

ICRASH 2010 Conference Program



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ICRASH 2010 Washington, DC USA



International Crashworthiness Conference

September 22-24, 2010

THE NATIONAL CONFERENCE CENTER
18980 Upper Belmont Pl, Leesburg, Virginia 20176, USA
www.conferencecenter.com

Organized by

- The University of Bolton, UK
- The George Washington University, Virginia Campus, USA
 - Taylor & Francis Group (Publishers of IJCRASH), UK
- Bolton Automotive & Aerospace Research Group (BAARG), UK
- The Editorial Members of the International Journal of Crashworthiness

www.bolton.ac.uk/bee/baarg/conferences/icrash2010.aspx



ICRASH 2010 Conference Program

Program Chairpersons

E. Clive Chirwa (*The University of Bolton, Bolton, UK*)

C. D. (Steve) Kan (*The George Washington University, Virginia Campus, USA*)

Distinguished Conference Scientific Faculty

W. Abramowicz (*Impact Design, Europe, Poland*)

S. Acar (*Loughborough University, UK*)

W. Altenhof (*University of Windsor, Canada*)

J. A. Ambrosio (*Instituto Superior Technico, Portugal*)

F. A. Bandak (*Uniformed Services University of the Health Sciences, USA*)

F. A. Berg (*Dekra Automobil GmbH, Germany*)

C. Bisagni (*Politecnico di Milano, Italy*)

M. D. Gilchrist (*University College Dublin, Ireland*)

R. H. Grzebieta (*University of New South Wales, Australia*)

H. Hamada (*Kyoto Institute of Technology, Japan*)

C. Kindervater (*D F L, Germany*)

K. Langwieder (*Institute of Vehicle Safety, Germany*)

A. G. Mamalis (*National Technical University of Athens, Greece*)

K. Mizuno (*Nagoya University, Japan*)

D. Otte (*Medical University Hannover, Germany*)

J. J. Quartuccio (*Naval Air Systems Command, Maryland, USA*)

J. D. Reid (*University of Nebraska-Lincoln, USA*)

ICRASH 2010 Conference Program

Local Organizing Committee and Conference Managers

Lilly Nix

Conference Manager

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Please refer to the Conference Website for program updates:

<http://www.bolton.ac.uk/BEE/BAARG/Conferences/icrash2010.aspx>

ICRASH 2010 Conference Program

Opening Evening Reception – Tuesday, 21 September 2010

07.00 – 09.30 pm

Pre-conference Registration

Welcome

General Chairperson: E C Chirwa, *The University of Bolton, Bolton, UK*

Co-Chairperson: C D (Steve) Kan, *The George Washington University, Virginia Campus, USA*

Conference Manager: Lilly Nix, *The George Washington University, Virginia Campus, USA*

Conference Assistant Manager: Sravanthi Nowpada, *The University of Bolton, Bolton, UK*

Cocktail Evening Reception
Hosted by

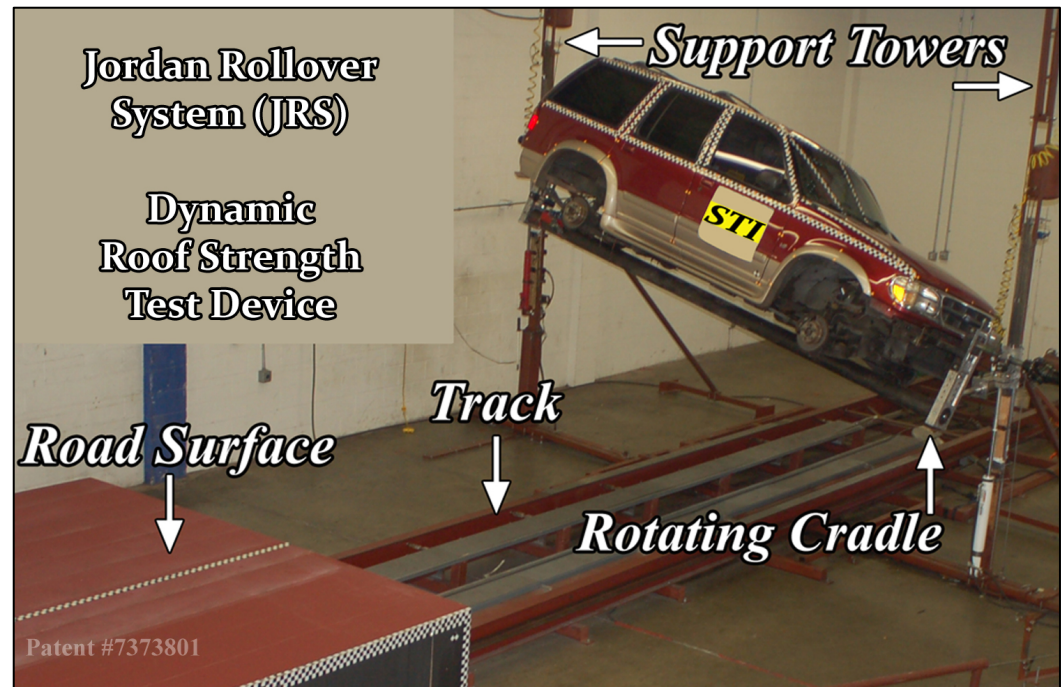
Safety Testing International (STI)

