

2015 Stapp Program

9:00 **Welcome and Opening Remarks** – General Chair, John M. Cavanaugh

9:15 **Stapp Memorial Lecture**
Impact Response, Conditional Probabilities and the Multiverse,
Guy S. Nusholtz, Fiat Chrysler Automobiles US LLC

9:45 **Remembering Dr. John D. States,** Albert I. King

Monday Morning

Biomechanical Testing and Modeling of Human Response and Injury Risk in Side Impacts

10:00 **Oblique Loading in Human Cadavers in Full Vehicle Lateral Impact Tests using Chestband Data**
Narayan Yoganandan, John R. Humm, Frank A. Pintar, Mike W. J. Arun, Department of Neurosurgery, Medical College of Wisconsin; Heather Rhule, Rodney Rudd, Matthew Craig US DOT NHTSA, Washington, DC

10:30 **A Comparison of Sacroiliac and Pubic Rami Fracture Occurrences in Oblique Side Impact Tests on Nine Post Mortem Human Subjects**
Philippe Petit, Xavier Trosseille, LAB PSA Peugeot Citroën Renault (Nanterre – France); Mathieu Lebarbé, Pascal Baudrit, Pascal Potier, CEESAR (Nanterre – France); Sabine Compigne, Toyota Motor Europe NV/SA (Belgium); Mitsutoshi Masuda, Akira Yamaoka, Tsuyoshi Yasuki, Toyota Motor Corporation (Japan); Richard Douard, Université René Descartes (Paris – France)

10:30-11:00 **Break**

11:00 **Development and Validation of the Total Human Model for Safety (THUMS) Version 5 Containing Multiple 1D Muscles for Estimating Occupant Motions with Muscle Activation during Side Impacts**
Masami Iwamoto, Yuko Nakahira, Hideyuki Kimpara, Toyota Central R&D Labs., Inc.

11:30 **Side Impact Regulatory Trends, Crash Environment and Injury Risk In the USA**
Priya Prasad, Prasad Engineering, LLC; Dainius Dalmotas, Aline Chouinard, D.J. Consulting, Inc.

12:00-1:30 **LUNCH**

Monday Afternoon

Biomechanics of Traumatic Brain Injury

1:30 **Future of Head Injury Research: A Neurosurgeon's Perspective,** Thomas A. Gennarelli, M.D.

2:00 **Why Bridging Vein Rupture Cannot be the Cause of Subdural Hematomas,** Albert I. King

2:30 **Recent Research on Brain Injury and Tolerance at the Cellular Level,** John M. Cavanaugh

3:00-3:30 **Break**

3:30 **Head Impact Mechanics in Cadavers and Animals,** Warren N. Hardy

4:00 **Strain Fields and Angular Acceleration Pulses on Regional Brain Injuries,** Frank A. Pintar

4:30 **Computational Modeling and Injury Criteria for Motor-Vehicle Crashes,** Erik G. Takhounts

5:00 **Head Injuries, Mechanisms and Assessments in Motor-Vehicle Environments,** Priya Prasad

Tuesday Morning

Biomechanics of the Thorax/Abdomen

- 9:00 Characterization of Human Rib Biomechanical Responses due to Three-Point Bending**
Anil Kalra, Tal Saif, Ming Shen, Xin Jin, Feng Zhu, Paul Begeman, Scott Millis*, King H. Yang,
Bio-Engineering Center, Wayne State University, Detroit, MI-48201
*School of Medicine, Wayne State University, Detroit, MI-48201
- 9:30 Derivation of a Provisional, Age-dependent, AIS2+ Thoracic Risk Curve for the THOR50 Test Dummy via Integration of NASS Cases, PMHS Tests, and Simulation Data**
Tony R. Laituri, Scott Henry, Raed El-Jawahri, Nirmal Muralidharan, Guosong Li, and Marvin Nutt, Ford Motor Company
- 10:00 Proposed Method for Development of Small Female and Midsize Male Thorax Dynamic Response Corridors in Side and Forward Oblique Impact Tests**
Pascal Baudrit, CEESAR; Xavier Trosseille, LAB PSA Peugeot-Citroën Renault
- 10:30-11:00 Break**
- 11:00 Reference PMHS Sled Tests to Assess Submarining**
Jérôme Uriot, Pascal Potier, Pascal Baudrit, CEESAR; Xavier Trosseille, Philippe Petit, LAB PSA Peugeot-Citroën Renault; Olivier Richard, Faurecia Automotive Seating; Sabine Compigne, Toyota Motor Europe NV/SA; Mitsutoshi Masuda, Toyota Motor Corporation; Richard Douard, Université René Descartes, Paris
- 11:30 Evaluation of the Kinematic Responses and Potential Injury Mechanisms of the Jejunum during Seatbelt Loading**
Meghan K. Howes and Warren N. Hardy, Virginia Tech-Wake Forest University, Center for Injury Biomechanics; Amanda M. Agnew, The Ohio State University, Injury Biomechanics Research Center; Jason J. Hallman, Toyota Technical Center USA, Toyota Motor Eng. and Mfg. NA, Inc.
- 12:00-2:00 LUNCH**

