



23rd International Technical Conference on the Enhanced Safety of Vehicles

Announcement and Call for Abstracts

The 23rd ESV conference organizing committee is pleased to announce that it is now accepting abstracts for consideration. Abstracts form the basis for the technical papers that will be accepted on a wide range of topics in vehicle safety invited for presentation at the ESV2013 Conference and publication in the Proceedings. All abstracts will be subject to review and approval by Abstract Review Committees, and shall not have been published elsewhere or submitted for presentation at another conference prior to presentation at the ESV2013 Conference. New for this ESV will be a special edition of Traffic Injury Prevention where a select number of peer-reviewed papers will be published. To assist you in your abstract submission, please refer to the abstract submission guidelines and description of technical session topics provided below.

Abstract Submission Guidelines

- ❑ All abstracts will be judged on three areas: Technical quality, originality and relevance to the session topic. Predominantly commercial abstracts will be declined.
- ❑ Based on the above criteria, accepted abstracts will be submitted in one of three (3) categories: Peer-review, Oral and Written (paper not peer-reviewed) or Written only. Peer-reviewed and Oral and Written papers will be presented at the conference. If the content of a technical paper is different from the accepted abstract, the technical paper will be disqualified.
- ❑ In order to be considered, all abstracts must be submitted in English, not to exceed 500 words, and should provide information on each of the following five points:
 - Research Question/Objective
 - Methods and Data Sources
 - Results
 - Discussion and Limitations
 - Conclusion and relevance to session submitted
- ❑ Abstracts should contain text only. Do not include photographs, figures, tables, graphs or other media.
- ❑ Abstracts must be submitted on-line at <http://submissions.miracdc.com/23esv>. Follow the instructions provided. To be considered for peer-review, you must submit your abstract by September 1, 2012 and indicate during submission that you want your abstract to be considered for a peer-review paper. Abstracts not accepted for peer-review paper will be referred back to session chairs for further consideration as an Oral and Written or Written Only paper.

- Accepted abstracts will be posted prior to the conference, and the full proceedings containing technical papers will be available on the National Highway Traffic Safety Administration (NHTSA) Web site at <http://www-esv.nhtsa.dot.gov>. Conference attendees will receive a USB Flash Drive of the proceedings at registration as well as a copy of the special edition of Traffic Injury Prevention containing the peer-reviewed papers.

Notification to Authors

By the specified dates below, authors will receive email notification(s) on the status of their submitted abstracts. Acceptance or rejection notices will also be available on the submission website <http://submissions.miracdc.com/23esv>. Authors of accepted abstracts will be provided guidelines for writing their technical papers. Authors will be able to review and approve their final paper prior to submission. The decisions of the abstract and paper review committees are final and not negotiable.

Important Deadline Dates (peer review paper process)

September 1, 2012	Abstract submission deadline for peer-review papers
September 15, 2012	Authors notified if abstract accepted for peer-review
November 1, 2012	Draft paper due for peer-review
February 1, 2013	Final Paper due

To be considered for peer-review, you must submit your abstract by September 1, 2012 and indicate on the website that you want to be considered. If your abstract is accepted for peer-review, you will have approximately six weeks to prepare your draft paper. A three month review cycle is anticipated between reviewers and authors to finalize papers for publication based on reviewer's comments and the [Traffic Injury Prevention](#) formatting guidelines. If your abstract is not accepted for peer-review, it will be returned to the session chair/co-chair for further consideration and follow the process below for non-peer-review papers.

Important Deadline Dates (non-peer review paper process)

October 1, 2012	Abstract submission deadline
November 21, 2012	Authors notified of status of abstracts
March 5, 2013	Final Paper due

This process is the abstract/paper review process as done previously for ESV conferences. Your abstract will be reviewed by a committee and then selected for Oral and Written or Written Only paper. Your paper will not be peer-reviewed, but must follow ESV paper guidelines. You will be responsible for uploading your paper to the ESV paper website by March 5, 2013.

Technical Session Descriptions

There are thirteen technical session topics listed below. Your abstract/paper should reflect the research or topics as described in the technical session descriptions provided. You will need to indicate your session presentation preference when you submit your abstract and paper.

