

**FINAL SCHEDULE FOR 17TH ESV TECHNICAL SESSIONS**

<b>Session Number</b>	<b>Tuesday, June 5, 2001</b>	<b>Chairman</b>	<b>Room</b>	<b>Session Time</b>	<b>Time of Poster Pres.</b>
1.1	* Biomechanics: Injury Criteria and Dummy Development	Eppinger, R.	Auditorium	9:00 - 12:30	3:30 - 4:30
2	Advanced Technology Safety Systems (Active & Passive Safety/Collision Avoidance)	Freidel, B.	Room A	9:00 - 12:30	3:30 - 4:30
	<b>LUNCH 12:30 - 2:00</b>				
1.2	Biomechanics: Injury Criteria and Dummy Development	Eppinger, R.	Auditorium	2:00 - 5:30	n/a
3	World-Wide NCAP related to existing test procedures	Rodgers, K.	Room A	2:00 - 5:30	n/a
4	Data Collection, Event Data Recorders and Risk Assessment	Wegman, F.	Room B	2:00 - 5:30	10:30 - 11:30
	<b>Wednesday, June 6, 2001</b>				
5	* Developments in Frontal Impact Protection (legal, technical)	Lomonaco, C.	Auditorium	9:00 - 12:30	n/a
6	Simulation and Computer Modeling in vehicle safety	Verriest, J.P.	Room A	9:00 - 12:30	3:30 - 4:30
	<b>LUNCH 12:30 - 2:00</b>				
7	* Compatibility in Frontal and Side Collisions (car/car and car/vehicle)	Lowne, R.	Auditorium	2:00 - 5:30	10:30 - 11:30
8	* Improved Safety of vulnerable road users (bicyclists, pedestrians, children)	Mizuno, Y.	Room A	2:00 - 5:30	10:30 - 11:30
	<b>Thursday, June 7, 2001</b>				
9	Developments in Restraint Systems (airbags, safety belts)	Wisnans, J.	Auditorium	9:00 - 12:30	3:15 - 4:15
10	* Developments in Side Impact Protection (legal, technical)	Seyer, K.	Room A	9:00 - 12:30	3:15 - 4:15
	<b>LUNCH 12:30 - 2:00</b>				
11	Safety of Heavy Trucks and Buses (i.e. lane-keeping, stability, tire/road)	Szczepaniak, C.	Auditorium	2:00 - 4:15	n/a
12	Intelligent Transportation Systems ITS/ Collision Avoidance	Noy, Y. I.	Room A	2:00 - 4:15	n/a
	<b>* IHRA Working Group Report Presentations</b>				

# ORAL PRESENTATIONS

Tuesday, June 5, 2001

9:00 a.m. - 12:30 p.m.

## Technical Session 1.1

### Biomechanics: Injury Criteria and Dummy Development

*Chairperson:* Rolf Eppinger, United States

Auditorium

#### Submission ID 492-O

#### **IHRA - International Harmonized Research Activities (IHRA) Status Report of the Biomechanics Working Group**

R. Eppinger

National Highway Traffic Safety Administration

United States

#### Submission ID 486-O

#### **Evaluation of the ES-2 Dummy in Representative Side Impacts**

R. Radwan Samaha, M. Maltese

National Highway Traffic Safety Administration

United States

J. Bolte

Transportation Research Center

United States

**Submission ID 409-O**

**Design and Evaluation of the WorldSID Prototype Dummy**

M. Sakurai, T. Harigae

Japan Automobile Research Institute

Japan

K. Bortenschlager

Audi

Germany

E. Hautmann

BMW

Germany

M. Page

Centre Européen d'Etudes de Sécurité et d'Analyse des Risques

France

G. Kostyniuk

DaimlerChrysler

United States

R. Scherer

Ford Motor Company

United States

K. Asakawa

Japan Automobile Manufacturers Association

Japan

T. Uchimura

Nissan Motor Co.

Japan

Design Team and Project Management

WorldSID Tri-Chair Committee

Canada

D. Cesari

INRETS

France

**Submission ID 336-O**

**Development and Evaluation of the ES-2 Side Impact Dummy**

M. Ratingen

EEVC WG12

Netherlands

**Submission ID 264-O**

**Improved Side Impact Protection: Development of Injury Assessment Functions**

T. Gibson, E. Benetatos

Human Impact Engineering

Australia

B. Fildes, S. Newstead

Monash University Accident Research Centre

Australia

**Submission ID 195-O**  
**Upper Extremity Interaction with a Side Air Bag: The Effect of a Door Handgrip**

S. Duma  
Virginia Tech  
United States

B. Boggess, J. Crandall, S. Hurwitz  
University of Virginia  
United States

K. Seki, T. Aoki  
Honda R&D Co. Ltd  
Japan

**Submission ID 141-O**  
**Body part study from real life accidents for a new SID (Side Impact Dummy)**

T. Kreuzinger, S. Knack  
Bundesanstalt fuer Strassenwesen (Federal Highway Research Institute)  
Germany

**Submission ID 474-O**  
**Dynamic response analysis of the THOR-LX dummy lower extremity**

F. Matsuoka  
Japan Automobile Manufacturers Association (JAMA)  
Japan

M. Haffner  
National Highway Traffic Safety Administration  
United States

M. Ito, T. Gotor, K. Ono  
Japan Automobile Research Institute  
Japan

**Submission ID 456-O**  
**Lower Extremity Response and Trauma Assessment using the Thor-Lx Hybrid III Retrofit and the Denton Hybrid III Leg in Frontal Offset Vehicle Crashes**

S. Kuppala, M. Haffner, R. Eppinger, J. Saunders III  
National Highway Traffic Safety Administration  
United States

**Submission ID 457-O**  
**Lower Extremity Injuries and Associated Injury Criteria**

S. Kuppala, R. Eppinger, J. Wang, M. Haffner  
National Highway Traffic Safety Administration  
United States

**Submission ID 355-O**  
**A Tibial Mid-Shaft Injury Mechanism in Frontal  
Automotive Crashes**

K. Miki, K. Furusu  
Toyota Central R&D Labs  
Japan

A. Tamura  
Toyota Central R&D Labs  
United States

K. Yang  
Bioengineering Center Wayne State Univ.  
United States

J. Hasegawa  
Toyota Motor Corporation  
Japan

**Submission ID 318-O**  
**Requirements for the Evaluation of the Risk of Injury to  
the Ankle in Car Impact Tests**

J. McMaster  
University of Nottingham  
United Kingdom

C. Owen, R. Lowne  
TRL Ltd  
United Kingdom

**Submission ID 237-O**  
**The Effect of Active Muscle Tension on the Axial Injury  
Tolerance of the Human Foot/Ankle Complex**

J. Funk, J. Crandall, L. Tourret, C. MacMahon, C. Bass  
University of Virginia Automobile Safety Laboratory  
United States

N. Khaewpong, R. Eppinger  
National Highway Traffic Safety Administration  
United States

**Submission ID 105-O**  
**Response and Vulnerability of the Ankle Joint in  
Simulated Footwell Intrusion Experiments – A Study with  
Cadavers and Dummies**

D. Kallieris, H. Riedl, R. Mattern  
Institute of Legal Medicine and Traffic Medicine, University of Heidelberg  
Germany

Tuesday, June 5, 2001

9:00 a.m. - 12:30 p.m.

