STAPP 2013 TECHNICAL PROGRAM

MONDAY, November 11

9:20 **WELCOME AND OPENING REMARKS**
Stephen W. Rouhana, Ford Motor Company

9:30 **JOHN PAUL STAPP MEMORIAL LECTURE**
Minimizing the Injury Potential of Deploying Airbag Interactions with Car Occupants
Dainius J. Dalmotas

OCCUPANT RESTRAINT PERFORMANCE

10:00 **Driver Kinematic and Muscle Responses in Braking Events with Standard and Reversible Pre-tensioned Restraints: Validation Data for Human Models**
Jonas Östh, Jóna Marín Ólafsdóttir, Johan Davidsson, Karin Brolin,
Chalmers University of Technology

10:30 **Effects of Driver Characteristics on Seat Belt Fit**
Matthew P. Reed, Sheila M. Ebert, University of Michigan Transportation Research Institute;
Jason J. Hallman, Toyota Technical Center USA

11:00 REFRESHMENT BREAK

11:30 **In Vivo Analysis of Thoracic Mechanical Response Variability under Belt Loading: Specific Behavior and Relationship to Age, Gender and BMI**
David Poulard, François Bermond, Karine Bruyère, Université de Lyon; IFSTTAR,
LBMC/Université Lyon 1

12 :00 **Biomechanical Considerations for Assessing Interactions of Children and Small Occupants with Inflatable Seat Belts**
Stephen W. Rouhana, Srinivasan Sundararajan, Derek Board, Priya Prasad, Ford Motor Company; Jonathan Rupp, Carl Miller, Thomas Jeffreys, Lawrence W. Schneider, University of Michigan Transportation Research Institute

12:30-2:30 LUNCH

PEDESTRIAN SAFETY

2:30 **Effect of Vehicle Front End Profiles Leading to Pedestrian Secondary Head Impact to Ground**
Vishal Gupta and King Yang, Wayne State University

3:00 **Observations on Pedestrian Pre-Crash Reactions during Simulated Accidents**
Anurag Soni, Thomas Robert, Université de Lyon, F-69622, Lyon, France/IFSTTAR, UMR_T9406, LBMC, Université Lyon 1; Frédéric Rongiéras, Université de Lyon, F-69622, Lyon, France/IFSTTAR, UMR_T9406, LBMC, Université Lyon 1/Chirurgie orthopédique et traumatologique, Hôpital d'instruction des armées Desgenettes, 69003 Lyon, France ; Philippe Beillas, Université de Lyon, F-69622, Lyon, France/IFSTTAR, UMR_T9406, LBMC, Université Lyon 1

3 :30 REFRESHMENT BREAK

4 :00 **Relationship Between Pedestrian Headform Tests and Injury and Fatality Rates in Vehicle-to-Pedestrian Crashes in the United States**
Becky Mueller, Charles Farmer, Jessica Jermakian, and David Zuby, Insurance Institute for Highway Safety, Vehicle Research Center

4:30 **Risks of Pedestrian Serious Injuries and Fatalities Associated with Impact Velocities of Cars in Car-versus-Pedestrian Accidents in Japan**
Yasuhiro Matsui, Shoko Oikawa, and Kenichi Ando, National Traffic Safety and Environment Laboratory, Japan

5:00 ANNOUNCEMENTS

TUESDAY, November 12

INJURY BIOMECHANICS

9:30 **The Roles of Mechanical Compression and Chemical Irritation in Regulating Spinal Neuronal Signaling in Painful Cervical Nerve Root Injury**
Sijia Zhang, Kristen J. Nicholson, Jenell R. Smith, Peter P. Syré, Taylor M. Gilliland and Beth A. Winkelstein, University of Pennsylvania

10:00 **Development of Brain Injury Criteria (BrIC)**
Erik G. Takhounts, National Highway Traffic Safety Administration; Vikas Hasija, Bowhead Systems Management, Inc.; Kevin Moorhouse, Joe McFadden, Matthew Craig, National Highway Traffic Safety Administration