Biomechanics #1: Crash Injury Mechanisms and Human Modeling

Chairperson: Philippe Vezin, France

Co-Chair: Matthew Craig, United States

For over seventy years, impact biomechanics research has contributed greatly to the understanding of the nature and causes of injury as a result of vehicle crashes. This work has also contributed to the development of vehicle safety countermeasures that are helping reduce the crash related death and injury rates around the world. This work is far from over as there are still injury issues to understand that can further drive more diverse assessment tools, more robust injury criteria and complex test procedures. This technical session seeks papers to address (1) the development and application of analytical and experimental techniques to better understand the human impact injury process, (2) techniques that enhance the identification of mechanical responses that are determinants of the injury outcome, (3) processes that enhance the interpretation and predictive accuracy of dummy responses and injuries and (4) cutting-edge mathematical modeling methods to accurately simulate human kinematic response in crashes and predict regional and organ injury mechanisms related to experimental as well as field observed injuries.

Testing and Modeling of Structural Performance in Frontal Crashes

Chairperson: Stephen Summers, United States

Co-Chair: Suzanne Tytko, Canada

Despite reductions in overall crash related death and injury, frontal impact continues to be the dominant crash mode. Car and truck manufacturers have made continuous improvement in crash protection over the last four decades, however, new NCAP requirements globally and new frontal small overlap and oblique impact test programs continue to challenge the frontal structural response. Changing vehicle fleet characteristics in response to new fuel efficiency requirements will also challenge manufacturers to seek new materials that can manage crash energy while reducing mass. The focus of this session is on the structural characteristics, size, stiffness and weight changes and their effect on frontal impact protection and crash compatibility. Papers are invited to discuss structural changes that may affect or improve strategies for frontal crash protection that are being pursued globally. Session papers may also include various aspects of crash compatibility, including safety countermeasures, test devices and procedures for their evaluation, and performance requirements.

Crash Avoidance #1: Safety Performance and Effectiveness of Driver Assistance Technologies, Test & Evaluation Procedures, Benefits Assessment

Chairperson: Anders Lie, Sweden

Co-Chair: Ray Resendes, United States

Advanced technologies are bringing enhanced safety to vehicles that never existed before. Driver warning and assistance technologies such as adaptive cruise control, road departure warning systems, and night vision systems have been in the market for many years. Even newer technologies are being researched and introduced, including dynamic radar-based braking systems to prevent rear-end crashes and or to mitigate crash injury risk. To accurately estimate the safety benefits of these technologies, the safety problems and target populations at each stage of the crash event must be analyzed. An important element in this process is the development of suitable test procedures that are objective and related to real-world problems. Government regulators, research bodies, and vehicle manufacturers are examining concepts to predict the safety consequences associated with advanced technologies. Papers are invited on research related to test and evaluation procedures and estimates of potential safety benefits and other performance issues related to driver assistance safety technologies.

Biomechanics #2: Advances in Crash Test Dummies, Instrumentation and Data Analysis

Chairperson: Kevin Moorhouse, United States

Co-Chair: Koshiro Ono, Japan

New crash test dummies, improvements to existing crash dummies and analytical techniques to evaluate dummy response are continually being developed to assess the various crash modes and to improve dummy biofidelity. The WorldSID and THOR dummy families (50th male and 5th female) are complete or in final development. Numerous groups have been testing and evaluating these dummies in new test procedures as well as assessing them for biofidelity, durability, repeatability and reproducibility. New materials are also being developed for dummies that may enhance these qualities. Other dummies such as BioRID and new child dummies are in or are being considered for widespread use. Finally, mathematical models of all dummies continue to improve. Technical papers are invited to discuss new dummies and improvements to existing dummies, as well as related instrumentation and analysis techniques that are under development to address future safety needs for vehicle design, testing and restraint system development.

Performance of Protection Systems for Children and Pedestrians

Chairperson: Jongsoo Kim, Korea

Co-Chair: Bernie Frost, United Kingdom

Protection of children and pedestrians from injury due to crashes continues to attract worldwide attention. For children, new test procedures for assessing child side impact performance, proposed use of child dummies in consumer vehicle test programs, and new research into rear seat performance in crashes has raised considerable attention to child safety issues. Papers for the child safety portion of this session should focus on these issues as well as other technologies, methods or data that can further the protection of children in vehicles.

