8th International Forum of Automotive Traffic Safety 2010

(INFATS 2010)

Wuhu, China 2-4 December 2010

Editors:

Jikuang Yang

ISBN: 978-1-61839-144-5

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© (2010) by the Scientific Research Publishing Inc. All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the Scientific Research Publishing Inc. at the address below.

Scientific Research Publishing Inc. P.O. Box 54821 Irvine, CA 92619-4821

Phone: (408) 329-4591

bookorder@scirp.org

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

Contents

Session 1 Vehicle Crashworthiness and Compatibility

Reproduce of Vehicle Frontal Crash Waveform Using Thin-Walled Circular Energy Absorption Tube	
Libo Cao, Peigang Yan·····	(1)
Performances Study of Aluminum-alloy Vehicle Hood	
Yajun Wang, Liang Zhang, Lian Lu, Shenrong Wu·····	(6)
The Preliminary Study of Car-to-Car Frontal Collision	
Liwei Xu, Shenrong Wu, Hongmiao Wang, Jingang Tu·····	(10)
Study on Performance of Aluminum-Alloy Car Frontal Side Rails	
Liwei Xu, Youzhong Xu, Shenrong Wu, Hongbing Wang, Jingang Tu·····	(15)
Strain Rate Effects Investigated in Simulation of Dynamic Crush of the Rectangular Beam	
Zhengping Huang, Jikuang Yang·····	(20)
Optimization of Goods Vehicle Side Under-run Protection Devices Based on Simulation Analysis	
Xueyang Yin, Haibo Huang····	(26)
The Pollution Characteristics of Nutrient and Organic Pollutions during the Icebound Season in Lakes	
Yuqiu Yang, Xiaofeng Wu, Hiroyuki Hamada·····	(31)
Effects of Seat Structure Stiffness on Side Impact Safety	
Ming Xiong, Jikuang Yang, Jie Guo·····	(36)
Investigation of Damage Location for Passenger Vehicle in Front-to-Side Impact Collision	
Youme Tong, Hongwu Huang, Shuiting Zhou, Fang Qiu, Fenggang Han, Jing Xiao·····	(41)
Crashworthiness Optimization of Longitudinal Beam Based on Artificial Neural Network and Genetic Algorithm	
Xisheng Zhou, Jikuang Yang, Chao Li, Xiaoqing Jiang·····	(46)
Optimization of Crashworthiness of Rear-End Structures of Vehicle	
Jiong Fu, Jikuang Yang, Jie Guo·····	(52)
Optimization of the Structure of Crash-Box Based on RCAR Front Impact Test	
Xiaoqiang Sun, Jikuang Yang·····	(57)
New Generation of Security Road Blocker (SRB) Design and Its Performance Subjected to Commercial Vehicle Crash	
E C Chirwa, Q Peng, A Lace, E Matsika, S Nowpada····	(62)
Safety of Busses and Coaches: Current Situation and Priorities for Future Researches	
Dominique Cesari	(68)
Optimization of Thickness of Car Side Structure Regarding Crashworthiness in Pole Side Impact Using Kriging Method	
Yide Li, Jikuang Yang, Xiaoqing Jiang·····	(72)
Session 2 Protection for Occupant and Vulnerable Road Users	
Evaluation of Anchorage Systems of Child Restraint According to ECE R44 by Computer Simulations	
Xiangcui Qi, Jikuang Yang·····	(77)

Evaluation of the Child Restraint System (CRS) Dynamic Performance by Test and CAE Analysis	
Chengyue Jiang, Yuanzhi Hu, Rui Fang, Jian Yuan····	(82)
Optimization of Adaptive Restraint System for Vehicle Frontal Impact	
Shiwei Zhou, Jikuang Yang·····	(86)
Chest Injury Factors Analysis in Front Crash	
Chunxian Ju, Kai Zhang, Yongpo Zhao, Xianling Chen	·· (91)
Head Impact Protection Status Analysis of Domestic Vehicles	
Shan Ren, Haibin Li, Kun Wang·····	(96)
Study on the Protective Method for Pregnant Occupant	
Libo Cao, Huiqing Xiao····	(102)
The Study on Improvement of Seat Safety in Euro-NCAP Whiplash Test	
Hongyun Li, Yugang Zhu·····	(108)
Performance Analysis on H-Shaped Airbag for Pedestrian Protection	
Lihai Ren, Jikuang Yang·····	(113)
Influence of Forming Effect on the Headform Impact Performance of an Engine Hood	
Puwei Wang, Xiliang Li, Kai Zhang·····	(117)
Improve Analysis of Front Bumper System Based on the Pedestrian Lower Extremity Protection	
Bingyu Wang, Jikuang Yang, Kaitao Jiang····	(121)
Improvement of Bumper Structure to Provide Satisfactory Protection of Pedestrian Lower Extremity	
Yuhua Li, Jikuang Yang····	(126)
Optimization of Vehicle Frontal Structure Parameter Based on Pedestrian Integrative Protection	
Libo Cao, Zhiwei Deng, Lingdong Ye·····	(131)
Impact Experimental Investigation of PVB Laminated Glass Based on High-Speed Photography: An Initial Attempt	
Mengyi Zhu, Bohan Liu, Yueting Sun, Jun Xu, Yibing Li·····	(137)
Comparison Analysis of Car-Pedestrian and Car-Bicyclist Crash	
Fuhao Mo, Jikuang Yang	(141)
Session 3 Road Vehicle Accident	
Influence of Braking Deceleration of Cars in Accident Events on the Assessment of Injury Severity	
Otte Dietmar, Wiese Birgitt····	(147)
The Three Threes Principles on Traffic Accident Liability Determination	
Jianfei Huang·····	(156)
Influence of Vehicle Speed and Front Structure on Driver Brain Injury of Scooter-like Electric Bicycle	
Xilei Zhao, Jikuang Yang, Guibing Li·····	(161)
Study and Application of Vehicle Speed Estimation Based on the Scratched Marks on Sidewall of Tire	
Pingfei Li, Hua Zhou	(168)
Research on Characteristic of Traffic Accidents at Highway Intersections	
Lingtao Wu, Daoyue Peng, Guohua Shen, Chengcheng Tang······	(172)
Characteristics and Preventing Strategy to the Self-Ignition Accidents of the Semi-Trailer Combination	
Yihong Zhang, Xueyang Yin, Tingxuan Zhou······	(176)