Venue: The National Ballroom Reception Lounge

You are all cordially invited!!

STI Home of the ... **Jordan Rollover System**
Dynamic Roof Strength Test Device

Safety Testing International www.safetytestingintl.com



Striving for Better Mobile Structural Crashworthiness and Injury Prevention

ICRASH 2010 Conference Program

Day One – Wednesday, 22 September 2010

08.00 – 09.00

Conference Registration - Tea and Coffee

09.00 – 09.05

Welcome Session

General Chairperson: E C Chirwa, *The University of Bolton, Bolton, UK*

Co-Chairperson: C D (Steve) Kan, *The George Washington University, Virginia Campus, USA*

09.05 – 09.25

OFFICIAL OPENING LECTURE

Chair: C. D. (Steve) Kan, *The George Washington University, Virginia Campus, USA*

Name: Dr Alan S Kushner

Chief Technical Advisor For Research and Advanced Technology

National Transportation Safety Board (NTSB)

Plenary Session

Chair: A S Kushner, *National Transportation Safety Board*

09.25 – 09.55

KEYNOTE LECTURE I

Name: John Maddox

Associate Administrator for Vehicle Safety Research

National Highway Transportation Safety Administration, US Department of Transportation

09.55 – 10.00

Discussion

10.00 – 10.20 **Coffee and Tea Break**

ICRASH 2010 Conference Program

Day One – Wednesday, 22 September 2010

Session 1A: Road Vehicle Crashworthiness I (General)

Chair: S Batzer, *The Engineering Institute, USA*

10.20 – 10.40 (2010-041)

The influence of vehicle engagement characteristics on whiplash injury risk

M Avery, A Weekes
Thatcham, UK

10.40 – 11.00 (2010-104)

Crash adaptive seat and head restraint systems for rear impact whiplash mitigation

S Himmetoglu
Hacettepe University, Turkey

M Acar
Loughborough University, UK

11.00 – 11.20 (2010-048)

Estimate of injury criteria at a frontal crash via machine learning from CAE sampling

H Horii, Y Matsumura
University of Yamanashi, Japan

11.20 – 11.40 (2010-078)

Evaluating effect of structural changes in the vehicle on the safety of rear seat occupants in frontal crashes

E Sahraei, D Marzougui, K Digges, C D (Steve) Kan
The George Washington University, VA Campus, USA

11.40 – 12.00 Discussion

12.00 – 13.00 Lunch

Session 1B: Impact Biomechanics I (Vulnerable Road User)

Chair: J R Crandall, *The University of Virginia, USA*

10.20 – 10.40 (2010-064)

Modeling the impact response of cranial bone

J A Motherway, M D Gilchrist
University College Dublin, Ireland

10.40 – 11.00 (2010-030)

Finite element analysis of human kinematic behavior and injuries in vehicle to pedestrian collisions