10:30 REFRESHMENTBREAK

11:00 **The Quantification of Liver Anatomical Changes and Assessment of Occupant Liver Injury Patterns**
Chantal S. Parenteau, Peter Ehrlich, Linda Ma, Grace L. Su, Sven Holcombe, Stewart C. Wang, International Center for Automotive Medicine, University of Michigan, USA

11:30 **Statistical Modeling of Human Liver Incorporating the Variations in Shape, Size, and Material Properties**
Yuan-Chiao Lu, Andrew R. Kemper, Scott Gayzik, Costin D. Untaroiu, Virginia Tech – Wake Forest University, Center for Injury Biomechanics; Philippe Beillas, Université de Lyon; IFSTTAR, LBMC, UMR; Université Lyon 1, France

12:00-2:00 LUNCH

2:00 **John Paul Stapp Best Paper Award** – The John Paul Stapp Award for the best paper of the 2012 conference and journal will be presented by John M. Cavanaugh to Meghan K. Howes, T. Stan Gregory, Warren N. Hardy, Virginia Tech-Wake Forest University Center for Injury Biomechanics; Philippe D Beillas, IFSTTAR, France for *Kinematics of the Thoracoabdominal Contents Under Various Loading Scenarios.*

Invitation and Call for Papers, John W. Melvin, Tandelta Inc., General Chair, 58th Stapp Car Crash Conference, Catamaran Resort and Spa, November 10-12, San Diego, California

LATERAL OCCUPANT DYNAMICS AND SIDE IMPACT BIOMECHANICS

2:15 **Volunteer Kinematics and Reaction in Lateral Emergency Maneuver Tests**
L. van Rooij, H. Elrofai, M.M.G.M. Philippens, H.A.M. Daanen, TNO

2:45 **Occupant Kinematics and Shoulder Belt Retention in Far-Side Lateral and Oblique Collisions: A Parametric Study**
Jason L. Forman, Francisco Lopez-Valdes, David J. Lessley, Patrick Riley, Mark Sochor, Sara Heltzel, Joseph Ash, Rafal Perz, University of Virginia Center for Applied Biomechanics; Thomas Seacrist, Kristy B. Arbogast, Children's Hospital of Philadelphia; Hiromasa Tanji, Kazuo Higuchi, Takata Corporation; Richard W. Kent, University of Virginia Center for Applied Biomechanics

3:15 REFRESHMENT BREAK

3:45 **PMHS Impact Response in 3 m/s and 8 m/s Nearside Impacts with Abdomen Offset**
Carl S. Miller, Nathaniel H. Madura, Lawrence W. Schneider, Kathleen D. Klinich, Matthew P. Reed, Jonathan D. Rupp, University of Michigan Transportation Research Institute (UMTRI)

4:15 **Oblique Lateral Impact Biofidelity Deflection Corridors from Post-Mortem Human Surrogates**
Narayan Yoganandan, John R. Humm, Mike W. J. Arun, Frank A. Pintar, Department of Neurosurgery, Medical College of Wisconsin; Rodney W. Rudd, Matthew Craig, U.S. Department of Transportation, National Highway Traffic Safety Administration

4:45 ANNOUNCEMENTS

WEDNESDAY, November 13

Crash Data Analysis and Biofidelity Assessment

9:30 **Opportunities for Injury Reduction in US Frontal Crashes: An Overview by Structural Engagement, Vehicle Class and Occupant Age**
Randa Radwan Samaha, Lilly Nix, NCAC, George Washington University;
Priya Prasad, Prasad Engineering, LLC

10:00 **Assessing Biofidelity of the Test Device for Human Occupant Restraint (THOR) Against Historic Human Volunteer Data**
Nathaniel Newby, Jeffrey T. Somers, Erin E. Caldwell, Wyle Science, Technology & Engineering Group; Chris Perry, Wright Patterson Air Force Base; Justin Littell, NASA Langley Research Center; Michael Gernhardt, NASA Johnson Space Center

10:30 **Stapp Student Awards**
Presentation by Stephen W. Rouhana

10:45 **ADJOURNMENT**
Stephen W Rouhana, 2013 General Chair