**Technical Session 2**

**Advanced Technology Safety Systems (Active, Passive Safety/Collision Avoidance)**

*Chairperson:* Bernd Friedel, Germany

Room A

**Submission ID 478-O**

**Active Night Vision - Enhancement of the Drivers View by Infrared Headlamps**

M. Burg, K. Eichhorn  
Hella KG Hueck & Co.  
Germany

**Submission ID 327-O**

**Potential effectiveness of Electronic Stability Programs (ESP) - What European field studies tell us.**

R. Sferco  
Ford Motor Company  
Germany

Y. Page, J. Le Coz  
LAB PSA Peugeot Citroen - Renault  
France

P. Fay  
Ford Motor Company  
United Kingdom

**Submission ID 300-O**

**How soon to brake and how hard to brake: unified analysis of the envelope of opportunity for rear-end collision warnings**

B. Wilson  
Volpe National Transportation Systems Center  
United States

**Submission ID 346-O**

**Scenario Definition and Control for the NADS**

Y. Papelis, O. Ahmad, M. Schikore  
NADS, The University of Iowa  
United States

**Submission ID 254-O**

**Unique Features and Capabilities of the NADS Motion System**

A. Clark, H. Sparks  
MTS Systems Corporation  
United States

J. Carmein  
Solidica  
United States

**Submission ID 175-O**  
**Enhancing Post-Crash Vehicle Safety Through Automatic Collision Notification**

J. Kianianthra, A. Carter  
National Highway Traffic Safety Administration  
United States

G. Preziotti  
Johns Hopkins University Applied Physics Laboratory  
United States

**Submission ID 352-O**  
**Development and Validation of the URGENCY Algorithm to Predict Compelling Injuries**

K. Digges  
The George Washington University  
United States

J. Augenstein  
William Lehman Injury Research Center  
United States

S. Ogata, E. Perdeck, J. Stratton  
University of Miami School of Medicine  
United States

**Submission ID 493-O**  
**A Vision for an Integrated Safety Concept**

K. Baumann, J. Rainer, R. Schöneburg  
DaimlerChrysler AG  
Germany

**Submission ID 171-O**  
**The development of a crashworthy system: Interactions between car structural integrity, restraint systems and guard-rails**

A. Ydenius, A. Kullgren  
Folksam Research  
Sweden

C. Tingvall  
Swedish National Road Administration and Monash University  
Australia

**Submission ID 94-O**  
**Advanced Roof Design for Rollover Protection**

D. Friedman  
MCR/LRI, Inc.  
United States

C. Nash  
George Washington University  
United States

**Submission ID 71-O**  
**Automated Crash Notification System via the Wireless Web: Design and Validation**

H. Gabler, J. DeFuria, J. Schmalzel  
Rowan University  
United States

Tuesday, June 5, 2001

2:00 p.m. - 5:30 p.m.

**Technical Session 1.2**

**Biomechanics: Injury Criteria and Dummy Development**

*Chairperson:* Rolf Eppinger, United States

Auditorium

**Submission ID 469-O**

**Hybrid III Dummy Neck Response to Air Bag Loading**

G. Kostyniuk  
DaimlerChrysler  
United States

V. Agaram, J. Kang, G. Nusholtz  
Daimler Chrysler  
United States

**Submission ID 242-O**

**A new test method for the assessment of neck injuries in rear-end collisions**

H. Cappon, M. Philippens  
TNO Automotive  
Netherlands

J. Wismans  
TNO Automotive, Crash Safety Centre and Eindhoven University of Technology  
Netherlands

**Submission ID 196-O**

**Human Head-Neck Kinematic Response to Impact Acceleration: Comparison of Oblique to Combined Frontal and Lateral Response**

E. Kaminsky-Bourgeois  
Electrical Engineering Department-University of New Orleans  
United States

S. Guccione, Jr.  
National Biodynamics Laboratory  
United States

**Submission ID 116-O**  
**A Comparison between BioRID and Hybrid III**  
**Head/Neck/Torso Response in Middle Speed Sled Rear**  
**Impact Tests**

F. Matsuoka  
Japan Automobile Manufacturers Association  
Japan  
T. Gotou, M. Ito, K. Ono  
Japan Automobile Research Institute  
Japan

**Submission ID 459-O**  
**SIMon; A Simulated Injury Monitor; Application to Head**  
**Injury Assessment**

A. Zhang, R. Tannous  
Conrad Technologies, Inc.  
United States  
F. Bandak, R. Eppinger  
National Highway Traffic Safety Administration  
United States  
F. DiMasi  
Volpe National Transportation Systems Center  
United States  
P. Masiello  
Jaycor, Inc.  
United States

**Submission ID 458-O**  
**Foundations and Elements of the NHTSA THOR Alpha**  
**ATD Design**

N. Rangarajan, T. Shams, M. Artis, D. Beach  
GESAC, Inc.  
United States  
M. Haffner, R. Eppinger  
National Highway Traffic Safety Administration  
United States

**Submission ID 411-O**  
**Development of Performance Specifications for the**  
**Occupant Classification Anthropomorphic Test Device**  
**(OCATD)**

M. Reed, S. Ebert, L. Schneider  
The University of Michigan Transportation Research Institute (UMTRI)  
United States

**Submission ID 155-O**  
**Computer simulation of impact test and injury criteria**  
**analysis by using sensitivity analysis**

I. Ciglaric, I. Prebil, M. Ambroz, P. Ravnik  
University of Ljubljana, Faculty of mechanical engineering  
Slovenia

**Submission ID 114-O**  
**Comparison of head and thorax cadaver and Hybrid III response to a frontal sled deceleration for the validation of a car occupant mathematical model**

P. Vezin, K. Bruyere, F. Bermond  
INRETS - LBMC  
France

**Submission ID 463-O**  
**Development and Application of the new Pedestrian dummy**

A. Akiyama, M. Okamoto, R. Yoshizawa  
Honda R&D Co., Ltd  
Japan  
J. McDonald  
GESAC, Inc.  
United States  
M. Shams, M. Artis, N. Rangarajan  
GESAC, Inc  
United States

**Submission ID 468-O**  
**Extractions of Information From Noisy 3-Year-Old ATD Response Signals in Static Out-of-Position Airbag Tests**

L. Xu, G. Nusholtz, G. Kostyniuk, G. Rabbiolo  
Daimler Chrysler Corporation  
United States

**Submission ID 294-O**  
**Child Restraint System for Children in Cars - CREST Results**

M. Schrooten  
TNO Automotive  
Netherlands  
X. Trosseille, F. Cassan  
LAB PSA Peugeot Citroen Renault  
France

Tuesday, June 5, 2001

2:00 p.m. - 5:30 p.m.

**Technical Session 3**

Worldwide NCAP Related to Existing Test Procedures

*Chairperson:* Keith Rodgers, United Kingdom  
Room B

**Submission ID 390-O**  
**The U.S. New Car Assessment Program (NCAP): Past, Present and Future**

L. Hershman  
National Highway Traffic Safety Administration  
United States

**Submission ID 485-O**  
**Status Report and Future Development of the Euro  
NCAP Programme**

W. Klanner  
ADAC Technical Centre  
Germany

**Submission ID 215-O**  
**JNCAP : Today and Tomorrow**

H. Ishikawa  
Japan Automobile Research Institute  
Japan  
S. Ohta  
Ministry of Land, Infrastructure and Transport  
Japan  
K. Ando  
Ministry of the Environment  
Japan  
K. Wani  
National Organization of Automotive Safety and Victims' Aid  
Japan

**Submission ID 129-O**  
**Harmonisation of Australian NCAP with EuroNCAP -  
Lessons learnt**

J. Haley  
NRMA Insurance  
Australia  
M. Case  
RACV Limited  
Australia  
M. Paine  
VDR  
Australia

**Submission ID 339-O**  
**Euroncap: Views and Suggestions for Improvements**

F. Bendjellal  
Renault Safety Department  
France

**Submission ID 143-O**  
**Consumer information - worldwide  
harmony?**

T. Terry  
General Motors  
United States

**Submission ID 277-O**  
**Comparison of Euro NCAP test results with Folksam car model safety ratings**

A. Lie  
Swedish National Road Administration and Karolinska Institutet  
Sweden

C. Tingvall  
Swedish National Road Administration  
Sweden

A. Kullgren  
Folksam Research  
Sweden

**Submission ID 319-O**  
**Comparison of EuroNCAP Assessments with Injury Causation in Accidents**

A. Fails, R. Minton  
TRL Ltd  
United Kingdom

**Submission ID 288-O**  
**JNCAP: Developing Overall Rating Protocol**

K. Yamazaki  
Japan Automobile Research Institute  
Japan

K. Ando  
Ministry of the Environment  
Japan

H. Tozawa  
Ministry of Land, Infrastructure and Transport  
Japan

**Submission ID 78-O**  
**Influence of a passenger dummy on consumer rating in offset frontal NCAP crash testing**

J. Haley  
NRMA Insurance  
Australia

J. Hurnall  
Queensland Transport  
Australia

C. Coxon  
Transport South Australia  
Australia

Tuesday, June 5, 2001

2:00 p.m. - 5:30 p.m.