Y Han, J Yang
Hunan University, China

K Nishimoto, K Mizuno
Nagoya University, Japan

Y Matsui
National Traffic Safety and Environment Laboratory, Japan

D Nakane, S Wanami
Denso Corporation, Japan

M Hitosugi
Dokkyo Medical University, Japan

11.00 – 11.20 (2010-085)

Investigation into suitability of current ATDs to represent ageing drivers

B S Acar, J Feng, V Esat
Loughborough University, UK

11.20 – 11.40 Discussion

Session 1C: Railway Crashworthiness

Chair: R Grzebieta, *University of New South Wales, Australia*

10.20 – 10.40 (2010-090)

An investigation into railway interior design for pregnant occupant safety

B S Acar, V Esat
Loughborough University, UK

10.40 – 11.00 (2010-103)

Experimental investigation of the kinematics of a wheelchair occupant in a rail carriage

E C Chirwa, E Matsika, S Nowpada, Q Peng
University of Bolton, UK

11.00 – 11.20 (2010-082)

Protection of railway occupants for the inline seating interior coach layout

Marta Carvalho, Jorge Ambrósio
Instituto de Engenharia Mecânica (IST), Portugal

11.20 – 11.40 (2010-116)

Simulation of crash behavior of a common Indian Railway passenger coach

P Prabhune, A Deb, G Balasubramani
Indian Institute Of Science, India

11.40 – 12.00 Discussion

ICRASH 2010 Conference Program

Day One – Wednesday, 22 September 2010

Session 1D: Impact Biomechanics II (General)

Chair: Y Matsui, *National Traffic Safety and Environment Laboratory, Japan*

13.00 – 13.20 (2010-123)

Head impact biomechanics simulations: A forensic tool for reconstructing head trauma?

J A Motherway, M D Gilchrist
University College Dublin, Ireland

13.20 – 13.40 (2010-120)

Biomechanical considerations for a dynamic rollover crash test

A S McIntosh, B Frechede, R Grzebieta, M Bambach
University of New South Wales, Australia

13.40 – 14.00 (2010-121)

The development of IARV's for the HYBRID III neck modified for dynamic rollover crash testing

J G Paver
Jacqueline G Paver Monrovia, USA

D Friedman, G Mattos, J Caplinger
Center for Injury Research, USA

14.00 – 14.20 (2010-088)

Assessment of the protective performance of hood using head FE model in car-pedestrian collisions

Y Peng, Y Han, J Yang, Y Chen
Hunan University, China

R Willinger
Université de Strasbourg, France

14.20 – 14.40 (2010-025)

Evaluation of the kinematics and Injury potential to a pedestrian impacted by an LTV equipped with a frontal guard

R Moradi, H M Lankarani
Wichita State University, USA

C Thorbole
The Engineering Institute, USA

14.40 – 15.00 Discussion

Session 1E: Aircraft Crashworthiness

Chair: J Ambrósio, *Instituto de Engenharia Mecânica (IST), Portugal*

13.00 – 13.20 (2010-033)

Soft body modeling and bird strike simulations using explicit non-linear finite element codes

M Anghileri, LM L Castelletti, A Milanese, D Molinelli
Politecnico di Milano, Italy

13.20 – 13.40 (2010-039)

Use of a head component tester to evaluate the injury potential of an aircraft head-up display

R DeWeese, D Moorcroft
Civil Aerospace Medical Institute, Federal Aviation Administration, USA

C K Thorbole
The Engineering Institute, USA

H Lankanrani
Wichita State University, USA

13.40 – 14.00 (2010-045)

Evaluation of an externally deployable energy absorber for crash applications

K E Jackson, M Annett, S Kellas,
NASA Langley Research Center, USA

J Littell, M Polanco
ATK Space Systems, USA

14.00 – 14.20 (2010-035)

An estimation of design parameters of aircraft fuselage section for crashworthiness

Hiromitsu Miyaki, Hirokazu Shoji
Japan Aerospace Exploration Agency, Japan

14.20 – 14.40 Discussion

Session 1F: Materials & Safety Systems I

Chair: D C Fleming, *Florida Institute of Technology, USA*

13.00 – 13.20 (2010-047)

