

**2008 STAPP CAR CRASH CONFERENCE  
TECHNICAL PROGRAM**

**Monday, November 3**

9:20 **WELCOME AND OPENING REMARKS**, Albert I. King, General Chair

9:30 **Thirty-Five Years of Progress in Automotive Safety -- My Perspectives**  
Priya Prasad, Ford Motor Company, retired

**HEAD INJURY AND NEURAL TRAUMA BIOMECHANICS**

10:00 **Investigation of Traumatic Brain Injuries Using the Next Generation of Simulated Injury Monitor (SIMon) Finite Element Head Model**

Erik G. Takhounts and Stephen A. Ridella, National Highway Traffic Safety Administration; Vikas Hasija, GESAC Inc.; Rabih E. Tannous, J. Quinn Campbell, and Dan Malone, AASA Inc.; Kerry Danelson and Joel Stitzel, Wake Forest University; Steve Rowson and Stefan Duma, Virginia Tech

10:30-11:00 REFRESHMENT BREAK

11:00 **The Role of Graded Nerve Root Compression on Axonal Damage, Neuropeptide Changes, and Pain-Related Behaviors**

Raymond D. Hubbard, Kyle P. Quinn, Joan J. Martinez, and Beth A. Winkelstein, University of Pennsylvania

11:30 **Age and Gender Based Biomechanical Shape and Size Analysis of the Pediatric Brain**

Kerry A. Danelson, Wake Forest University School of Medicine/Virginia Tech-Wake Forest University Center for Injury Biomechanics; Carol P. Geer, Wake Forest University School of Medicine; Joel D. Stitzel, Wake Forest University School of Medicine/Virginia Tech-Wake Forest University Center for Injury Biomechanics; Dennis E. Slice, University of Vienna, Austria; Erik G. Takhounts, National Highway Traffic Safety Administration

12:00-2:00 LUNCH

**PEDIATRIC AND PREGNANT OCCUPANT BIOMECHANICS**

2:00 **Methods for Determining Pediatric Thoracic Force-Deflection Characteristics from Cardiopulmonary Resuscitation**

Matthew R. Maltese, Thomas Castner, Dana Niles, Akira Nishisaki and Sriram Balasubramanian, The Children's Hospital of Philadelphia; Jon Nysaether, Laerdal Medical Corporation; Robert Sutton, Vinay Nadkarni and Kristy B. Arbogast, The Children's Hospital of Philadelphia/The University of Pennsylvania School of Medicine

2:30 **Tensile Mechanical Properties of the Perinatal and Pediatric PMHS Osteoligamentous Cervical Spine**

Jason F. Luck, Roger W. Nightingale, Andre M. Loyd, Michael T. Prange, Alan T. Dibb, Yin Song, Lucy Fronheiser, and Barry S. Myers, Injury and Orthopaedic Biomechanics Research Lab, Duke University

3:00-3:30 REFRESHMENT BREAK

3:30 **Biomechanical Response of the Pediatric Abdomen, Part 2: Injuries and Their Correlation with Engineering Parameters**

Richard Kent, Stephen Stacey, Matthew Kindig, William Woods, and Jay Evans, University of Virginia Center for Applied Biomechanics; Stephen W. Rouhana, Ford Motor Company; Kazuo Higuchi, Kiromasa Tanji, and Schuyler St. Lawrence, Takata Corporation; Kristy B. Arbogast, Children's Hospital of Philadelphia/University of Pennsylvania

4:00 **Dynamic Biaxial Tissue Properties of Pregnant Porcine Uterine Tissue**

Sarah J. Manoogian, Craig McNally, Joel D. Stitzel, and Stefan M. Duma, Virginia Tech-Wake Forest Center for Injury Biomechanics