**Technical Session 4**

**Data Collection, Event Data Recorders and Risk Assessment**

*Chairperson:* Fred Wegman, Netherlands

Room A

**Submission ID 168-O**

**Injury risk functions for individual car models**

A. Lie

Swedish National Road Administration

Sweden

A. Kullgren, M. Krafft

Folksam Research

Sweden

C. Tingvall

Monash University Accident Research Centre

Australia

**Submission ID 174-O**

**The correlation between crash pulse characteristics and the duration of symptoms to the neck-crash recording in real life rear impacts**

M. Krafft, A. Kullgren, A. Ydenius

Folksam Research

Sweden

C. Tingvall

Swedish National Road Administration

Sweden

**Submission ID 190-O**

**Aggressivity variables and their sensitivity in car aggressivity ratings**

M. Cameron, S. Newstead

Monash University Accident Research Centre

Australia

V. Laine, T. Ernvall

University of Oulu, Road and Transport Laboratory

Finland

**Submission ID 216-O**

**Acceleration pulses and crash severity in low velocity rear impacts - real world data and barrier tests**

M. Avery  
Motor Insurance Repair Centre, Thatcham  
United Kingdom

M. Svensson  
Chalmers University of Technology  
Sweden

A. Linder  
Chalmers University of Technology  
Sweden

M. Krafft, A. Kullgren  
Folksam Research  
Sweden

**Submission ID 225-O**

**Accidents and near-misses analysis by using video drive-recorders in a fleet test**

Y. Arai, T. Nishimoto  
Japan Automobile Research Institute  
Japan

K. Yoshimoto  
University of Tokyo  
Japan

Y. Ezaka  
Ministry of Land, Infrastructure and Transport  
Japan

**Submission ID 236-O**

**Dutch in-depth accident investigation: first experiences and analysis results for motorcycles and mopeds**

F. Galliano  
ACEM  
Belgium

H. Mooi  
TNO Automotive  
Netherlands

**Submission ID 303-O**

**Motorcycle Braking and its Influence on Severity of Injury**

A. Sporer, T. Kramlich  
Institute for vehicle safety - GDV  
Germany

**Submission ID 340-O**

**Risk-Benefit Analysis Methods and Criteria for Vehicle Safety Devices**

J. Zellner  
Dynamic Research, Inc.  
United States

K. Thompson, J. Graham  
Harvard Center for Risk Analysis  
United States

**Submission ID 350-O**  
**The Methodology of On The Spot Accident Investigations  
in the UK**

N. Byard, I. Rillie  
Transport Research Laboratory  
United Kingdom

J. Hill, P. Thomas, M. Smith  
Vehicle Safety Research Centre, Loughborough University  
United Kingdom

**Submission ID 389-O**  
**Quality Criteria for Crashworthiness Assessment from  
Real world crashes**

B. Fildes, M. Cameron  
Monash University Accident Research Centre  
Australia

T. Ernvall  
University of Oulu  
Finland

K. Langwieder  
GDV Institute for Vehicle Safety  
Germany

**Submission ID 68-O**  
**Comparative Analysis of Several Vehicle Safety Rating  
Systems**

T. Ernvall, V. Laine  
University of Oulu, Road and Transport Laboratory  
Finland

M. Cameron, S. Narayan, S. Newstead  
Monash University Accident Research Centre  
Australia

K. Langwieder  
Technical University of Munich  
Germany

Wednesday, June 6, 2001

9:00 a.m. - 12:30 p.m.

**Technical Session 5**

**Development in Frontal Impact Protection (Legal, Technical)**

*Chairperson:* Claudio Lomonaco, Italy  
Auditorium

**Submission ID 491-O**  
**IHRA - 5 Years Status Report of the Advanced Offset  
Frontal Crash Protection**

C. Lomonaco, E. Gianotti  
Ministry of Transport  
Italy

**Submission ID 437-O**

**Review of the European Frontal and Side Impact**

M. Edwards, A. Fails, H. Davies, A. Hobbs, R. Lowne  
TRL Ltd  
United Kingdom

**Submission ID 315-O**

**Progress of Passive Safety in Car to Car Frontal Collisions: Results from Real-Life Crash Analyses and from Crash Tests**

A. Berg, P. Ruecker, W. Niewohner  
DEKRA Automobil GmbH  
Germany  
E. Miltner, K. Marion  
Society for Real-Life Accident Crashes  
Germany

**Submission ID 193-O**

**Airbag efficiency in frontal real world accidents**

J. Huère, J. Foret-Bruno, G. Faverjon, J. Le Coz  
Laboratory of Accidentology, Biomechanics and human behaviour  
France

**Submission ID 136-O**

**Steering Column Movement in Severe Frontal Crashes and Its Apparent Effect on Airbag Performance**

D. Zuby, B. O'Neill  
Insurance Institute for Highway Safety  
United States

**Submission ID 421-O**

**Static Out-of-Position Test Methodologies: Identifying a Realistic Worst Case for Small Stature Female Drivers**

S. Tylko, D. Dalmotas  
Transport Canada  
Canada

**Submission ID 363-O**

**Lower Extremity Response of the Thor-Lx Compared to the Hybrid-III Lower Leg In Frontal Barrier Crash Tests**

D. Longhitano, J. Turley  
Honda R&D Americas, Inc.  
United States

**Submission ID 101-O**

**Parameter Study on Different Factors Influencing Lower Extremity Injuries**

J. Hoffmann  
Siemens Restraints Systems  
Germany  
S. Hesse, S. Blaesser  
Adam Opel AG  
Germany

**Submission ID 199-O**  
**Structural Front Unit Global Approach**

P. Delannoy  
Teuchos Group - Renault Safety Department  
France

A. Diboine  
Renault S.A.  
France

**Submission ID 329-O**  
**Improved design for frontal crash protection**

N. Sharpe, R. Vendrig  
TNO Automotive - Crash Safety Centre  
Netherlands

K. Houtzager  
Reynolds Aluminium  
Netherlands

**Submission ID 465-O**  
**Advanced Driver Airbag System**

J. Moreno  
CIDAUT  
Spain  
E. Fazio, P. Barrero  
Dalphimetal Espana S.A.  
Spain

**Submission ID 132-O**  
**Improved Safety for Drivers and Couriers of Coaches**

J. Wessels  
autobusfabriek BOVA bv  
Netherlands  
P. de Coe, R. Hazelebach  
TNO Road vehicles Research Institute  
Netherlands

Wednesday, June 6, 2001

9:00 a.m. - 12:30 p.m.

**Technical Session 6**

**Simulation and Computer Modeling in Vehicle Safety**

*Chairperson:* Jean Pierre Verriest, France  
Room A

**Submission ID 251-O**  
**NHTSA's Crashworthiness Modeling Activities**

S. Summers, W. Hollowell  
National Highway Traffic Safety Administration  
United States

**Submission ID 157-O**  
**The Investigation and Modelling of Corkscrew Rollovers**

N. Harle, P. Glyn-Davies  
Millbrook Proving Ground Ltd  
United Kingdom

**Submission ID 281-O**  
**CAE methods for simulating FMVSS 201 Interior Head Impact**

R. Sturt, B. Dennis  
Ove Arup & Partners  
United Kingdom

**Submission ID 285-O**  
**The influence of residual effects of stamping on crash results**

R. Sturt, T. Dutton, P. Richardson, A. Knight  
Ove Arup & Partners  
United Kingdom

**Submission ID 200-O**  
**Evaluating Structural Foam as an alternative to steel in a Front Offset CAE analysis**

S. Gupta  
Honda R & D, Americas, Inc.  
United States

**Submission ID 126-O**  
**Development of Detailed Finite Element Models of Child Restraint Systems for Occupant Protection Investigation**

O. Takatori, J. Morimoto  
Japan Automobile Research Institute  
Japan  
J. Monclus-Gonzalez, A. Eskandarian  
FHWA/NHTSA National Crash Analysis Center  
United States

**Submission ID 301-O**  
**Development of CAE Simulated Crash Pulses for Airbag Sensor Algorithm/Calibration in Frontal Impacts**

C. Chou, J. Le, P. Chen, D. Bauch  
Ford Motor Company  
United States

**Submission ID 282-O**  
**Development and Evaluation of a Human Lower Extremity Model**

Y. Kitagawa, C. Pal  
Nissan Motor Co., Ltd.  
Japan

**Submission ID 297-O**  
**HUMOS: HUMAN MODEL for Safety; a joint effort towards the development of refined car occupant models**

S. Robin  
LAB PSA Peugeot Citroen RENAULT  
France

**Submission ID 119-O**  
**Simulation of rear end impact with a full body human model with a detailed neck: role of passive muscle properties and initial seating posture**

R. Happee  
TNO Automotive, Crash Safety Centre and Eindhoven University of Technology  
Netherlands

J. Wismans  
TNO Automotive  
Netherlands

M. van der Horst, P. Bovendeerd  
Eindhoven University of Technology  
Netherlands

H. Kingma  
Brain and Behaviour Institute, Maastricht University  
Netherlands

**Submission ID 152-O**  
**Advances in Numerical Modelling of Crash Dummies**

L. Margerie  
TNO Automotive  
France

R. Verhoeve, R. Kant  
TNO Automotive  
Netherlands

**Submission ID 307-O**  
**A Stochastic Approach for the Simulation of an Integrated Vehicle and Occupant Model**

C. Lin, Z. Gao, Y. Cheng  
General Motors  
United States

Wednesday, June 6, 2001

2:00 p.m. - 5:30 p.m.