Composite helmet finite element modeling and validation

V Tinard, C Deck, R Willinger
Université de Strasbourg, France

13.20 – 13.40 (2010-117)

Energy-Absorption Behaviors of CSM-Based GFRC Plates with Hemispherical Force-Multipliers

A Deb, P Lakshmanan
Indian Institute of Science, India

E C Chirwa, S Nowpada
University of Bolton, UK

13.40 – 14.00 (2010-034)

Experimental tests and numerical modeling for riveted joints characterization

M Anghileri, LM L Castelletti, A Milanese
Politecnico di Milano, Italy

14.00 – 14.20 (2010-028)

Numerical investigation into the deformation behavior of Aluminum Egg-box energy absorber under quasi-static and dynamic loads: Pedestrian Protection Applications

S Nowpada, E C Chirwa, P Myler, E Matsika, Q Peng
University of Bolton, UK

14.20 – 14.40 (2010-066)

Influence of test conditions on dynamic viscoelastic and hyperelastic properties of brain tissue

B Rashid, M Destrade, M D Gilchrist
University College Dublin, Ireland

14.40 – 15.00 Discussion

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Day One – Wednesday, 22 September 2010

15.00 – 15.20 Coffee and Tea Break

Session 1G: Road Vehicle Crashworthiness II (Rollover)

Chair: S Richardson, *DVExperts International, Australia*

15.20 – 15.40 (2010-102)

Modeling of roof crush using the newly updated FMVSS 216

E C Chirwa, Q Peng
University of Bolton, UK

15.40 – 16.00 (2010-021)

How stronger roofs prevent diving injuries in rollover crashes

R H Grzebieta, M Bambach, A S McIntosh
University of New South Wales, Australia

16.00 – 16.20 (2010-051)

The case for a dynamic rollover test

R Rhoads Stephenson
Consultant (Jet Propulsion Laboratory – retired), USA

16.20 – 16.40 (2010-072)

Alternate design modifications of the Jordan Rollover System for research, development and high volume testing

D Friedman, A Jordan, J Jimenez
Center for Injury Research, USA

16.40 – 17.00 (2010-083)

Sensitivity Study of Vehicle Rollovers to Various Initial Conditions - Finite Element Model Based Analysis

F Tahan, K Digges, P Mohan
The George Washington University, VA Campus, USA

17.00 – 17.20 Discussion

17.20 – 17.40 Coffee and Tea Break

Session 1H: Modeling & Simulation I

Chair: J D Reid, *University of Nebraska-Lincoln, USA*

15.20 – 15.40 (2010-081)

Development of generic road vehicle multibody models for crash analysis using an optimization approach

Marta Carvalho, Jorge Ambrósio
Instituto de Engenharia Mecânica (IST), Portugal

15.40 – 16.00 (2010-014)

Modeling, testing, and validation of the 2007 Chevy Silverado Finite Element Model

P Mohan, M Ritter, D Marzougui, D Brown, C D (Steve) Kan
The George Washington University, VA Campus, USA

K Opiela
Federal Highway Administration, Department of Transportation, USA

16.00 – 16.20 (2010-016)

A method for the election of conflict simulations from drive video recorder's data

H Imanaga, S Kitajima, O Takatori, T Arai
Japan Automobile Research Institute, Japan

16.20 – 16.40 (2010-026)

A theoretical study of steady-state cutting of circular tubes by a cutter with multiple blades

S Yi Jin, W Altenhof
University of Windsor, Canada

16.40 – 17.00 (2010-113)

Development of Star Rating System for Rear Underrun Protection of Heavy Vehicles in Malaysia

M H Muntalip, M S Solah, S V Wong
Malaysian Institute of Road Safety Research, Malaysia

17.00 – 17.20 Discussion

Free Evening

ICRASH 2010 Conference Program

Day Two – Thursday, 23 September 2010

08.00 – 08.30 KEYNOTE LECTURE II

Chair: R Morgan, *The George Washington University, Virginia Campus, USA*

Name: Dr Mary Pat McKay, MD, MPH
*Director, Center for Injury Prevention and Control
The Ronald Reagan Institute of Emergency Medicine
The George Washington University Medical Center, USA*

