Monday, November 12

9:15 Welcome and Opening Remarks – General Chair, Warren N. Hardy, Virginia Tech Center for Injury Biomechanics

9:30 KEYNOTE ADDRESS – Safety in the Coming Decades: Are We Poised to Achieve Total Safety in an Autonomous Vehicle Environment?
Joseph Kaniathanthra, Ph.D. (Mech. Eng.), President, Active Safety Engineering LLC
Former Associate Administrator (Retd.), Vehicle Safety Research, NHTSA, US DOT

10:00 – 10:30 Refreshment Break

THORAX AND ABDOMEN RESPONSE AND INJURY IN FRONTAL IMPACTS – Part 1

Devon L. Albert, Stephanie M. Beeman, Andrew R. Kemper, Department of Biomedical Engineering and Mechanics, Virginia Tech

11:00 The Effects of Inboard Shoulder Belt and Lap Belt Loadings on Chest Deflection
Koji Mizuno, Ryoichi Yoshida, Nagoya University; Yutaka Nakajima, Yoshihiko Tanaka, Ryota Ishigaki, Autoliv Japan; Naruyuki Hosokawa, Yoshinori Tanaka, National Traffic Safety and Environment Laboratory; Masahito Hitosugi, Shiga University of Medical Science

11:30 Reference PMHS Sled Tests to Assess Submarining of the Small Female
Xavier Trosseille, Philippe Petit, LAB PSA Peugeot-Citroën Renault; Jérôme Uriot, Pascal Potier, Pascal Baudrit, CEESAR; Olivier Richard, Faurecia Automotive Seating; Sabine Compigne, Toyota Motor Europe NV/SA; Mitsutoshi Masuda, Toyota Motor Corporation; Richard Douard, Université René Descartes, Paris

12:00 – 2:00 LUNCH

THORAX AND ABDOMEN RESPONSE AND INJURY IN FRONTAL IMPACTS – Part 2

2:00 Sources of Variability in Structural Bending Response of Pediatric and Adult Human Ribs in Dynamic Frontal Impacts
Amanda M. Agnew, Michelle M. Murach, Victoria M. Dominguez, Akshara Sreedhar, Elina Misicka, Angela Harden, John H. Bolte IV, Injury Biomechanics Research Center, The Ohio State University; Jason Stammen, Kevin Moorhouse, National Highway Traffic Safety Administration, Vehicle Research and Test Center; Yun-Seok Kang, Injury Biomechanics Research Center, The Ohio State University

2:30 Quantification of Skeletal and Soft Tissue Contributions to Thoracic Response in a Dynamic Frontal Loading Scenario
Michelle M. Murach, Yun-Seok Kang, John H Bolte IV, Injury Biomechanics Research Center, The Ohio State University; Kevin Moorhouse, Jason Stammen, National Highway Traffic Safety Administration, Vehicle Research and Test Center; Rakshit Ramachandra, Amanda M. Agnew, Injury Biomechanics Research Center, The Ohio State University

3:00 – 3:30 REFRESHMENT BREAK
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<tr>
<td>3:30</td>
<td>Injury Risk Curves for the Human Cervical Spine from Inferior-to-Superior Loading</td>
<td>Narayan Yoganandan, Sajal Chirvi, Frank A. Pintar, Anjishnu Banerjee, Medical College of Wisconsin; Liming Voo, John Hopkins University</td>
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<td>4:00</td>
<td>A Reanalysis of Experimental Brain Strain Data: Implication for Finite Element Head Model Validation</td>
<td>Zhou Zhou, Xiaogai Li, Svein Kleiven, KTH Royal Institute of Technology, Sweden; Chirag S. Shah, Humanetics Innovative Solutions, Inc.; Warren N. Hardy, Virginia Tech-Wake Forest Center for Injury Biomechanics</td>
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<td>4:30</td>
<td>SC – High-Speed Biplane X-Ray Head Impact Experiments in the Göttingen Minipig</td>
<td>Elizabeth McNeil, Amy Hermundstad, Pamela VandeVord, and Warren Hardy, Department of Biomedical Engineering and Mechanics, Virginia Tech</td>
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<td>4:45</td>
<td>Tribute to Dr. Albert I. King</td>
<td>John M. Cavanaugh, Wayne State University</td>
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<td>4:50</td>
<td>ANNOUNCEMENTS</td>
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**Tuesday, November 13**

