian Donn, Wolfgang Zulehner, Heiko Kubach, Uwe Wagner, Ulrich Spicher, Wolfgang Puntigam and Klaus Strasser	
Modelling and Simulation of AMT Truck Clutch Actuating Mechanism	1391
F2012-E12-030	
Yanying Guo, Xintian Lu, Tao Yan and Zhonghui Sun	
Vibration Fatigue Analysis of Adaptive Front Lighting System.	1401
F2012-E12-031	
Yeon Gyoo Lee, Seungryul Choi and Tae Ryong Jeon	
Application of Two-Chamber Muffler to Reduce Car Noise in Engine Intake System	1411
F2012-E12-040	
Zhihong Tang, Zhenying Zhu, Yongxin Men and Fuquan Zhao	
Ergonomic Simulation and Optimization During the Body Assembly	1419
F2012-E12-041	
Yanjun Gao, Xianbo Wei, Beifang Ma, Yang Yu, Xingmin Wei and Fuquan Zhao	
Test and Analysis of the Mechanical Properties for Laser-Welding Seams and Spot-Welding Joints	1429
F2012-E12-046	
Liling Zhang, Xuefeng Chen, Qing Jiang and Xu Wang	
Aerodynamic Design and Numerical Simulation Analysis of a Passenger Car’s Defrosting Duct.	1441
F2012-E12-048	
Bo Yang, Li-na Huang and Fengtao Ren	

**An Operating System for the Optimization of Technical Systems
Using the Example of Transmission Calibration 1449**
F2012-E12-051

Albert Albers, Alexander Schwarz, Matthias Behrendt and Rolf Hettel

**Model Structure, Realization and Learning Process For a Driver
Model Being Capable to Improve Performance
with Learning by Itself 1461**
F2012-E12-052

Kazuhide Togai and Hisashi Tamaki

Part XIII Virtual Design, Testing and Validation

**The Suspension Optimization of FSAE Racing Car Based
on Virtual Prototyping Technology 1481**
F2012-E13-002

Jun Ni, Sizhong Chen and Zhicheng Wu

**The Study of the Impact of Aluminum Formability Parameters
on its Stamping Formability 1491**
F2012-E13-003

Jian Zhang, Mingtu Ma and Hongzhou Lu

**Calculation of Shrinkage Rate for Injection Molding Based
on Moldflow 1501**
F2012-E13-007

Fangcheng Xiao, Lei Chen and Xiao Wang

**A Study of Contact Condition in Vehicle Transmission
Virtual Assembly System 1511**
F2012-E13-010

Yan Chen, Shouwen Yao and Fei Liu

**The Multi-Properties Modeling Technologies of Virtual Assembly
for Vehicle Transmission Based on the Design 1521**
F2012-E13-011

Fei Liu, Qingdong Yan, Shouwen Yao and Xin Zheng

New Technologies in Driving Dynamics Performance Simulation . . . 1531
F2012-E13-012

Cibrario Valerio and Cugnon Frederic

Transmission System Design and Manufacture in FSC Racing Vehicle.	1551
F2012-E13-014	
Zhenpo Wang, Changfu Zou, Lei Yue and Lei Zhang	
Parallel Design Optimization of Articulated Heavy Vehicles with Active Safety Systems	1563
F2012-E13-015	
Manjurul Md. Islam, Steve Mikaric, Yuping He and Thomas Hu	
The Application of Dual Limit Analysis Method in Physical Performance Characteristics Defining and Structural Designing	1577
F2012-E13-016	
Chi Luo	
Predicting Battery Pack Thermal and Electrical Performance in a Vehicle Using Realistic Drive Cycle Power Profiles	1587
F2012-E13-017	
Allen Curran and Scott Peck	
Virtual Test Drive in the Application Process of ESP®-Systems to Ensure Performance and Robustness.	1595
F2012-E13-019	
Albert Lutz, Fabien Macaire and Walter My	
The Test and Analysis of Car's Brake Noise.	1611
F2012-E13-020	
Qinghai Sui	
Thermal Management Simulation of Passenger Car with Naturally Aspirated and Turbocharged Gasoline Engine	1621
F2012-E13-021	
Haie Chen, Hongzhou Li, Xinxin Dai, Qun Chen and Kang Li	
 Part XIV Testing of Components, Systems and Full Vehicle	
Research on User Vehicle Operation Regularity	1643
F2012-E14-008	
Zhonggao Yu, Yutan Zhang, Yonghong Xu, Gan Chen, Jianguang Zhou, Jianxian Chen and Jie Bai	