**Technical Session 7**

**Compatibility in Frontal and Side Collisions (Car/Car, Car/Vehicle)**

*Chairperson:* Richard Lowne, United Kingdom  
Auditorium

**Submission ID 337-O**  
**IHRA – Status Report of IHRA Compatibility Working Group**

P. O'Reilly  
DETR  
United Kingdom

**Submission ID 249-O**  
**NHTSA's Research Program for Vehicle Aggressivity and Fleet Compatibility**

S. Summers, A. Prasad, W. Hollowell  
National Highway Traffic Safety Administration  
United States

**Submission ID 444-O**  
**EEVC Research in the Field of Improvement of Crash Compatibility Between Passenger Cars**

E. Faerber  
BASt (Federal Highway Research Institute)  
Germany

**Submission ID 140-O**  
**Development of Criteria and Standards for Vehicle Compatibility**

R. Zobel, T. Schwarz  
Volkswagen AG  
Germany

**Submission ID 127-O**  
**Test Procedures to Evaluate Vehicle Compatibility**

K. Tateishi  
Japan Automobile Research Institute  
Japan  
Y. Ezaka  
Ministry of Land, Infrastructure and Transport  
Japan  
K. Mizuno  
Traffic Safety and Nuisance Research Institute  
Japan

**Submission ID 239-O**  
**Current Front Stiffness of European Vehicles with regard to Compatibility**

J. Huibers, E. de Beer  
TNO Automotive  
Netherlands

**Submission ID 349-O**  
**Measurements of Stiffness and Geometric Compatibility in Front to Side Crashes**

K. Digges, A. Eigen  
The George Washington University  
United States

**Submission ID 158-O**  
**The Essential Requirements for Compatible cars in Frontal Collisions**

M. Edwards, J. Happian-Smith, H. Davies, N. Byard, A. Hobbs  
TRL Ltd  
United Kingdom

**Submission ID 91-O**  
**Effects of Geometry and Stiffness on the Frontal  
Compatibility of Utility Vehicles**

S. Meyerson, J. Nolan  
Insurance Institute for Highway Safety  
United States

**Submission ID 428-O**  
**Evaluation of Vehicle Compatibility in Various Frontal  
Impact Configurations**

S. Barbat, P. Prasad, X. Li  
Ford Motor Company/Safety R & D  
United States

**Submission ID 133-O**  
**Empirical Comparison of Vehicle Aggressivity Rating  
Systems**

M. Cameron, M. Les, S. Newstead, S. Narayan  
Monash University Accident Research Centre  
Australia  
T. Ernvall, V. Laine  
University of Oulu, Road and Transport Laboratory  
Finland

**Submission ID 172-O**  
**Mass Data Evaluation of the Importance of Structural and  
Mass Related Aggressivity**

A. Kullgren  
Folksam Research  
Sweden  
A. Lie  
Swedish National Road Administration and Karolinska Institutet  
Sweden  
C. Tingvall  
Swedish National Road Administration and Monash University  
Sweden

**Submission ID 354-O**  
**A Systems Modeling Methodology For Estimation Of  
Harm In The Automotive Crash Environment**

A. Kuchar  
Volpe National Transportation Systems Center, USDOT  
United States

**Submission ID 343-O**  
**PSA's views on compatibility : a potential two-step  
approach to improve compatibility among the vehicle fleet**

S. Monnet  
PSA Peugeot Citroën  
France

Wednesday, June 6, 2001

2:00 p.m. - 5:30 p.m.

**Technical Session 8**

**Improved Safety for Vulnerable Road Users (Bicyclists, Pedestrians, Children)**

*Chairperson:* Yoshiyuki Mizuno, Japan  
Room A

**Submission ID 280-O**

**IHRA - Summary of IHRA Pedestrian Safety WG  
Activities - Proposed Test Methods to Evaluate Pedestrian  
Protection Afforded by Passenger Cars**

H. Ishikawa  
Japan Automobile Research Institute  
Japan  
Y. Mizuno  
Japan Automobile Standards Internationalization Center  
Japan

**Submission ID 263-O**

**Reconsideration of Injury Criteria for Pedestrian  
Subsystem Legform Test - Problems of RIGID legform  
Impactor**

A. Konosu, H. Ishikawa  
Japan Automobile Research Institute  
Japan  
M. Tanahashi  
Japan Automobile Manufacturers Association  
Japan

**Submission ID 212-O**

**The Emerging Threat of Light Truck Impacts with  
Pedestrians**

D. Lefler, H. Gabler  
Rowan University  
United States

**Submission ID 475-O**

**The development of a new class of two wheeler vehicles**

H. Osendorfer, S. Rauscher  
BMW Group  
Germany

**Submission ID 423-O**

**New headlamp concepts as key to optimisation of vehicle  
front ends in consideration of pedestrian protection**

R. Lachmayer  
Hella KG Hueck & Co.  
Germany  
F. Friesen  
Institut für Kraftfahrwesen Aachen (ika), RWTH Aachen  
Germany

**Submission ID 183-O**

**Pedestrian and cyclist protection on road vehicles with high or flat fronts**

I. Neilson  
PACTS (Parliamentary Advisory Council for Transport Safety)  
United Kingdom

**Submission ID 202-O**

**Pedestrian Safety Upper Legform Bumper Impact Simulation**

S. Mark  
Honda R&D, Americas  
United States

**Submission ID 283-O**

**Improvements to Pedestrian Protection as Exemplified on a Standard-Sized Car**

F. Friesen  
Institut für Kraftfahrwesen Aachen (ika), RWTH Aachen  
Germany  
I. Kalliske  
Federal Highway Research Institute (BASt)  
Germany

**Submission ID 131-O**

**Evaluation of a new pedestrian head injury protection system with a sensor in the bumper and lifting of the bonnet's rear part**

R. Fredriksson, Y. Håland  
Autoliv Research  
Sweden  
J. Yang  
Chalmers University of Technology  
Sweden

**Submission ID 322-O**

**Closure and trim design for Pedestrian impact**

H. Gaalman  
DSM Design & Application Development Centre  
Netherlands  
F. Bosma  
TNO Automotive - Crash Safety Centre  
Netherlands  
W. Souren  
Centre of Lightweight Structures TUD-TNO  
Netherlands

**Submission ID 330-O**

**Pedestrian Protection - An Evaluation of an Airbag System Through Modelling and Testing**

P. Holding, B. Chinn, J. Happian-Smith  
TRL Ltd  
United Kingdom

**Submission ID 375-O**  
**Improvement of visibility for vulnerable parties in traffic accidents**

A. Takahashi, N. Asanuma  
Honda R&D Co.,Ltd.  
Japan

**Submission ID 454-O**  
**Development of a dynamic testing procedure to assess crashworthiness of the rear patient compartment of ambulance vehicles**

N. Levick, G. Li  
Johns Hopkins University  
United States  
J. Yannaccone  
ARCCA Inc.

Thursday, June 7, 2001

9:00 a.m. - 12:30 p.m.

