Contents

Part I  Automotive Structure Crashworthiness

The New ECE Regulation Brings Challenge on Commercial Vehicle .......................... 3
F2012-F01-001
Lilin Zhou, Yanhui Wang, Shifei Wang, Wei Li and Shuli Zhao

BIW Safety Performance Research Based on Vehicle Frontal Crash ................................ 13
F2012-F01-003
Zhida Shen, Xin Qiao and Haishu Chen

Development of an Impact Absorbing Component by Gimlet Form for any Crushes ........ 27
F2012-F01-004
Tauchi Hideki

Study on the Spot-Weld Failure Prediction Model in Auto Crash Simulation ................. 39
F2012-F01-005
Xiao Feng

Ultra High Strength Steel B Pillar Reinforcement Structure to Enhance Side Impact and Roof Crash as Reducing Weight ............. 53
F2012-F01-006
Do Hoi Kim, Chan Young Kang, Jong Weon Seo, Jung Han Kim and Yong Bai Joo

The Design of Car’s Crash Box Based on the Section Force ................................. 73
F2012-F01-007
Man Yang
Vehicle Front Crash Design Accounting for Uncertainties.................. 83
F2012-F01-009
Markus Zimmermann

The Initial Velocity Value of Coach in Frontal Impact Research............ 91
F2012-F01-010
Zhaokai Li, Qiang Yu, Junjie Chen, Qiang Li,
Guosheng Zhang and Xiao Yuan

Study on Correlation Method of C-NCAP Full Frontal Impact .............. 105
F2012-F01-026
Feng Huang, Yongxing Chao and Weigang Chen

Study on Vehicle Body Structure Deformation
Modes in Frontal Crash.................................................. 117
F2012-F01-028
Huihong Liao, Weiguo Liu, Dayong Zhou,
Chun Wang and Fuquan Zhao

Part II  Occupant and Child Safety Protection

An Analysis on Optimization of Side Impact Performance
for X Project Using Madymo............................................. 133
F2012-F02-003
Lijuan Hu, Minhui Liu and Houjun Zhang

Optimization Analysis of Chest Injury of a Dummy
in a Vehicle Subjected to Side Collision................................ 147
F2012-F02-004
Yan Liu and Haishu Chen

Ejection of Passengers in Bus Rollover Accidents......................... 161
F2012-F02-005
Matolcsy Mátyás

Enhancement Vehicle’s Occupant Safety by Using Vehicle Dynamics
Control Systems in Vehicle-to-Barrier Offset Frontal Collision........... 179
F2012-F02-006
Mustafa Elkady and Ahmed Elmarakbi

Research on a New Airbag in the Seat Back of Vehicle....................... 193
F2012-F02-013
Zhi Wang, Huili Yu, Taisong Cui and Hui Zhao
Study of the Sled Test Simulation for 40 % Offset Deformable Barrier Crash Test ........................................... 201
F2012-F02-014
Zhi Wang, Bi-na Dai and Hui Zhao

Development of a Six-Year Old Digital Human Body Model for Vehicle Safety Analysis ........................................ 207
F2012-F02-015
Jesse Ruan, Stephen Rouhana and Saeed Barbat

New Concept for Neck Injury Lessening System Development ........ 223
F2012-F02-019
SangDo Park, DongWoo Jeong, Hak Gyun Kim and Jin Young Nam

Evaluation of the Testing Capabilities of the Q10 Prototype Dummy ........................................... 237
F2012-F02-022
Alejandro Longton, Marianne Hynd, Kees Waagmeester, Erik Salters and Serge Cirovic

Improvement of the Child Injury Risk Curves for Road Accidents . . 247
F2012-F02-023
Alejandro Longton, Philippe Lesire, Heiko Johannsen, Philippe Beillas, Anita Fiorentino and Alan Kirk

Optimization of Passive Head Restraint for IIHS Low Speed Rear Impact .................................................. 257
F2012-F02-026
Dong Ming

Optimization Study on Whiplash Injury Reduction in Rear Impact .................................................. 269
F2012-F02-027
Yuanbo Wang