4:30 ANNOUNCEMENTS

**TUESDAY, November 4**

**OCCUPANT IMPACT RESPONSE AND INJURY**

- 9:00 **Interactions of Out-of-Position Small-Female Surrogates with a Depowered Driver Airbag**  
Warren N. Hardy and Lawrence W. Schneider, University of Michigan Transportation Research Institute; Priya Prasad, Prasad Engineering
- 9:30 **Rib Cage Strain Pattern as a Function of Chest Loading Configuration**  
Xavier Trosseille, LAB PSA Peugeot-Citroën Renault; Pascal Baudrit and Tiphaine Leport, CEESAR; Guy Vallancien, Université René Descartes, Paris, France
- 10:00-10:30 REFRESHMENT BREAK
- 10:30 **Mechanisms of Traumatic Rupture of the Aorta and Associated Peri-isthmic Motion and Deformation**  
Warren N. Hardy, Chirag S. Shah, Matthew J. Mason, James M. Kopacz, King H. Yang, and Albert I. King, Wayne State University; Chris A. Van Ee, Design Research Engineering; Jennifer L. Bishop, Richard F. Banglmaier, and Michael J. Bey, Henry Ford Health System; Richard M. Morgan and Kennerly H. Digges, The George Washington University
- 11:00 **3D Deformation and Dynamics of the Human Cadaver Abdomen under Seatbelt Loading**  
Sophie Lamielle, Université de Lyon/INRETS – LBMC/CEESAR; Philippe Vezin, and Jean-Pierre Verriest, INRETS - LBMC; Philippe Petit and Xavier Trosseille, LAB PSA Peugeot-Citroën Renault; Guy Vallancien, Université René Descartes, Paris, France
- 11:30 **Rear Seat Occupant Safety: Kinematics and Injury of PMHS Restrained by a Standard 3-Point Belt in Frontal Crashes**  
Jarett Michaelson, Jason Forman, and Richard Kent, University of Virginia; Shashi Kuppa, National Highway Traffic Safety Administration
- 12:00-2:00 LUNCH
- 2:00 **John Paul Stapp Best Paper Award Invitation and Call for Papers**, Frank A. Pintar, General Chair, 53<sup>rd</sup> Stapp Conference, Hyatt Regency, Savannah, Georgia
- SIDE IMPACT OCUPANT KINEMATICS AND INJURY**
- 2:15 **Occupant-to-Occupant Interaction and Impact Injury Risk in Side Impact Crashes**  
Craig Newland and Thomas Belcher, Australian Government Department of Infrastructure, Transport, Regional Development and Local Government; Ola Boström, Autoliv Research; Hampton C. Gabler, Virginia Tech – Wake Forest University; Joon-Geun Cha and Hee Loong Wong, Hyundai Motor Company; Suzanne Tylko, Transport Canada; Ross Dal Nevo, New South Wales Roads and Traffic Authority
- 2:45 **Characteristics of Pole Impacts to Side of Passenger Cars in European Traffic Accidents and Assessment of Injury Mechanisms—Analysis of German and UK In-Depth Data**  
Dietmar Otte and Carl Haasper, Hannover Medical School, Germany; Volker Eis and Roland Schaefer, Ford Germany
- 3:15-3:45 REFRESHMENT BREAK
- 3:45 **Occupant Kinematics and Estimated Effectiveness of Side Airbags in Pole Side Impacts Using a Human FE Model with Internal Organs**  
Shigeki Hayashi, Tsuyoshi Yasuki, and Yuichi Kitagawa, Toyota Motor Corp.
- 4:15 **The Influence of Arm Position on Thoracic Response in Side Impacts**  
Andrew R. Kemper, Craig McNally, Eric A. Kennedy, Sarah J. Manoogian, and Stefan M. Duma, Virginia Tech-Wake Forest University, Center for Injury Biomechanics
- 4:45 ANNOUNCEMENTS

**WEDNESDAY, November 5**

**OCCUPANT LOWER EXTREMITY AND PEDESTRIAN BIOMECHANICS**

- 9:00           **Characterization of Knee-Thigh-Hip Response in Frontal Impacts Using Biomechanical Testing and Computational Simulations**  
Jonathan D. Rupp, Carl S. Miller, Matthew P. Reed, Nathaniel H. Madura, Kathleen D. Klinich, and Lawrence W. Schneider, University of Michigan Transportation Research Institute
- 9:30           **Development of a Finite Element Model to Study the Effects of Muscle Forces on Knee-Thigh-Hip Injuries in Frontal Crashes**  
Chia-Yuan Chang and Jonathan D. Rupp, University of Michigan Transportation Research Institute; Noboru Kikuchi, The University of Michigan, Department of Mechanical Engineering; Lawrence W. Schneider, University of Michigan Transportation Research Institute
- 10:00-10:30   REFRESHMENT BREAK
- 10:30           **Impact Response and Biomechanical Analysis of the Knee-Thigh-Hip Complex in Frontal Impacts with a Full Human Body Finite Element Model**  
Jesse S. Ruan, Raed El-Jawahri, Saeed Barbat, Stephen W. Rouhana, and Priya Prasad, Ford Motor Company
- 11:00           **A Comparative Analysis of the Pedestrian Injury Risk Predicted by Mechanical Impactors and Post Mortem Human Surrogates**  
Jason R. Kerrigan and Jeff R. Crandall, University of Virginia;  
Bing Deng, General Motors R&D Center
- 11:30           **Stapp Student Awards**  
Presentation by Albert I. King
- 11:45           **Adjournment**  
Albert I. King, 2008 General Chair