**Technical Session 9**

**Developments in Restraint Systems (Airbags, Safety Belts)**

*Chairperson:* Jac Wismans, Netherlands  
Auditorium

**Submission ID 149-O**  
**Evaluation of Lower Limb Injury Mitigation from Inflatable Carpet in Sled Tests with Intrusion using the Thor Lx**

E. Hjerpe, Y. Håland  
Autoliv Research  
Sweden  
R. Rudd, J. Crandall  
University of Virginia  
United States

**Submission ID 167-O**  
**The Effectiveness of Airbags in Australia as Determined by In-Depth Crash Injury Research**

A. Morris, J. Barnes, B. Fildes  
Monash University Accident Research Centre  
Australia

**Submission ID 177-O**  
**Rollover: A Methodology for Restraint System Development**

S. Ridella, A. Nayef  
TRW Occupant Safety Systems  
United States  
P. Altamore  
TNO-MADYMO North America  
United States

**Submission ID 207-O**  
**Factors and Status of Motorcycle Airbag Feasibility Research**

N. Rogers  
International Motorcycle Manufacturers Association  
Switzerland

J. Zellner  
Dynamic Research, Inc.  
United States

**Submission ID 231-O**  
**Enhancement of Seat Performance in Low Speed Rear Impact**

H. Zellmer, A. Seidenschwang, M. Stamm  
Autoliv GmbH  
Germany  
A. Brunner  
Winterhur Insurance Corp., Dept. Of Accident Research  
Switzerland

**Submission ID 234-O**  
**Performance Evaluation of Dual Stage Passenger Air Bag Systems**

T. Ato  
Takata Corporation  
Japan

G. Narwani  
Automotive Systems Laboratory, Inc.  
United States

W. Hollowell, L. Summers, A. Prasad  
National Highway Traffic Safety Administration  
United States

**Submission ID 240-O**  
**Exploratory Study of an Airbag Concept for a Large Touring Motorcycle: Further Research**

T. Yamazaki, S. Iijima, T. Yamamoto  
Honda R&D Co., Ltd  
Japan

**Submission ID 328-O**  
**An Evaluation of the Benefits of Active Restraint Systems in Frontal Impacts Through Computer Modelling and Dynamic Testing**

P. Holding, B. Chinn, J. Happian-Smith  
TRL Ltd  
United Kingdom

**Submission ID 334-O**  
**Study of improved safety for minibuses by better seat and occupant retention**

G. Lawrence  
TRL Ltd  
United Kingdom

**Submission ID 370-O**  
**Development of Whiplash Injury Reducing Seat System**  
**using Bio-RID II Dummy**

H. Negishi  
TS-TECH Co.,Ltd.

Japan

K. Ono, T. Gotou  
Japan Automobile Research Institute  
Japan

J. Warren  
Honda R&D Europe(UK) Ltd.  
United Kingdom

K. Sano, Y. Dokko  
Honda R&D Co.,Ltd.  
Japan

**Submission ID 420-O**  
**Side Airbags: Evaluating the Benefits and Risks for**  
**Restrained Children**

S. Tylko, D. Dalmotas  
Transport Canada  
Canada

Thursday, June 7, 2001

9:00 a.m. - 12:30 p.m.

**Technical Session 10**

Developments in Side Impact Protection (Legal, Technical)

*Chairperson:* Keith Seyer, Australia

Room A

**Submission ID 151-O**  
**IHRA - IHRA Side Impact Working Group Status Report**

K. Seyer  
Department of Transport & Regional Services  
Australia

**Submission ID 482-O**  
**Performance of the Prototype WorldSID Dummy in Side Impact**

E. Hautmann

BMW

Germany

T. Uchimura

Nissan Motor

Japan

R. Scherer, S. Rouhana

Ford Motor Company

United States

K. Asakawa

Japan Automobile Manufacturers Association

Japan

M. Page, D. Cesari

Centre Européen d'Etudes de Sécurité et d'Analyse des Risques

France

K. Bortenschlager

Audi

Germany

K. Seyer, C. Newland

Department of Transport and Regional Services

Australia

**Submission ID 442-O**  
**Field and Crash Performance of Side-Mounted Airbag Systems**

D. Dalmotas, S. Tylko, A. German

Transport Canada

Canada

**Submission ID 399-O**  
**The Dependence of Side Impact Injury Risk on MDB Configuration**

D. Dalmotas

Transport Canada

Canada

M. Terrell, C. Newland, K. Seyer

Department of Transport & Regional Services

Australia

**Submission ID 356-O**  
**Vehicle Deformation in Real-World Side Impact Crashes and Regulatory Crash Tests**

S. Rattenbury, P. Gloyns

Vehicle Safety Consultants Ltd

United Kingdom

S. Ferguson

Insurance Institute for Highway Safety

United States

**Submission ID 351-O**  
**Injuries to Restrained Occupants in Far Side Crashes**

D. Dalmotas  
Transport Canada  
Canada

K. Digges  
The George Washington University  
United States

**Submission ID 331-O**  
**Evaluation of Injury Risk from Side Impact Air Bags**

A. Louden  
Transportation Research Center, Inc.  
United States

A. Prasad, R. Samaha  
National Highway Traffic Safety Administration  
United States

**Submission ID 289-O**  
**Study on Car to Car Side Impact**

S. Yamazaki, T. Sugimoto  
Honda R&D Co., Ltd.  
Japan

**Submission ID 267-O**  
**Japanese Research Activity on Future Side Impact Test Procedures**

T. Harigae  
Japan Automobile Research Institute  
Japan

Y. Ezaka  
Ministry of Land, Infrastructure and Transport  
Japan

H. Yonezawa  
Traffic Safty and Nuisance Research Institute  
Japan

**Submission ID 265-O**  
**Improved Side Impact Protection (ISIP) in Australia -  
Overview of a Collaborative Approach**

L. Sparke  
Advanced Engineering, Holden Ltd  
Australia

K. Seyer  
Department of Transport & Regional Services  
Australia

B. Fildes, A. Morris  
Monash University Accident Research Centre  
Australia

**Submission ID 221-O**  
**A Consideration on Barrier Face**  
**Specifications of Side Impact MDB**

K. Hisajima  
Japan Automobile Manufacturers Association, Nissan Motor Co., LTD  
Japan  
N. Fukushima  
Japan Automobile Manufacturers Association, Toyota Motor Co.  
Japan  
T. Uchimura  
Japan Automobile Manufacturers Association, Nissan Motor Co., LTD  
Japan

**Submission ID 47-O**  
**Research Progress on Improved Side Impact Protection -**  
**EEVC WG13 Progress Report**

R. Lowne  
EEVC WG13  
United Kingdom

Thursday, June 7, 2001

2:00 p.m. - 4:15 p.m.

**Technical Session 11**

Safety of Heavy Trucks and Buses (Lanekeeping, Stability,  
Tire/Road)

*Chairperson:* Cezary Szczepaniak, Poland  
Auditorium

**Submission ID 316-O**  
**Accidents with Vans and Box-Type Trucks: Results from**  
**Official Statistics and Real-Life Crash Analyses**

A. Berg, W. Niewoehner, M. Froncz  
DEKRA Automobil GmbH  
Germany

**Submission ID 287-O**  
**Research on Bus Passenger Safety in Frontal Impact**

H. Mitsuishi, Y. Sukegawa, F. Matsukawa  
Japan Automobile Research Institute  
Japan  
S. Okano  
Japan Automobile Manufacturers Association  
Japan

**Submission ID 230-O**  
**Evaluation of New Technologies to Improve**  
**Truck Safety Performance (High Safety**  
**Vehicle Project)**

H. Desfontaine, B. Favre, P. Ravoux  
RENAULT V.I.  
France

**Submission ID 224-O**

**Experimental Research on Truck Driver's Safety in Frontal Collision**

Y. Sukegawa, F. Matsukawa  
Japan Automobile Research Institute  
Japan

N. Masuda  
Japan Automobile Manufacturers Association  
Japan

**Submission ID 218-O**

**Performance Criteria, Design and Crash Testing of Effective Rear Underride Guards**

C. Powell  
Department of Civil Engineering, Monash University  
Australia

G. Rechnitzer  
Monash University Accident Research Centre  
Australia

K. Seyer  
Department of Transport & Regional Services  
Australia

**Submission ID 153-O**

**The analysis of Dutch national data on Heavy Truck Accidents: the necessary extension of traditional frequency counts with logistic regression analysis**

Y. Vries, H. Mooi  
TNO Automotive  
Netherlands

**Submission ID 115-O**

**The Potential Gain to be achieved by the Generalization of Seatbelts and Airbags in Trucks**

Y. Page  
LAB PSA Peugeot Citroen - Renault  
France

M. Simon, P. Botto  
Centre Européen d'Etudes de Sécurité et d'Analyse des Risques  
France

F. Paulhet  
RENAULT VI  
France

**Submission ID 425-O**

**Development of new underride guards for enhancement of compatibility between trucks and cars**

J. Mariolani, C. Arruda, L. Schmutzler  
State University of Campinas  
Brazil

**Submission ID 470-O**

**Fuzzy Logic Control of Intelligent Vehicle Systems**

C. Szczepaniak, A. Szosland  
Vehicle Research Institute, Technical University of Lodz  
Poland

**Submission ID 244-O**  
**Heavy Truck Passive Safety: overview, evaluations and simulations of accidents**

G. Köfalvi  
IbB-Hungary  
Hungary  
S. Vincze-Pap  
AUTOKUT  
Hungary

**Submission ID 222-O**  
**Assessment of the use of seat belts in buses based on recent road traffic accidents in Spain**

I. Ferrer  
IDIADA AUTOMOTIVE TECHNOLOGY SA  
Spain  
J. de Miguel  
CENTRO ZARAGOZA  
Spain

Thursday, June 7, 2001

2:00 p.m. - 4:15 p.m.