The Safety of Body Structure and Occupant Protection Research of Medium Bus Under Three Kinds of Frontal Impact Forms. ........ 279
F2012-F02-038
Zhaokai Li, Yuan Xiao, Wenyan Zhu and Hanxue Zhao
Part III  Pedestrian Protection

Development of a Parametric Vehicle Front Structure Model for Pedestrian Impact Simulations ........................................ 295
F2012-F03-004
Bingbing Nie, Jun Huang, Yong Xia, Qing Zhou, Bing Deng and Mark Neal

Front Stop Lamps for a Safer Traffic ....................................... 311
F2012-F03-006
Ovidiu Antonescu

Study on Headlamp with Spot Light ....................................... 315
F2012-F03-007
Byoungsuk Ahn, Youngsub Oh, Hootae-k Cho, Myunggug Bang and Sunkyoung Park

Analysis of Pedestrian Kinematics and Injury Mechanism in Real World Accidents ......................................................... 325
F2012-F03-010
Daisuke Murakami, Chinmoy Pal, Yoshiko Kawabe and Tomosaburo Okabe

Development of an On-Board Pedestrian Detection System Using Monocular Camera for Driver Assistance Applications ........ 341
F2012-F03-013
Pongsathorn Raksincharoensak, Yuichi Sakai, Ikuko Shimizu, Masao Nagai, Dirk Ulbricht and Rolf Adomat

Pedestrian Detection by Neuromorphic Visual Information Processing ................................................................. 351
F2012-F03-017
Han Woo Joon, Kim Chulsoo and Han Il Song

Development of an On-Board Crosswalk Detection for Pedestrian Protection Using a Monocular Camera .......................... 363
F2012-F03-019
Yuichi Sakai, Pongsathorn Raksincharoensak, Ikuko Shimizu, Masao Nagai, Dirk Ulbricht and Rolf Adomat
On-Demand Driver Vigilance Enhancement Without Drowsiness Detection ........................................ 477
F2012-F07-003
Shane Chang

Pre-Crash Performance of Collision Mitigation and Avoidance Systems: Results from the Assess Project ............... 489
F2012-F07-006
Andrés Aparicio, Sébastien Baurès, Jordi Bargalló, Carmen Rodarius,
John Vissers, Oliver Bartels, Patrick Seiniger, Paul Lemmen,
Thomas Unselt, Maminirina Ranovona,
Tatsuhiro Okawa and Swen Schaub

Optical Self Diagnostics for Camera Based Driver Assistance ........ 507
F2012-F07-008
HadjHamma Tadjine, Dehghani Anoushirvan,
Dick Eugen and Karsten Schulze

Object Detection and Classification Using a Rear In-Vehicle Fisheye Camera ........................................ 519
F2012-F07-009
HadjHamma Tadjine, Markus Hess and Schulze Karsten

Abnormal Driving Behavior Detection Using a Linear Non-Gaussian Acyclic Model for Causal Discovery .............. 529
F2012-F07-010
Zujie Zhang, Yuta Inoue, Kazushi Ikeda, Tomohiro Shibata,
Takashi Bandou and Takayuki Miyahara

euroFOT: Field Operational Test and Impact Assessment of Advanced Driver Assistance Systems: Final Results .......... 537
F2012-F07-012
Mohamed Benmimoun, Andreas Pütz, Adrian Zlocki and Lutz Eckstein

A New Risk Evaluation Index for Rear-End Collisions Considering Drivers’ Risk Perception .......................... 549
F2012-F07-023
Hui Zhang, ShaoBo Qiu, Hongjian Li and Bin Liu

Study on the Highway Vehicle Collision Avoidance and Warning System ............................................. 557
F2012-F07-025
Yuncheng Wang, Xie Fei, Jianhua Wang and Xu Hao
Effectiveness Assessment of Human–Machine Interface in Driver Assistance System .......................... 567
Bo Li, Weiguo Liu, Xiaolin Zhang, Zhijie Pan and Fuquan Zhao