08.30 – 08.35 Discussion

**Session 2A: Road vehicle Crashworthiness III
(General)**

Chair: W Altenhof, *University of Windsor, Canada*

08.35 – 08.55 (2010-024)

An investigation of inertial unlatching of side release seatbelt buckles using computational modeling

C K Thorbole, D A Renfro
The Engineering Institute, USA

08.55 – 09.15 (2010-042)

ESC vehicle dynamic response characteristics under the GTR

M Avery, A Weekes, B Cheetham, C Grover
Thatcham, UK

09.15 – 09.35 (2010-013)

Analysis of small overlap crashes

P Mohan, P Scullion, R Morgan, C D (Steve) Kan
The George Washington University, VA Campus, USA

K Shanks, W Jin, R Tangirala

Hyundai Kia American Technical Center Inc, USA

09.35 – 09.55 (2010-109)

Optimization study of energy absorbing cargo restraint systems

W Kong, E C Smith, C E Bakis
Penn State University, USA

M A Yukish, G M Stump

Applied Research Laboratory, USA

09.55 – 10.15 Discussion

Session 2B: Impact Biomechanics III (Vulnerable Road User)

Chair: J Gugler, *Graz University of Technology, Austria*

08.35 – 08.55 (2010-100)

Modeling of a volunteer's pelvis

E C Chirwa, G K Chinaswamy
University of Bolton, UK

08.55 – 09.15 (2010-115)

Passenger Vehicle Drivers and Motorcycle Riders Injury Severity Risk Factors in Single-Vehicle Accidents

ZA Ahmad Noor Syukri, MI Mohd Hafzi, AR Mohammad Mahafiz, SV Wong
Malaysian Institute of Road Safety Research, Malaysia

09.15 – 09.35 (2010-086)

Pregnant driver injury investigations in oblique crashes

B S Acar, V Esat
Loughborough University, UK

09.35 – 09.55 (2010-096)

Influence of test conditions for pedestrian legform impactor to car bumper impact test results

Y Matsui, S Takagi
National Traffic Safety and Environment Laboratory, Japan

09.55 – 10.15 Discussion

10.15 – 10.35 Coffee and Tea Break

ICRASH 2010 Conference Program

Day Two – Thursday, 23 September 2010

Session 2C: Road Crashworthiness IV (Side Impact)

Chair: B S Acar, *Loughborough University, UK*

10.35 – 10.55 (2010-012)

The relation between the movements of passengers seating on the far side and neck injury mechanisms during accidents

T Sakurai
Iwaki Meisei University, Japan

10.55 – 11.15 (2010-110)

FE Analysis of child occupant kinematics in CRS in side oblique impact

Y Cui, M Yamaguchi, K Mizuno
Nagoya University, Japan

R Yoshida
Takata Corporation, Japan

Y Tanaka
National Traffic Safety and Environment Laboratory, Japan

11.15 – 11.35 (2010-080)

The Accident Analysis of Two-Vehicle Side Impact Crashes in Malaysia

M I Mohd Hafzi, A K Khairi Anwar, R Mohd Khairudin, S V Wong
Malaysian Institute of Road Safety Research, Malaysia

11.35 – 11.55 Discussion

11.55 – 12.55 Lunch

Session 2D: Accident Reconstruction and Database

Chair: A S McIntosh, *University of New South Wales, Australia*

10.35 – 10.55 (2010-105)

Case study of a frontal car accident involving three fatally injured children

F Feist, H Hoschopf, C Mottl, W Sinz, E Tomasch
Technical University Graz, Austria

10.55 – 11.15 (2010-037)

Crash characteristics of motorcyclists who sustained spine injuries in road traffic collision

H.Z. Zarir, A.M. Abdul Rahmat, F.P. Noor, M.F. Siti Atiqah, S.V. Wong
Malaysian Institute of Road Safety Research, Malaysia

11.15 – 11.35 (2010-008)

Monte Carlo modeling to estimate pedestrian velocity from post-accident vehicle damage

J Elliott, S Augy, C Simms
Trinity College, Ireland

D Wood
Denis Wood Associates Forensic Engineers, Ireland

11.35 – 11.55 Discussion

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Day Two – Thursday, 23 September 2010