**Technical Session 12**

**Intelligent Transportation Systems (ITS) Collision Avoidance**

*Chairperson:* Ian Noy, Canada  
Room A

**Submission ID 445-O**  
**IHRA - Report of IHRA Working Group on Intelligent Transport Systems**

I. Noy  
Transport Canada  
Canada

**Submission ID 382-O**  
**Development of The Nissan ASV-2**

S. Matsumoto, T. Yasuda, T. Kimura, T. Takahama, H. Toyota  
Nissan Motor Co., Ltd.  
Japan

**Submission ID 427-O**  
**Active safety experiments with common drivers for the specification of active safety systems**

M. Kassaagi  
Ecole Centrale Paris  
France  
T. Perron, G. Brissart  
LAB PSA Peugeot Citroën - RENAULT  
France

**Submission ID 233-O**  
**NHTSA Driver Distraction Research: Past, Present and Future**

W. Garrott, M. Goodman  
National Highway Traffic Safety Administration  
United States

T. Ranney  
Transportation Research Center Inc.  
United States

**Submission ID 185-O**  
**Collision Avoidance Capability of Older Driver and Improvement by Warning Presentation**

H. Uno, K. Hiramatsu  
Japan Automobile Research Institute  
Japan

**Submission ID 324-O**  
**Intelligent speed adaptation: the best collision avoidance system?**

O. Carsten, F. Tate  
Institute for Transport Studies, University of Leeds  
United Kingdom

**Submission ID 378-O**  
**Analysis of Crossing Path Crash Countermeasure**

D. Smith  
National Highway Traffic Safety Administration  
United States

W. Najm, J. Koopmann  
US DOT Volpe Center  
United States

**Submission ID 201-O**  
**Distance Behaviour on Motorways with Regard to Active Safety - A Comparison between Adaptive-Cruise-Control (ACC) and Driver**

B. Filzek, B. Breuer  
Darmstadt University of Technology  
Germany

**Submission ID 401-O**  
**Research on a Brake Assist System with a Preview**

M. Tamura, H. Inoue, N. Maruko, T. Watanabe  
Nissan Motor Co., Ltd.  
Japan

**Submission ID 483-O**  
**Effects of speech versus tactile driver support messages on driving behaviour and workload**

M. Martens, W. Winsum  
TNO Human Factors  
Netherlands

## **POSTER PRESENTATIONS**

### **Upper Lounge Auditorium**

Tuesday, June 5, 2001

3:30 p.m. - 4:30 p.m.

#### **Technical Session 1.1**

**Biomechanics: Injury Criteria and Dummy Development**

##### **Submission ID 160-P**

**Human injury modelling – capabilities and limitations**

C. Oakley  
Transport Research Laboratory  
United Kingdom

##### **Submission ID 226-P**

**Child Injury Tolerance Through Case Reconstruction**

A. Hagedorn, D. Rhule  
National Highway Traffic Safety Administration  
United States

##### **Submission ID 274-P**

**Pressure and shear responses in brain injury models**

D. Bradshaw, C. Morfey  
ISVR, University of Southampton  
United Kingdom

Tuesday, June 5, 2001

3:30 p.m. - 4:30 p.m.

#### **Technical Session 2**

**Advanced Technology Safety Systems (Active, Passive  
Safety/Collision Avoidance)**

##### **Submission ID 164-P**

**The contributive benefits that state-of-the-art sound  
generation technology provides for Advanced Technology  
Safety Systems in the NADS program**

C. Patterson, R. Welles  
G.E. Capital I-sim  
United States

##### **Submission ID 186-P**

**Traffic Accidents in Rural Areas and Assist System for  
Traffic Safety**

T. Katayama, H. Hashimoto, Z. Yang  
Japan Automobile Research Institute  
Japan

Tuesday, June 5, 2001

10:30 a.m. - 11:30 a.m.

**Technical Session 4**

Data Collection, Event Data Recorders and Risk Assessment

**Submission ID 146-P**

**Real-World Perceptions of Emerging EDR Technologies**

T. Kowalick  
Click, Inc--Transportation Safety Technologies  
United States

**Submission ID 209-P**

**Large Truck Crash Data-New Developments**

J. Carra, S. Stern  
National Highway Traffic Safety Administration  
United States

Wednesday, June 6, 2001

3:30 p.m. - 4:30 p.m.

**Technical Session 6**

Simulation and Computer Modeling in Vehicle Safety

**Submission ID 313-P**

**Simulations of Large School Bus Safety Restraints -  
NHTSA**

L. McCray  
National Highway Traffic Safety Administration  
United States  
A. Barsan-Anelli  
Information Systems & Services Incorporated  
United States

**Submission ID 364-P**

**NADS System Architecture**

P. Whalen, A. Schafer  
TRWS & ITG  
United States

**Submission ID 438-P**

**The electronic belt-fit test device (eBTD): A method for  
certifying safe seat belt fit**

C. Pruett  
TecMath of North America  
United States  
C. Brown, I. Noy  
Transport Canada  
Canada

Wednesday, June 6, 2001

10:30 a.m. - 11:30 a.m.

**Technical Session 7**

Compatibility in Frontal and Side Collisions (Car/Car,  
Car/Vehicle)

**Submission ID 243-P**

**Geometric compatibility in near side impact crashes**

C. Tingvall, G. Rechnitzer  
Monash University Accident Research Centre  
Australia

R. Grzebieta  
Department of Civil Engineering, Monash University  
Australia

**Submission ID 308-P**

**Effects of Angles and Offsets in Crash Simulations of  
Automobiles with Light Trucks**

J. Brewer  
Volpe National Transportation Systems Center/DTS-74  
United States

**Submission ID 433-P**

**Influence of body intrusion and deceleration on occupant  
injuries in frontal collisions between passenger cars**

Y. Kadotani  
American Honda Motor Co., Inc.  
United States

T. Sugimoto  
Honda R&D Co., Ltd.  
Japan

H. Suzuki  
Honda R&D Co., Ltd.  
Japan

Wednesday, June 6, 2001

10:30 a.m. - 11:30 a.m.

**Technical Session 8**

Improved Safety for Vulnerable Road Users (Bicyclists,  
Pedestrians, Children)

**Submission ID 278-P**

**Pedestrian Headform Impact Tests for Various Vehicle Locations**

K. Mizuno  
Traffic Safety and Nuisance Research Institute  
Japan  
H. Yonezawa  
Traffic Safety and Nuisance Research Institute  
Japan  
J. Kajzer  
Kabimec Consulting  
Sweden

Thursday, June 7, 2001

3:15 p.m. - 4:15 p.m.

**Technical Session 9**

Developments in Restraint Systems (Airbags, Safety Belts)

**Submission ID 238-P**

**Protection of the lower extremities in two and three wheelers with safety cell**

C. Gehre, D. Vetter, H. Appel  
Technical University Berlin  
Germany

**Submission ID 347-P**

**The CREST project (Child Restraint System for Children in Cars) Accident data base**

T. Hummel  
German Insurance Association GDV, Institute for Vehicle Safety  
Germany  
R. Grant  
Vehicle Safety Research Centre, Loughborough University  
United Kingdom  
P. Lesire  
LAB PSA Peugeot Citroen - Renault  
France

Thursday, June 7, 2001

3:15 p.m. - 4:15 p.m.