Tuesday Afternoon

- 2:00 Presentation of 2014 Stapp Best Paper Award**, presented by John M. Cavanaugh to Lauren K. Wood, Carl S. Miller, Nathaniel H. Madura, Matthew P. Reed, Lawrence W. Schneider, Kathleen D. Klinich, Jonathan D. Rupp, University of Michigan Transportation Research Institute for *Response and Tolerance of Female and/or Elderly PMHS to Lateral Impact*

Call for Papers for 2015 Conference, Washington D.C., Erik G. Takhoumts, General Chair

Estimating Effects of Vehicle Mass and Active Safety Technologies on Injury/Fatality Risk

- 2:15 Integration of Active and Passive Safety Technologies - A Method to Study and Estimate Field Capability**
Jingwen Hu, Carol Flannagan, Shan Bao, University of Michigan Transportation Research Institute; Robert W. McCoy, Kevin M. Siasoco, Saeed Barbat, Ford Motor Company
- 2:45 Fleet Fatality Risk and its Sensitivity to Vehicle Mass Change in Frontal Vehicle-to-Vehicle Crashes, Using a Combined Empirical and Theoretical Model**
Yibing Shi and Guy S. Nusholtz, Fiat Chrysler Automobiles US LLC
- 3:15-3:45 Break**

Computational Models and ATDs

3:45 Responses of the Q6/Q6s ATD Positioned in Booster Seats in the Far-Side Seat Location of Side Impact Passenger Car and Sled Tests

Suzanne Tylko, Transport Canada; Katarina Bohman, Autoliv Research; Alain Bussi res, PMG Technologies

4:15 Comparison of Kriging and Moving Least Square Methods to Change the Geometry of Human Body Models

Erwan Jolivet, CEESAR - European center of studies and risk analysis, France;
Yoann Lafon, Universit  de Lyon, F-69622, Lyon, France; Universit  Claude Bernard Lyon 1, Villeurbanne; IFSTTAR, UMR_T9406, LBMC, F-69675, Bron;
Philippe Petit, LAB-PSA Peugeot Citro en-Renault, France;
Philippe Beillas, Universit  de Lyon, F-69622, Lyon, France; Universit  Claude Bernard Lyon 1, Villeurbanne; IFSTTAR, UMR_T9406, LBMC, F-69675, Bron

4:45 Development and Validation of an Older Occupant Finite Element Model of a Mid-Sized Male for Investigation of Age-Related Injury Risk

Samantha L. Schoell, Ashley A. Weaver, Jillian E. Urban, Derek A. Jones, Wake Forest School of Medicine, University of Virginia Department of Orthopaedic Surgery; Eunjoo Hwang, Jingwen Hu, Matthew P. Reed, Jonathan D. Rupp, University of Michigan Transportation Research Institute; Joel D. Stitzel, Wake Forest School of Medicine, Virginia Tech – Wake Forest University Center for Injury Biomechanics

Wednesday Morning

Human and ATD Responses to High-Speed Vertical Loading

9:00 Comparison of ATD to PMHS Response in the Under-Body Blast Environment

Kerry A. Danelson, Kerry A. Danelson, Wake Forest School of Medicine, Department of Orthopaedic Surgery; Andrew R. Kemper and Matthew J. Mason, Virginia Tech, Center for Injury Biomechanics; Michael Tegtmeier, US Army Research Laboratory; Sean A. Swiatkowski (USN), Armed Forces Medical Examiner System; John H. Bolte IV, The Ohio State University, Injury Biomechanics Research Center; Warren N. Hardy, Virginia Tech, Center for Injury Biomechanics

9:30 Testing and Modeling the Responses of Hybrid III Crash-Dummy Lower Extremity under High-Speed Vertical Loading

Feng Zhu, Liqiang Dong, Xin Jin, Binhui Jiang, Anil Kalra, Ming Shen, King H. Yang, Bioengineering Center, Wayne State University, Detroit, MI 48201, USA

10:00-10:30 Break

Response and Injury to Pedestrians and Cyclists

10:30 Whole-Body Response for Pedestrian Impact with a Generic Sedan Buck

Jason L. Forman, Hamed Joodaki, Ali Forghani, Patrick O. Riley, Varun Bollapragada, David J. Lessley, Brian Overby, Sara Heltzel, University of Virginia Center for Applied Biomechanics; Seth Yarboro, David B. Weiss, University of Virginia Department of Orthopaedic Surgery; Jason R. Kerrigan, Jeff R. Crandall, University of Virginia Center for Applied Biomechanics

11:00 Risks of Serious Injuries and Fatalities of Cyclists Associated with Impact Velocities of Cars in Car-Cyclist Accidents in Japan

Yasuhiro Matsui and Shoko Oikawa,
National Traffic Safety and Environment Laboratory (NTSEL), Japan

11:30 Presentation of John W. Melvin Best Student Paper Awards, Albert I. King

11:45 Adjournment, John M. Cavanaugh, General Chair