Pedestrian protection using automated vehicle-based solutions has been the focus of research worldwide in recent years. Much progress has been made in this area. The primary vehicle-oriented countermeasures are centered on improving frontal structure of passenger vehicles to mitigate head injuries and improving lower extremity injuries. However, pedestrian safety continues to be a serious problem in several countries. In many areas, in addition to vehicle-based solutions, infrastructure related solutions are also being explored. Advanced technology systems using radar, vision concepts, and other types of sensors are being investigated to identify pedestrians at intersections and to potentially provide warnings to drivers. Papers are invited in this session to address the issues faced by pedestrians and bicyclists and the technology solutions being designed and offered to prevent or mitigate these crashes.

Crash Avoidance #2: Human Factors and Driver/Occupant Behavior Analysis

Chairperson: Bernd Lorenz, Germany

Co-Chair: Peter Burns, Canada

Human-Machine Interface (HMI) design plays a key role in all vehicle systems requiring driver interaction. For safety systems, manufacturers are introducing advanced crash warning systems that have the potential to alert drivers of impending crash situations. The effectiveness of such systems depends on the interface design and how well drivers are able to interact with them to improve their driving performance while minimizing unintended consequences. Interface design is also critical to non-safety telematics systems to ensure that no unsafe driver distraction results. Research is underway at various institutions on

the issues related to human-machine interface design, appropriate evaluation techniques, and suitable metrics for such evaluations. Evaluation protocols and metrics are fundamental to determining which HMI approaches are most effective, enabling decisions to be made with respect to HMI design, standards and guidelines. Papers are invited on research related to evaluation of crash warning, non-safety telematics, and impaired driving HMI's and how these evaluation techniques can be used to support decisions on HMI design and standardization.

Testing and Modeling of Structural Performance in Side Impact and Rollover Crashes

Chairperson: Mark Terrell, Australia

Co-Chair: Byungkee Han, Korea

Side impact crashes continue to account for a large percentage (approximately 25%) of crash fatalities and injuries. U.S. side impact standards upgrades and the formation of a pole side impact Global Technical Regulation (GTR) work group will challenge manufacturers to improve side impact crashworthiness. Advanced vehicle control and safety technologies are being introduced into vehicles at a fast pace. For example, electronic stability control systems are already available on most vehicles sold in the U.S. today. However, rollover related deaths are still a significant portion of the overall fatalities in the U.S., accounting for about 30% of traffic-related deaths. Since rollovers and related deaths will continue to be overrepresented, research into rollover occupant protection has continued. Recently, the U.S. has adopted a new roof crush requirement and ejection mitigation requirements. Internationally, research is underway to investigate dynamic rollover occupant protection interventions. This session is inviting papers related to vehicle based countermeasures that reduce the occupant risk of injury as a result of side impact or rollover crashes. These countermeasures may be structural design and/or material-based in design that have been tested and/or modeled to protect occupants in these types of crashes.

Crash Avoidance #3: Vehicle Electronic System Safety: Controls, Cybersecurity and Automated Vehicles

Chairperson: [Bernie Frost, United Kingdom](#) ~~FBD, United Kingdom~~

Co-Chair: Tim Johnson, United States

Nearly every vehicle component, subsystem and system is tied into the vehicle electronic architecture and monitored/controlled via central or distributed control units. The complexity and highly interlaced nature of vehicle electronic safety systems requires knowledge of how the system must operate to monitor function and detect/prevent anomalies to maintain proper function, warn the driver of potential subsystem or system failure or take over limited or total control of the vehicle. External interfaces to the vehicle electronic system via embedded or blue-toothed portable devices may expose the vehicle electronic system to remote attack that could be used to disable or reprogram the system to function abnormally. This session seeks paper on the emerging field of vehicle control system and design for both safety and security. Also, papers that describe the challenging issues associated with automated or semi-automated driving are encouraged.

Restraint System Design and Performance Challenges: Addressing the Needs of Diverse Populations (Age, Gender, Stature)

Chairperson: Lex van Rooij, Netherlands

Co-Chair: Jaewan Lee, Korea

Vehicle restraints in frontal crashes are slightly more than 50 percent effective in preventing fatalities. Occupant protection can be improved through the development of advanced restraint systems that can tailor their performance taking into consideration occupant

characteristics such as age, gender and stature, as well as the crash characteristics. Concerns also exist for these populations with respect to the design of future vehicles that may be smaller and/or lower in mass to improve fuel efficiency. The aging population will continue to drive or be occupants in vehicles so adaptive protection systems will need to be even more complex in the future as fleet changes may also change the crash pulse and change performance requirements for occupant restraints in front and rear seating positions. Further, new crash warning systems provide opportunities to integrate alerts and optimize safety performance. These issues are receiving the attention of safety researchers world-wide. Papers are invited on research related to safety performance for new vehicle and restraint designs especially as they pertain to older occupants, small females and heavier populations.

