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19th ESV TECHNICAL THEME AND TECHNICAL SESSION TOPICS

“The Evolution of Automobile Safety from Experimental to Enhanced Safety Vehicles: A Look at Over 30 Years of Progress”

Rollover Crashworthiness and Protection

Chairperson: Ekkehard Brühning, Germany | **Co-Chair:** Rodolfo Schöneburg, Germany

Some vehicle fleets comprise a large numbers of sports utility vehicles, standard vans and minivans, pick-up trucks and other light vehicles. The rollover propensities of some of these vehicles are higher than passenger cars. Further, roof crush and interior contacts in such crashes result in fatalities and serious injuries. Technical papers related to rollover metrics, test procedures to discriminate rollover potential of vehicles, crash protection countermeasures, ejection prevention and other rollover related topics are invited for this session.

***Compatibility in Frontal/Side Collisions**

Chairperson: Peter O'Reilly, United Kingdom | **Co-Chair:** Bernie Frost, United Kingdom

Compatibility/aggressiveness of vehicles has been receiving great public attention worldwide, recently. Concern regarding the safety of occupants of smaller vehicles in the fleet in crashes with other larger vehicles is increasing. Technical papers dealing with the topic of compatibility in frontal and side collisions and consumer rating programs for frontal impact protection are invited for this session.

***Advanced Intelligent Technologies – ITS**

Chairperson: Peter Burns, Canada | **Co-Chair:** Andry Rakotonirainy, Australia

Use of Intelligent Transportation Systems (ITS) involving vehicles is an important area for advanced collision avoidance systems and driver assistance systems that can offer drivers both improved safety and convenience benefits but can also have adverse safety consequences, for instance by distracting drivers. Therefore Human-Machine Interface (HMI) issues are crucial. ITS advances including external communications systems can offer safety benefits provided the driver workload can be satisfactorily managed. Technical papers dealing with ITS technologies and their applications, field operation test findings, and other research topics of interest are invited for this session.

***Improved Safety for Pedestrians and Other Vulnerable Road Users**

Chairperson: Yoshiyuki Mizuno, Japan | **Co-Chair:** Masao Notsu, Japan

Pedestrian protection, and the safety of users of two and three-wheeled vehicles are of particular interest in many regions of the world. Technical papers are invited on research and regulatory activities to address the safety problems faced by pedestrians and two and three-wheeled highway-use vehicles.

Vehicle Handling, Stability and Control Systems, and Rollover Prevention

Chairperson: Michael Monk, United States | **Co-Chair:** Scott Schmidt, United States

Vehicles are currently designed to help prevent or lessen skids from unexpected road conditions. New studies on designs for keeping vehicles stable are proclaiming a 20 to 30 percent in accident reduction. These designs are now being marketed in Europe and will soon be promoted in the United States. This session invites papers that present a new approach to crash prevention, vehicle stability, traction, braking, and other active safety ratings including rollover rating systems and data analysis.

***Biomechanics: Injury Criteria and Test Procedures**

Chairperson: Rolf Eppinger, United States | **Co-Chair:** Priya Prasad, United States

To motivate effectively and efficiently the incorporation of appropriate safety measures to address the multitude of automotive crash scenarios requires ever more diverse and robust injury criteria and test procedures. To advance the discussion on these necessary capabilities, this technical session seeks papers that address and discuss (1) the development and application of analytical and experimental techniques to understand better basic impact injury process, (2) analytical techniques that enhance the identification of mechanical responses that are determinants of the injury outcome, and/or (3) processes that enhance the interpretation and injury predictive accuracy of dummy responses

Advanced Technology: Driver-Vehicle Safety/Driver Performance

Chairperson: Kaneo Hiramatsu, Japan | **Co-Chair:** Annie Pautie, France

Advanced In-Vehicle Systems (IVS) to assist in crash prevention (with minimum driver involvement), crash severity reduction, injury mitigation and/or to optimize protection systems just before a crash are being developed and some are already available or close to market. These systems raise important issues for drivers, manufacturers and legislators. Technical papers on the above subjects are invited for this session.

***Developments in Side Impact Protection**

Chairperson: Craig Newland, Australia | Co-Chair: Suzanne Tylko, Canada

Side impact protection has been a top crash safety priority in many regions of the world for more than a decade. The changing fleet characteristics and the advent of new technologies in vehicles necessitate a discussion of the latest research findings in this area. Papers are invited on various aspects of side impact protection including safety countermeasures, test devices and procedures for their evaluation and consumer rating programs for side impact protection.

Injury Risk Assessments

Chairperson: Jac Wismans, The Netherlands | Co-Chair: Priya Prasad, United States

The latest technological and methodological developments worldwide in using real world data for risk assessment and injury prediction will be presented. Papers on the use of data in defining the safety problems, in developing injury risk metrics, in determining effectiveness of motor vehicle safety standards, and in calculating anticipated benefits should be included. Special emphasis will be given to short and long term nature of rear impact injuries and costs of such injuries. Papers are invited on unique methodologies on the above topics.

Alternative Fueled Vehicles and Their Safety Implications (NEW)

Chairperson: William T. Hollowell, United States | Co-Chair: Saeed Barbat, United States

Growing global environmental and energy conservation concerns have given rise to alternative transportation methods being developed and integrated into the vehicle fleet. Electric vehicles, natural and hydrogen gas fuel cell vehicles, and hybrid fuel systems pose significant safety implications. Examining these alternatives and their impacts on the motoring public will be discussed. Since fuel system integrity for these vehicles is of interest, the general topic of fuel system integrity also will be included in this session. Technical papers on the above subjects are invited for this session.

Biomechanics: Dummy Development and Computer Modeling

Chairperson: Dominique Cesari, France | Co-Chair: Michiel van Ratingen, The Netherlands

The multitude of surrogates for the human crash victim, ranging from the stable of physical crash test dummies to the many analytical equivalents, have become necessary ingredients for the timely and successful development and incorporation of safety into new vehicle designs. Papers addressing any of the many technical aspects of the design, development, enhancement, testing, validation, and evaluation of these physical and virtual surrogates, are invited.

Safety of Motorcycles, Heavy Trucks, and Buses

Chairperson: Geoff Harvey, United Kingdom | Co-Chair: Steve Gillingham, United Kingdom

Safety technologies for heavy trucks and buses are topics that have received immense attention in past ESV conferences. This ESV conference will continue to focus on those technologies, but also will increase the attention on technologies for improving motorcycle safety. Papers are invited on these and other safety topics related to motorcycles, heavy trucks, and buses.

Restraint Systems for Adults and Children

Chairperson: Anders Lie, Sweden | Co-Chair: Anders Kullgren, Sweden

Restraint technologies have made a giant leap in recent years from automatic belt systems to driver and passenger air bags, pre-tensioning and load limiting, inflatable tubular structures, window curtains and other passive devices. Changes in technologies in belt systems, sensing systems, crash event data recording and the like also have accompanied these developments. Technical papers are invited to discuss various aspects of passive restraint systems design for occupant protection, sensors and algorithms, and crash event data acquisition.

Developments in Frontal Impact Protection

Chairperson: Dainius Dalmotas, Canada

Improvements in frontal crash protection have occurred over the last decade in many regions of the world because of the introduction of frontal air bags in vehicles. However, safety problems still occur because body regions other than those that are protected by the air bags continue to receive injuries in frontal crashes. Papers are invited to discuss improvements in crash protection in single and multi-vehicle frontal crashes and up-to-date research activities related to full and frontal offset testing and countermeasure development.