Part VII Vehicle Controls on Handing and Stability

Sliding Mode Control for All-Wheel Steering of Four-Axle Vehicle . . . 577
Kaifeng Zheng and Sizhong Chen

Vehicle Control via Real-Time Flow Modeling and Flow Manipulation ................................. 589
Hiroshi Tokutake, Taro Tsukada and Eiji Itakura

Road Test for Interaction Between Differential Lock and Driving Control System .......................... 599
Jian Zhao, Bing Zhu, Jing Li, Jian Wu and Hui Lu

Evaluation of the Effectiveness of Active Safety Systems in Vans with Respect to Real World Accident Analysis .................. 609
Francisco Javier Páez Ayuso, Arturo Furones Crespo, Francisco Aparicio Izquierdo and Blanca Arenas Ramírez

High Accuracy Yaw Rate Sensor for Preventive Safety System ........... 619
Masamoto Kawaguchi, Naoki Fujimoto, Takashi Katsumata and Masaaki Tanaka

The Exploration and Improvement of Steering Heavy for Heavy Dumper ........................................ 631
Jian Chen

Sidewise Adaptive Single-Track Vehicle Model for ESC .................. 645
Zhenfu Chen, Georg Roll, Alfred Eckert and Peter Rieth
Dynamic Stability Control Strategy Development for an In-Wheel Motorized Electric Vehicle 657
F2012-F08-013
Jianwu Zhang, Yan-e Zhao, Xiqiang Guan and Tongli Lu

A Study of Cornering Braking Control Strategy Based on Road Identification 669
F2012-F08-014
Xiqiang Guan, Yao Li, Tengyue Ba and Jianwu Zhang

Van Traffic Accident Analysis. A Holistic Approach 681
F2012-F08-015
Blanca Arenas Ramírez, Javier Páez Ayuso, José M. Mira McWilliams,
Felipe Jiménez Alonso, Arturo Furones Crespo and Francisco Aparicio Izquierdo

Study on Rollover Prevention of Heavy-Duty Vehicles by Using Flywheel Energy Storage Systems 693
F2012-F08-016
Suda Yoshihiro, Huh Junhoi, Aki Masahiko, Shihpin Lin,
Ryoichi Takahata and Naomasa Mukaide

Part VIII Safety Standards and International Regulations

Iso 26262 Impact on Development of Powertrain Control System 705
F2012-F09-003
Hui Guo, Jiaxi Liu, Shitao Yu and Jun Li

Analysis and Improvement for the Failure of Seat Belt Anchor of a Car Based on Simulation and Experiment 717
F2012-F09-004
Yongsheng Li, Hong Peng, Bing Rong, Yongxin Men and Fuquan Zhao

Passengers’ Safety Evaluation Research Based on Vehicle with Freeway Guardrail Impact 733
F2012-F09-005
Hui Tang, Yongxin Men, Qiangxiang Guo, Jianxun Liu and Fuquan Zhao

Protection of Occupants for Survival Space as per ECE R29: A Study of Regulatory Requirements, New Proposals and Challenges of Implementation in Global Context 747
F2012-F09-008
Mukesh Sharma
Automotive Functional Safety Compliance Requirements with ISO 26262: HW Architectural Metrics with an Example 769
F2012-F09-009
T. Chitra

Part IX Other

Research on Vehicle Transportation Safety Risk Assessment and Control 783
F2012-F10-002
Jie Yang and Xinpeng Tang

Reliability in Automotive Engineering by Fuzzy Rule-Based FMEA 793
F2012-F10-003
László Pokorádi and Tímea Fülep

Back Muscle Activity While Operating a Vehicle 801
F2012-F10-010
Chaoyang Chen, Bo Cheng, Zhengguang Wang, Dawei Chen, Xin Tao and John M. Cavanaugh

Development of Lightweight Front Side Member Through Hydroforming Technology 813
F2012-F10-017
Proceedings of the FISITA 2012 World Automotive Congress
Volume 9: Automotive Safety Technology
; (Eds.)
2013, XIII, 818 p., Hardcover
ISBN: 978-3-642-33804-5