**Technical Session 10**

Developments in Side Impact Protection (Legal, Technical)

**Submission ID 479-P**

**Modular Door System for Side Impact Safety of Motor Vehicles**

M. El-Sayed  
Kettering University  
United States

J. Townsend, M. Kaczmar  
Joalto Design Inc.  
United States

**Submission ID 484-P**

**Design Engineering with Foams and Plastics to Enhance Vehicle Safety**

T. Mettler  
Gurit -Essex  
Switzerland

H. Koelman, R. Heim, P. Naughton  
Dow Automotive Germany  
Germany

J. Allal  
Gurit -Essex  
France

J. Kramer  
Gurit -Essex  
Germany

# WRITTEN PAPERS

## Technical Session 1.1

### Biomechanics: Injury Criteria and Dummy Development

#### Submission ID 124-W

##### **A new neck injury criterion candidate for rear-end collisions taking into account shear forces and bending moments**

K. Schmitt, P. Niederer  
Institute of Biomedical Engineering, ETH Zurich  
Switzerland  
M. Muser, F. Walz  
Working group on Accident Mechanics, Univ. Zurich  
Switzerland

#### Submission ID 144-W

##### **Parametric Study of Side Impact Thoracic Injury Criteria Using the MADYMO Human Body Model**

R. Kent, E. Sieveka, J. Crandall  
University of Virginia  
United States

#### Submission ID 365-W

##### **Characterization of CIREN**

L. Brown, Jr., C. McCullough  
National Highway Traffic Safety Administration  
United States

#### Submission ID 373-W

##### **Biofidelity of test devices and validity of injury criteria for evaluating knee injuries to pedestrians**

Y. Takahashi, Y. Kikuchi  
Honda R&D Co., Ltd.  
Japan

#### Submission ID 436-W

##### **Improved Thorax Behaviour of the EUROSID and Effects on Thorax Injury Assessment on the Basis of Pendulum Impacts**

N. Yoganandan  
Medical College of Wisconsin  
United States  
M. Beusenbergh, M. Keown  
Biokinetics and Associates Ltd.  
Canada

## **Technical Session 2**

Advanced Technology Safety Systems (Active, Passive Safety/Collision Avoidance)

### **Submission ID 86-W**

#### **TENDENCIES RECOGNITION AND ANALYSIS of CRITICAL SITUATIONS by the ACTIVE SAFETY SYSTEMS**

V. Ivanov  
Belarusian State Polytechnical Academy, Dept. of Automobiles  
Belarus

V. Boutylin, J. Lepeshko  
Scientific Centre for Machine Mechanic Problems  
Belarus

### **Submission ID 122-W**

#### **Difficulties in Determining the Cause of Real-World Crash Injuries: A Case Study of a NASS Investigation**

R. Arbelaez, B. O'Neill  
Insurance Institute for Highway Safety  
United States

### **Submission ID 228-W**

#### **TOR (Total Occupant Recognition) system**

G. Becker, T. Mousel, P. Schockmel  
International Electronics & Engineering  
Luxembourg

### **Submission ID 258-W**

#### **The Influence of a Rear Tire Tread Separation on a Vehicle's Stability and Control**

S. Arndt  
Safety Engineering & Forensic Analysis, Inc.  
United States

M. Arndt  
Transportation Safety Technologies, Inc.  
United States

### **Submission ID 314-W**

#### **The effect of occupant characteristics on injury risk and the development of active-adaptive restraint systems**

J. Hill  
VSRC, Loughborough University  
United Kingdom

M. McCarthy, B. Chinn  
TRL Ltd  
United Kingdom

### **Submission ID 320-W**

#### **The Necessity of an Adaptive Vehicle Structure to Optimize Deceleration Pulses for Different Crash Velocities**

W. Witteman, R. Kriens  
Technische Universiteit Eindhoven  
Netherlands

**Submission ID 325-W**  
**Development of an Occupant Position Sensor System to Improve Frontal Crash Protection**

D. Breed  
Automotive Technologies International  
United States

J. Carlson, M. Koyzreff  
Autoliv  
United States

L. Summers  
National Highway Traffic Safety Administration  
United States

**Submission ID 476-W**  
**Improved driver assistance and collision avoidance with adaptive lighting**

B. Wordenweber  
HELLA KG Hueck & Co.  
Germany

**Technical Session 3**

**Worldwide NCAP Related to Existing Test Procedures**

**Submission ID 64-W**  
**Injury and deformation trends with offset crash tests**

M. Griffiths  
Road Safety Solutions  
Australia

M. Paine  
VDR  
Australia

**Submission ID 128-W**  
**Review of Australian NCAP since ESV 1998**

J. Haley  
NRMA Insurance  
Australia

M. Case  
RACV Limited  
Australia

**Submission ID 211-W**  
**NCAP - Field Relevance of the Metrics**

J. Lavelle  
General Motors Corporation  
United States

## **Technical Session 4**

### **Data Collection, Event Data Recorders and Risk Assessment**

#### **Submission ID 246-W**

##### **Air Bag Crash Investigations**

A. Chidester, T. Roston  
National Highway Traffic Safety Administration  
United States

#### **Submission ID 247-W**

##### **Real World Experience with Event Data Recorders**

A. Chidester, T. Roston  
National Highway Traffic Safety Administration  
United States

J. Hinch  
National Highway Traffic Safety Administ  
United States

#### **Submission ID 248-W**

##### **Final Report on the Pedestrian Crash Data Study**

A. Chidester, R. Isenberg  
National Highway Traffic Safety Administration  
United States

#### **Submission ID 259-W**

##### **Safety Benefits of Improvements in vehicle Design since the introduction of the ANCAP Crash test program**

D. Hendry, G. Lyle  
University of Western Australia  
Australia

J. Haley  
NRMA Insurance  
Australia

#### **Submission ID 357-W**

##### **Crash Visualization using Real-World Acceleration Data**

L. Lombardo  
National Highway Traffic Safety Administration  
United States

R. Galganski, B. Donnelly  
Center for Transportation Injury Research  
United States

#### **Submission ID 412-W**

##### **The role of innovation and statistical Methodology in safety assessment projects**

G. Stewart  
National Highway Traffic Safety Administraion  
United States

**Submission ID 426-W**  
**Driver Characteristics using Driving Monitoring Recorder**

M. Ueyama  
National Research Institute of Police Science  
Japan

**Technical Session 5**

**Development in Frontal Impact Protection (Legal, Technical)**

**Submission ID 147-W**  
**Old car crash test program**

V. Bonney  
University of New South Wales  
Australia  
J. Haley  
NRMA Insurance  
Australia

**Submission ID 385-W**  
**Evaluation of Frontal Offset/Oblique Crash Test**  
**Conditions**

D. Elliott  
Abacus  
United States  
C. Ragland  
National Highway Traffic Safety Administration  
United States  
O. Fessahaie  
Information Systems and Services, Incorporated  
United States

**Submission ID 392-W**  
**Evaluation of the effect of air bags in**  
**Multi-year NCAP tests**

A. Berkowitz  
National Highway Traffic Safety Administration  
United States

**Submission ID 487-W**  
**Frontal Offset Deformable Barrier Crash Testing and its**  
**Effect on Vehicle Stiffness**

J. Nolan, A. Lund  
Insurance Institute for Highway Safety  
United States

## **Technical Session 6**

### **Simulation and Computer Modeling in Vehicle Safety**

#### **Submission ID 96-W**

##### **The virtual prototype of an off-road vehicle**

C. Alexandru, P. Alexandru  
University Transilvania of Brasov  
Romania

#### **Submission ID 99-W**

##### **Proposed four ¼ turn metric to simulate rollover crashes**

P. Bellion  
Victorian Police  
Australia  
S. Richardson, R. Grzebieta  
Monash University  
Australia

#### **Submission ID 125-W**

##### **Finite Element Simulation of Drive Shaft in Truck/SUV Frontal Crash**

J. Poisac  
Radioss Consulting Corporation  
United States  
X. Chen, D. Wagner  
Ford Motor Company  
United States

#### **Submission ID 142-W**

##### **Presenting the results of vehicle dynamics simulation in virtual 3D environment**

M. Ambroz, I. Prebil  
University of Ljubljana, Faculty of mechanical engineering  
Slovenia

#### **Submission ID 145-W**

##### **Development of a Sport Utility Front Bumper System for Pedestrian Safety and 5 MPH Impact Performance**

D. Detwiler, R. Miller, S. Malcolm, S. Mark  
Honda R&D, Americas  
United States

#### **Submission ID 159-W**

##### **A new approach to modelling vehicle interactions with Roadside Restraint Systems**

C. Oakley  
Transport Research Laboratory  
United Kingdom

#### **Submission ID 191-W**

##### **Application of the driver model in computer smulation of the car motion**

A. Renski  
Warsaw University of Technology  
Poland

**Submission ID 223-W**

**Virtual testing driven development process for side impact safety**

S. Mundal, D. Schaub  
TRW ORS GmbH & Co.  
Germany

C. Amann  
BMW AG  
Germany

**Submission ID 232-W**

**Speed limit in city area and improvement of vehicle front design for pedestrian impact protection- A computer simulation study**