Acoustic Mode and Structure Mode Analysis of Heavy Duty Truck Muffler	1655
F2012-E14-011	
Guoquan Wang, Cheng Zhao, Liangcheng Zhang and Yong Chen	
Transient Thermal Measurement of Electronic Components and Radiometric Characterization of LEDs	1669
F2012-E14-013	
Boris Marovic and Alexandra Francois-Saint-Cyr	
Maneuver-Based Testing of Integrated, Highly Interconnected Safety Systems	1677
F2012-E14-019	
Kathrin Sattler, Andreas Raith, Thomas Brandmeier, Christian Schyr and Daouda Sadou	
Studying of Instantaneous Emissions Character for Hybrid Electric Vehicle	1691
F2012-E14-024	
Yanxin Nie, Baocheng Du, Peng Wan and Jingsi Xie	
Effect of Cryogenic Treatment on Retained Austenite and Fatigue Life of Gcr15 Wheel-Hub Bearing	1701
F2012-E14-025	
Qiucheng Wang, Xiaobin Ning, Qi Chen and Bintao Mao	
A Study on Analysis Method of Motion Characteristics in the Crash Test Based on Computer Vision	1709
F2012-E14-029	
Guohua Cao, Gang Han, Weiguo Liu and Fuquan Zhao	
Study of Optimized Tuning in Full AFLS Head Lamps	1719
F2012-E14-031	
Doohyun Kim	
Improvements in Test Protocols for Electric Vehicles to Determine Range and Total Energy Consumption	1733
F2012-E14-032	
Juhani Laurikko, Jukka Nuottimäki and Nils-Olof Nylund	
New AMFM Test Method with Android Operation System	1745
F2012-E14-038	
Yongqing Zhu, Kerun Xu, Lubing Zeng, Minjie Tian and Chendong Wang	

Part XV Subjective and Objective Evaluation of Performances

Ergonomic Evaluation System for Vehicle Package. 1755
F2012-E15-001
Shihai Li, Yongqing Liu, Zhongxian Chen, Mengdong Mi, Hao Chen,
Weiwei Du, Tingchuan Song and Huang Jian

**Subjective and Objective Vehicle Tests, Two Parallel
Vehicle Handling Evaluations** 1767
F2012-E15-004
Eric Chabrier and Michel Grima

**Subjective Evaluation and Modeling of Human Ride Comfort of
Electric Vehicle Using Tools Based on Artificial Neural Networks. . .** 1777
F2012-E15-005
Lerspalungsanti Sarawut, Albers Albert and Ott Sascha

**Torque Vectoring Control Design Based on Objective
Driving Dynamic Parameters.** 1787
F2012-E15-006
Michael Graf and Markus Lienkamp

**Integrated State Estimation with Driving Dynamic Sensors
and GPS Data to Evaluate Driving Dynamics Control Functions. . .** 1797
F2012-E15-013
Markus Bauer, Carlo Ackermann and Rolf Isermann

Evaluation Tool for Current and Future Powertrains. 1807
F2012-E15-016
Barak Adam

Part XVI Other

**Wet Handling Track: Utilities, Water System, Coefficient
of Adherence.** 1825
F2012-E16-005
Pinilla Marc, Carbonell Abel and Arango Luz A

**The Development of an Auxiliary Unloading Device
for Dump Trucks** 1837
F2012-E16-006
Guoxing Li and Tie Wang