Session 2E: Road Vehicle Crashworthiness V (General)

Chair: S V Wong, *Malaysian Institute of Road Safety Research, Malaysia*

12.55 – 13.15 (2010-022)

Analysis of fatal crashes involving Chennai city's metropolitan transport corporation (MTC) buses

J Padmanaban
J P Research, USA

R Rajaraman, S Narayan, B Ramesh
J P Research India, India

13.15 – 13.35 (2010-068)

Truck frontal underride protection-compatibility factors influencing passenger car safety

A Krusper
Chalmers University of Technology, Sweden

R Thomson
VTI, Sweden

13.35 – 13.55 (2010-006)

Go-karting fatalities in Australia

R Grzebieta, S Chong, T Achilles
University of New South Wales, Australia

R Zou
Monash University, Australia

13.55 – 14.15 (2010-101)

Experimental and virtual testing of a small European car under side impact

E C Chirwa, G K Chinaswamy
University of Bolton, UK
F Leimbach
DEKRA Automobil GmbH, Germany

14.15 – 14.35 Discussion

Session 2F: Energy Absorbers I

Chair: K E Jackson, *NASA Langley Research Center, USA*

12.55 – 13.15 (2010-069)

Energy absorption of composite impact beam

Y Yang, S Terada, M Okano, H Hamada
Kyoto Institute of Technology, Japan

13.15 – 13.35 (2010-091)

Frangible design of instrument landing system/glide slope towers

M H van Houten
National Aerospace Laboratory, The Netherlands

H Gottschalk
Europoles GmbH, Germany
C Rooks, R Miller
Select Engineering Services, USA
P Tölke
CW Concept Consulting GmbH, Austria

13.35 – 13.55 (2010-043)

Modeling composite crushing initiation using a cohesive element formulation

D C Fleming
Florida Institute of Technology, USA

13.55 – 14.15 (2010-084)

Crash test of an MD-500 helicopter with a deployable energy absorber

J D Littell
ATK Space Systems, NASA Langley Research Center, USA

K Jackson, S Kellas
NASA Langley Research Center, USA

14.15 – 14.35 Discussion

14.35 – 14.55 Coffee and Tea Break

ICRASH 2010 Conference Program

Day Two – Thursday, 23 September 2010

Session 2G: Road Vehicle Crashworthiness VI (Rollover)

Chair: F A Berg, *DEKRA Automobil GmbH, Germany*

14.55 – 15.15 (2010-095)

A suggested rollover protective structural criteria for trucks

S Richardson, G Rechnitzer, T Pok, N Josevski, A Short
Delta-VExperts International, Australia

C Thorbole, S Batzer
The Engineering Institute, USA

S Crocker, D Salikram
DUYS Engineering, South Africa

15.15 – 15.35 (2010-060)

Commercial, police, and military vehicle rollover protection and evaluating the effectiveness of geometry and retrofit rollover testing

S Bozzini, J Jimenez, G Mattos
Safety Engineering International, USA

R H Grzebieta
University of New South Wales, Australia

J Paver
Center for Injury Research, USA

15.35 – 15.55 (2010-092)

Test system, vehicle, and occupant response repeatability evaluation in rollover crash tests: The deceleration rollover sled test

J R Kerrigan, N Dennis, D P Parent, S Purtsezov, J H Ash, J R Crandall
University of Virginia, USA

D J Stein
Autoliv North America, USA

15.55 – 16.15 Discussion

Session 2H: Impact Biomechanics IV (General)

Chair: K Mizuno, *Nagoya University, Japan*

14.55 – 15.15 (2010-087)

External biofidelity in lateral impact: Measurement of global and local forces

D P Parent, C G Shaw, D J Lessly, P O Riley, J R Crandall
The University of Virginia, USA

S Takayama, K Ono, K Kamiji, T Yashuki
Japan Automobile Research Institute, Japan

15.15 – 15.35 (2010-023)

Investigation into injury of Out-of-position (OOP) posture occupants and their implications in active safety measures

Bastien, Freinsinger, Hoffmann, Van Der Made, Blundell
University of Coventry, UK