J. Yang, X. Liu, P. Lövsund  
Crash Safety Division, Chalmers University of Technology  
Sweden

C. Tingvall, A. Lie, P. Larsson, T. Lekander  
Swedish National Road Administration  
Sweden

**Submission ID 250-W**

**Effects of seat back force-deflection Properties on injuries for both front and Rear seat occupants in rear impacts**

J. Saunders III, L. Molino, E. Sun  
National Highway Traffic Safety Administration  
United States

**Submission ID 257-W**

**Simulation of a Vehicle Crash into a Truck Underrun Barrier**

G. Rechnitzer  
Monash University Accident Research Centre  
Australia

R. Zou, R. Grzebieta  
Department of Civil Engineering, Monash University  
Australia

**Submission ID 305-W**

**Analytical Evaluation of an Advanced Integrated Safety Seat Design in Frontal, Rear, Side, and Rollover Crashes**

R. Munson, J. Lindberg  
Johnson Controls, Inc  
United States

L. Summers  
National Highway Traffic Safety Administration  
United States

M. Rashidy, G. T.J, R. Morris, B. Deshpande  
EASi Engineering  
United States

**Submission ID 344-W**  
**Methodology to design restraint systems with simulations**  
**: case of the seat**

I. Pimort, L. Bouchard  
Renault Safety Department  
France

L. Palanchon  
Lore  
France

M. Pajon, M. Bakacha  
Faurecia  
France

**Submission ID 419-W**  
**Simplified Models for Passive Safety Engineering**

G. Boichot, B. Hazet, L. Di Valentin, S. Lepoutre  
PSA Peugeot Citroën  
France

**Submission ID 477-W**

**Virtual Night Drive**

T. Weber, C. Plattfaut  
HELLA KG Hueck & Co.  
Germany

**Submission ID 494-W**

**Development of a Finite Element Model of the Total  
Human Model for Safety (THUMS) and Application to  
Car-Pedestrian Impacts**

T. Maeno  
Toyota System Research Inc.  
Japan

J. Hasegawa  
Toyota Motor Corporation  
Japan

**Technical Session 7**

**Compatibility in Frontal and Side Collisions (Car/Car,  
Car/Vehicle)**

**Submission ID 156-W**

**Vehicle Compatibility in Car-to-Car Frontal Offset Crash**

H. Bae, K. Park, J. Lim  
Hyundai Motor Co.  
Republic of Korea

**Submission ID 430-W**

**A Comparative Analysis of Vehicle-to-Rigid Wall and  
Vehicle-to-Vehicle Frontal Impacts**

S. Barbat, P. Prasad, X. Li  
Ford Motor Company/Safety R & D  
United States

## **Technical Session 8**

### **Improved Safety for Vulnerable Road Users (Bicyclists, Pedestrians, Children)**

#### **Submission ID 184-W**

##### **A new legform impactor for evaluation of car aggressiveness in car-pedestrian accidents**

J. McDonald, T. Shams  
GESAC, Inc.  
United States

A. Wittek, A. Konosu, Y. Matsui, H. Ishikawa  
Japan Automobile Research Institute  
Japan

A. Sasaki  
Japan Automobile Manufacturers Association  
Japan

#### **Submission ID 214-W**

##### **Surveys of Child Restraint Use in New South Wales**

H. Vertsonis  
Roads & Traffic Authority, NSW  
Australia

M. Paine  
VDR  
Australia

#### **Submission ID 219-W**

##### **Pedestrian Injury Projection In Australia If Vehicles Achieved A Higher Pedestrian Star Rating**

C. Coxon  
Transport South Australia  
Australia

#### **Submission ID 326-W**

##### **Pedestrian Head Impact Testing and PCDS**

J. Stammen, R. Saul  
National Highway Traffic Safety Administration  
United States

B. Ko  
The Ohio State University  
United States

#### **Submission ID 380-W**

##### **A Study of The Upper Leg Component Tests Compared with Pedestrian Dummy Tests**

A. Akiyama, M. Okamoto, Y. Okamoto  
Honda R&D Co., Ltd  
Japan

Y. Kikuchi  
Honda R&D Co., Ltd.  
Japan

**Submission ID 395-W**

**Daytime Running Lamps (DRLs) - A North American Success Story**

P. Bergkvist  
General Motors Corporation  
United States

**Submission ID 440-W**

**Field Test of a Pedestrian Safety Zone Program for Older Pedestrians**

A. Cleven, R. Blomberg  
Dunlap and Associates, Inc.  
United States  
  
M. Levy, M. Vegega  
National Highway Traffic Safety Administration  
United States

**Submission ID 443-W**

**Characterization of Leg Injuries from Motor Vehicle Impacts**

T. Kress  
The University of Tennessee  
United States  
  
D. Porta  
Bellarmine College  
United States

**Submission ID 452-W**

**Ambulance crashworthiness and occupant dynamics in vehicle-to-vehicle crash tests**

N. Levick  
Johns Hopkins University  
United States  
  
B. Donnelly, A. Blatt  
Center for Transportation Injury Research  
United States

**Technical Session 9**

**Developments in Restraint Systems (Airbags, Safety Belts)**

**Submission ID 97-W**

**Dynamic Characteristics of End Release Seatbelt Buckles**

D. Renfroe, H. Roberts, S. Andrews, J. Partain  
Renfroe Engineering, Inc.  
United States

**Submission ID 134-W**

**Potentials of Adaptive Load Limitation**

G. Clute  
Autoliv GmbH  
Germany

**Submission ID 169-W**  
**A Preliminary Evaluation of Passenger Airbag Effectiveness in Australia**

A. Morris, J. Barnes, B. Fildes  
Monash University Accident Research Centre  
Australia

**Submission ID 332-W**  
**The Influence of Rear Loading on the Protection of Child Car Occupants in Child Restraints**

M. Le Claire, C. Visvikis  
TRL  
United Kingdom

**Submission ID 338-W**  
**Analysis of Occupant Protection Provided to 50th Male Dummies Sitting Mid-Track and 5th Female Dummies Sitting Full-Forward in Crash Tests of Paired Vehicles with Redesigne d Air Bag Systems**

L. Summers, W. Hollowell, A. Prasad  
National Highway Traffic Safety Administration  
United States

**Submission ID 345-W**  
**Large School Bus Safety Restraint Evaluation**

J. Elias  
Transportation Research Center, Inc.  
United States  
L. Sullivan, L. McCray  
National Highway Traffic Safety Administration  
United States

**Submission ID 374-W**  
**Study of Airbag Interaction with Out of Position Occupant by the Computer Simulation**

K. Kamiji, N. Kawamura  
Honda R&D  
Japan

**Submission ID 381-W**  
**A Methodology Using a Combined Injury Criteria Index to Study the Performance of Various Driver Restraint System Configurations**

Y. Håland  
Autoliv Research  
Sweden  
H. Svanberg  
Saab Automobile AB, Sweden  
Sweden  
J. Yang, H. Mellander, P. Lövsund  
Crash Safety Division, Chalmers University of Technology  
Sweden

**Submission ID 480-W**  
**Development of Advance Restraint Features to Mitigate Driver Out-of-Position Injury**

W. Mu  
Daimler Chrysler  
United States

**Technical Session 10**

Developments in Side Impact Protection (Legal, Technical)

**Submission ID 387-W**  
**Side Impact Air Bags - GM Approach**

M. Scherba  
General Motors Corporation  
United States

**Submission ID 466-W**  
**Investigation on the influence of lateral side impact against curbstones on side airbag sensing**

S. Olders, M. Philipps  
Institut für Kraftfahrwesen, Aachen  
Germany

**Technical Session 11**

Safety of Heavy Trucks and Buses (Lanekeeping, Stability, Tire/Road)

**Submission ID 270-W**  
**Front underrun protection systems for trucks. Considerations about the bullet and target vehicles for a test procedure**

J. Ayuso, M. Lozano  
INSIA  
Spain

**Submission ID 414-W**  
**Excessive yaw behaviour of commercial vehicles, a fundamental approach**

J. Pauwelussen  
TNO-Automotive & Delft University of Technology  
Netherlands

## **Technical Session 12**

### **Intelligent Transportation Systems (ITS) Collision Avoidance**

#### **Submission ID 310-W**

#### **An Algorithm for Rear-end Collision Avoidance Warning Systems**

A. Carter, A. Burgett  
National Highway Traffic Safety Administration  
United States

G. Preziotti  
Johns Hopkins University Applied Physics Laboratory  
United States

#### **Submission ID 321-W**

#### **Rear-end Collision Warning System Field Operational Test - Status Report**

J. Ference  
National Highway Traffic Safety Administration  
United States