Measures of Improving on Railway Intersection Traffic Safety and Research on Frame Bridge Design Technique Jiawen Li	. (191)
Vehicle-Cyclist Accident Reconstruction Study Based on PC-Crash	(101)
Dang Xu, Xichan Zhu, Ye Feng, Zhixiong Ma	(185)
Auto Alarm Technology in the Traffic Accident Integrated Rescue System	(103)
Yang Song, Hui Wang, Huiqing Jin, Binjun Song·····	. (100)
Collision Detection Based on Audio Alarm Technology of Major Traffic Accidents	(190)
Yang Song, Pengfei Feng, Huiqing Jin, Binjun Song······	(104)
	• (194)
A Research about Macroscopical Factors and Traffic Safety in China Basing on Random-Effects Negative Binomial Model	(200)
Tie-Jun Zhang, Chengcheng Tang, Fang Ye·····	· (200)
Session 4 Biomechanics and Human Body Models	
Influence of Head Boundary Conditions in Pedestrian Real World Head Trauma Simulations	
Marie Munsch, Robert Anderson, Caroline Deck, Bertrand Ludes, Rémy Willinger	(209)
Development and Validation of a Finite Element Model of the Lumbar Segment with Detailed Facet Joint	
Libo Cao, Binhui Jiang, Guanjun Zhang, Long Zhang·····	(219)
A Study on an Approach of Virtual Testing for Passenger Car Air-Curtain in Side Impact Based on a Head Finite Element Mod	lel
Bin Zhang, Jikuang Yang····	(223)
A Study on Intracranial Pressure in Pedestrian and Cyclist Traffic Accidents	
Yong Chen, Yong Peng, Jikuang Yang, Ditmar. Otte·····	(229)
A Study on Head and Chest Injuries in Car-Pedestrian Collisions	
Yong Han, Jikuang Yang, Koji Mizuno, Yasuhiro Matsui·····	• (237)
Investigation of the Effect of Head Material Parameters on Intracranial Responses Based on Finite Element Model	
Shijie Ruan, Wei Zhao, Haiyan Li, Shihai Cui·····	(242)
Clinical and Biomechanics Analysis of Whiplash Injuries	
Haibin Chen, Liying Zhang, Zhengguo Wang, Xuemei Cheng, Yi Wang, Ling Zhang	(246)
Session 5 Assessment Techniques and NCAP	
Comparison on Regulations of the Occupants Protection in the Event of a Frontal Collision in China, America, Europe and Gu	ılf
Liying Peng, Sheng Wang, Xiaomei Huang, Shuhua Zhao·····	· (253)
Characteristic Analysis of Different Child Pedestrian Headforms with Mathematic Models	
Wei Xu, Fan Li∙···	(258)
Capturing Human Motion inside a Moving Vehicle, that Obstructs the Camera Field of View	
Symeonidis Ioannis, Kavadarli Gueven, Schuller Erich, Peldschus Steffen	(262)
Research on Side Sled Test Method of Child Restraint System	
Reniun Wan Zhixin Liu Qi Feno Jian Yuan	. (265)

Session 6 Vehicle Active Safety

Driver Fatigue Detection and Warning System in Road Freight Operation	
Xiaohan Liu····	(269)
Real-Time Traffic Flow Forecasting Based on Traffic Video Detection	
Yang Song, Hai-juan Liu, Hui-qing Jin, Lai Jin·····	(273)
An Empirical Study on the Relationship between Psychological Contract and Employee Loyalty	
Xiaona Bao, Xiaonan Fan·····	(277)
Environmental Analysis and Competitiveness Cultivate of Private Express	
Jinxia He·····	(281)
The Research of Requirement Engineering for Equipment Oriented	
Qisheng Guo, Meng Zhang, Xiaodan Wang, Yaodong Yan·····	(285)
Study on the Effect of Inexplicable Tacit Knowledge on Enterprise Competitive Advantage	
Wen Zhang, Zhengbin Wang, Penghu Qi····	(289)
Research on the Method of Slope Treatment Assessment	
Erping Zhao····	(294)
Application of the Grey Theory in Intrusion Detection System	
Qiang Zheng····	(297)