15.35 – 15.55 (2010-065)

Mechanical properties of excised human skin

A N Annaidh, M D Gilchrist
University College Dublin, Ireland

M Ottenio, K Bruyere, M Destrade
Institut National de Recherche sur les Transport et leur Sécurité, France

15.55 – 16.15 Discussion

16.15 – 16.35 Coffee and Tea Break

Conference Dinner

ICRASH 2010 Conference Program

Day Three – Friday, 24 September 2010

Session 3A: Energy Absorbers II (Road Furniture)

Chair: H Hamada, *Kyoto Institute of Technology, Japan*

08.00 – 08.20 (2010-009)

Numerical investigation of energy absorbers in composite materials for automotive applications

S Boria
University of Camerino, Italy

G Belingardi
Politecnico di Torino, Italy

08.20 – 08.40 (2010-007)

Development of a wire rope model for cable guardrail simulation

C S Stolle, J D Reid
University of Nebraska-Lincoln, USA

08.40 – 09.00 (2010-118)

Crash Performance of Strong-Post W-Beam Guardrail with Missing Blockouts

C E Hampton, H C Gabler
Virginia Tech, USA

09.00 – 09.20 (2010-079)

Wood-steel structure for roadside safety barriers

C Goubel
INRETS, France

M Massenzio, S Ronel
Université de Lion, France

09.20 – 09.40 (2010-070)

Application of FRP in a vehicle for Student Formula SAE competition of Japan

Y Yang, S Terada, M Okano, H Hamada
Kyoto Institute of Technology, Japan

Y Yang
Kyoto Institute of Technology, Japan

09.40 – 10.00 **Discussion**

Session 3B: Impact Biomechanics V (General)

Chair: M D Gilchrist, *University College Dublin, Ireland*

08.00 – 08.20 (2010-089)

Wavelet analysis of piezoelectric transducer signals to detect rib fracture during impact tests

D Subit
The University of Virginia, USA
Laboratoire d'Automatique, de Mécanique et d'Informatique industrielles et Humaines, France

G Shaw, J R Crandall
The University of Virginia, USA

E Ogam
Laboratoire de Mécanique et d'Acoustique, France

S Ejima
Japanese Automobile Research Institute, Japan

08.20 – 08.40 (2010-027)

Crash analysis of a three-year old human child model in side impacts considering normal and incorrect CRS usage

Z Li, W Zhang, T Kapoor, W Altenhof
University of Windsor, Canada

08.40 – 09.00 (2010-015)

Injury severities of the normal and small vehicle passengers in lateral collisions-Analysis of the ITARDA micro investigation data

M Hitosugi, S Tokudome
Dokkyo Medical University, Japan

09.00 – 09.20 (2010-004)

Head impact conditions an injury pattern in car crashes against pedestrians versus bicyclists in German in-depth-accident-study GIDAS

D Otte
Medical University Hannover, Germany

09.20 – 09.40 (2010-071)

A comparison of impact characteristics in the rugby tackle with different age and years of experience

M Arai, M Kume, R Marui, T Yoshida, H Hamada
Kyoto Institute of Technology, Japan

09.40 – 10.00 **Discussion**

ICRASH 2010 Conference Program

Day Three – Friday, 24 September 2010

10.00 – 10.20 Coffee and Tea Break

Session 3C: Materials & Safety Systems II (Helmets)

Chair: M Avery, *Thatcham, UK*

10.20 – 10.40 (2010-049)

Evaluation of a new protective helmet solution to reduce head injury for tangential impact

C Deck, R Willinger
Université de Strasbourg, France

10.40 – 11.00 (2010-057)

Behavior of helmets during head impact from motorcyclists' real accident cases

N Bourdet, C Deck, V Tinard, R Willinger
Université de Strasbourg, France

11.00 – 11.20 (2010-063)

Equestrian helmet design: A computational and Head impact biomechanics simulation approach

M A F Rueda, M D Gilchrist
University College Dublin, Ireland

11.20 – 11.40 (2010-112)

Motorcycle Safety Helmet Service Life Degradation Model

H Azhar, SV Wong
Malaysian Institute of Road Safety Research, Malaysia

11.40 – 12.00 (2010-119)