Electric Vehicle, Battery and Fuel Cell Safety

Chairperson: Kwangbum Lee, Korea

Co-Chair: Jost Gail, Germany

Through economic and regulatory pressures, automobile manufacturers are striving to improve fuel efficiency of vehicles. Conventional wisdom is that more fuel efficient vehicles are lighter and smaller and are not as safe as their heavier and larger, less fuel efficient counterparts. In the age of advanced technologies for higher fuel efficiency and for enhancing safety, opportunities exist for both fuel efficiency and improved safety to coexist without the necessary trade off of fuel efficiency against safety. This session is inviting papers on the subject of strategies for improving fuel economy and safety, and on the impact of fuel saving vehicle designs on crashes and safety. Included in these subject areas will be papers that discuss ongoing research activities in advanced fuel saving and safety technologies and papers regarding the safety of batteries (including lithium-ion chemistries) as well as other alternative fuel technologies.

NCAP and Non-Regulatory Approaches for Improving Safety

Chairperson: Claes Tingvall, Sweden

Co-Chair: Jenny Dang, United States

In recent years, New Car Assessment Programs (NCAP) and other consumer vehicle testing programs have become widely accepted in the U.S., Europe, Japan, Australia, Korea, China, and other countries for conducting light vehicle safety evaluations and providing vehicle safety ratings to the general public. The motor vehicle industry improves safety performance of vehicles as it strives to receive the highest rating possible for their vehicles. In addition to assessing occupant crash safety, programs are now giving credit for advanced crash avoidance systems and providing an overall rating for a motor vehicle. While testing strategy varies from region to region, the programs all strive for similar outcomes, safer vehicles. Papers are invited on research on NCAP rating and other testing strategies. Additionally, papers relating to crash avoidance evaluation approaches and overall vehicle scores and their impact on marketing safety are encouraged.

Heavy Truck, Bus, and Motorcycle Safety

Chairperson: Jac Wismans, The Netherlands

Co-Chair: Kyongsu Yi, Korea

Safety technologies for trucks and buses are topics that have received immense attention in past ESV conferences. This ESV conference will continue to focus on heavy vehicle advanced technologies, and also explore research in the human-vehicle response area. With increasing attention on driver performance, can advanced safety technologies assist drivers of large vehicles mitigate or prevent crashes? Are these technologies capable of assisting drivers when they are drowsy and/or fatigued under long and tedious hours of operation?

Technical papers on research related to these safety issues and potential solutions are invited for this session.

Motorcycle crashes are a cause of serious concern globally. In the United States alcohol use and speeding are cited as major contributing factors in these crashes. Non-use of helmets is another concern. Many of these same problems exist in other regions of the world. Motorcycle rider education and licensing, reducing the number of impaired motorcyclists on the road, increasing motorists' awareness of motorcycles, use of advanced technologies, and increased helmet use are appropriate means to improve motorcycle safety. Technical papers on research related to these safety issues and potential solutions are also invited for this session.

**Assessment of New and Improved Field Data Collection, Analysis and Benefits
Assessment Methods**

Chairperson: Andre Seeck, Germany

Co-Chair: Augustus (Chip) Chidester, United States

Use of field crash data helps to stimulate all aspects of vehicle safety from research to policy to regulation. These data also play a leading role in development of crash prevention and crash protection countermeasures. However, due to changes in technology, the collection and analysis of these valuable data need to evolve and develop information along the entire crash spectrum from pre-crash to post crash. Also, several naturalistic studies are in progress in various regions of the world that will provide additional insight into how crashes occur, providing additional information on how to prevent motor vehicle crashes. Worldwide, programs in Asia, UK, Germany, and other countries in Europe and the U.S. are being used more to drive research and policy decisions. This session invites papers aimed at a discussion of future data collection and analysis methods. Papers related to such topics as event data recorders, naturalistic driving data on human-vehicle performance, analytical methods for estimating potential benefits of safety technologies, evaluation methods of video data, universal descriptions of crash causal factors and resulting crash types, crash reconstruction and other related topics are welcome in this session.