Pedal and motorcycle helmet performance in a new oblique impact test

A S McIntosh, T Y Pang, K T Thai, R H Grzebieta
University of New South Wales, Australia

12.00 – 12.20 Discussion

Session 3D: Road Vehicle Crashworthiness VII (Green Technology)

Chair: M Anghileri, *Politecnico di Milano, Italy*

10.20 – 10.40 (2010-001)

Ultralight Vehicles: Non-linear correlations between weight and safety

K Chan-Lizardo, A Lovins, L Schewel, M Simpson
Rocky Mountain Institute, USA

10.40 – 11.00 (2010-040)

Contribution to the description of the safety of hybrid-driven cars during impacts

F A Berg, P Rücker, M Egelhaaf
DEKRA Automobil GmbH, Germany

11.00 – 11.20 (2010-055)

Integration of a crashworthy battery in a fully electric city bus

Ch. Breitfuß, J Gugler, W Sinz, F Feist
Vehicle Safety Institute, Graz University of Technology, Austria

H Lacher, F V Conte
Austrian Institute of Technology, Austria

S Kutsenits
Kutsenits Handels- und BuskonstruktionsgmbH, Austria

E Kieninger
Filmarchiv Austria, Austria

11.20 – 11.40 (2010-002)

Expandable A-pillar for improved occupant safety and vision

B Pipkom
Autoliv Research, Sweden

J Lundström
SAAB Automobile AB, Sweden

11.40 – 12.00 Discussion

ICRASH 2010 Conference Program

Day Three – Friday, 24 September 2010

12.20 – 13.20 Lunch

Session 3E: Road Vehicle Crashworthiness VIII (Non-Professional Repairs & Optimization)

Chair: F Leimbach, *DEKRA Automobil GmbH, KTI, Germany*

13.20 – 13.40 (2010-106)

The project fair repair - motivation, background and structure

H Kiebach
KTI, Germany

J Ahlgrimm, A Berg
DEKRA Automobil GmbH, Germany

F Leimbach
DEKRA Automobil GmbH, KTI, Germany

13.40 – 14.00 (2010-107)

Crash-test results to analyze the impact of non-professional repair on the performance of side structure of a car (VW Passat)

U Schmorte, H Kiebach
KTI, Germany

F Leimbach
DEKRA Automobil GmbH, KTI, Germany

14.00 – 14.20 (2010-108)

Numerical simulation assessing the impact of non-professional repair on the performance of car structures in frontal crash (Ford Fiesta)

E C Chirwa
University of Bolton, UK

H Kiebach, F Leimbach
KTI, DEKRA Automobil GmbH, Germany

14.20 – 14.40 Discussion

Session 3F: Road Vehicle Crashworthiness IX (Rollover)

Chair: R Willinger, *Université de Strasbourg, France*

13.20 – 13.40 (2010-010)

Comprehensive computational rollover sensitivity study Part 1: Influence of vehicle pre-crash parameters on crash kinematics and roof crush

D P Parent, J R Kerrigan, J R Crandall
University of Virginia, USA

13.40 – 14.00 (2010-059)

Status of Comparative Dynamic Rollover Compliance Research and Testing

D Friedman, J Paver, J Caplinger
Center for Injury Research, USA

14.00 – 14.20 (2010-058)

Characterizing the injury potential of a real world rollover

D Friedman, G Mattos
Center for Injury Research, USA

J Paver
Jacqueline G Paver Monrovia, USA

14.20 – 14.40 Discussion

14.40 – 15.00 Coffee and Tea Break

ICRASH 2010 Conference Program

Day Three – Friday, 24 September 2010

15.00 – 15.30

KEYNOTE LECTURE III

Chair: E C Chirwa, *The University of Bolton, Bolton, UK*

Name: Prof. Kennerly Digges, Ph.D.

Director, Vehicle Safety and Biomechanics Research

The National Crash Analysis Center

The George Washington University, USA

15.30 – 16.00

Panel Discussion

Chair: K Digges, *The George Washington University, USA*

End of Technical Presentations

THANK YOU & GOOD BYE

SEE YOU IN 2012