**BIOMECHANICAL RESPONSE AND TESTING IN SIDE IMPACTS**

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<tr>
<td>9:00</td>
<td>Human Shoulder Response to Lateral Impact in Intermediate Loading Conditions between High-Velocity, Short Duration and Low-Velocity, Long Duration</td>
<td>Matthieu Lebarbé, Pascal Potier, Jérome Uriot, Pascal Baudrit, CEESAR; Denis Lafont, DGA TT; Richard Douard, Université René Descartes</td>
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<td>9:30</td>
<td>Side Impact Assessment and Comparison of Appropriate Size and Age Equivalent Porcine Surrogates to Scaled Human Side Impact Response Biofidelity Corridors</td>
<td>Jennifer L. Yaek, Christopher J. Andrecovich, John M. Cavanaugh, Wayne State University; Stephen W. Rouhana, Vehicle Safety Sciences, LLC</td>
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<td>10:00</td>
<td>SC – Next Steps for the IIHS Side Crashworthiness Evaluation Program</td>
<td>Raul A. Arbelaez, Becky Mueller, Matthew Brumbelow, Eric R. Teoh, Insurance Institute for Highway Safety</td>
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<td>10:15</td>
<td>10:45 REFRESHMENT BREAK</td>
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**FINDINGS FROM REAL-WORLD CRASHES**

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<td>10:45</td>
<td>Relation Between Sacroiliac and Other Pelvic Fractures Based on Real World Automotive Accidents</td>
<td>Philippe Petit, Xavier Trosseille, LAB PSA Peugeot Citroën Renault (Nanterre – France) ; Sophie Cuny, Matthieu Lebarbé, Pascal Baudrit, CEESAR (Nanterre – France) ; Sabine Compigne, Toyota Motor Europe NV/SA (Belgium) ; Mitsutoshi Masuda, Toyota Motor Corporation (Japan)</td>
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<td>11:15</td>
<td>Front Airbag Deployment Rates in Real-World Car Accidents in Japan and Implications for Activation of Accident Emergency Calling System</td>
<td>Yasuhiro Matsui, National Traffic Safety an Environment Laboratory, Japan; Shoko Oikawa, Tokyo Metropolitan University, Japan</td>
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<td>11:45</td>
<td>SC – Development of Multiple Crash Events to Understand Occupant Behavior and Injury Based on Real-World Accidents</td>
<td>Seok Ho Hong, Sung Soo Kim, Hyung Wook Park, Sung Hun Chang, Jang Mook Lim, Hyundai Motor Company; Brian William Storey, Jordan Robert Haynes, Robert Michael Schnorenberg, MGA Research Corporation</td>
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<td>12:00</td>
<td>2:00 LUNCH</td>
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2:00 **John Paul Stapp Best Paper Award** – The John Paul Stapp Award for the best paper of the 2017 conference and journal will be presented by Guy S. Nusholtz to Hiromichi Nakadate, Evrim Kurtoglu, Hidenori Furukawa, Shoko Oikawa, Shigeru Aomura, Tokyo Metropolitan University, Graduate School of System Design; Akira Kakuta, National Institute of Technology, Tokyo College; Yasuhiro Matsui, National Traffic Safety and Environment Laboratory for *Strain-Rate Dependency of Axonal Tolerance for Uniaxial Stretching*.

**Invitation and Call for Papers** – General Chair, John H. Bolte IV, The Ohio State University 63rd Stapp Conference, Hyatt Regency San Antonio, TX, November 11-13, 2019

**PANEL DISCUSSION – AUTOMATED DRIVING SYSTEMS (ADS): SAFETY CONSIDERATIONS FOR TODAY AND TOMORROW**

Audience participation is encouraged. The moderator will pose questions to the panel and field comments and questions from the floor.

**Moderator** -- *Warren N. Hardy*, Director, Virginia Tech Center for Injury Biomechanics

2:15 **Driver Assistance and Fully Autonomous Systems: Their Implications on Safety**

*Joseph Kanianthra*, President, Active Safety Engineering LLC

Former Associate Administrator (Retd.), Vehicle Safety Research, NHTSA, US DOT

*Raul A. Arbelaez*, Vice President, Vehicle Research Center, Insurance Institute for Highway Safety

*Joseph Kanianthra*, President, Active Safety Engineering LLC,

Former Associate Administrator (Retd.), Vehicle Safety Research, NHTSA, US DOT

*Shaun Kildare*, Director of Research, Advocates for Highway and Auto Safety

*Yuichi Kitagawa*, Chief Professional Engineer, Toyota Motor Corporation

*Kevin Moorhouse*, Chief, Applied Biomechanics Division, Vehicle Research and Test Center, National Highway Traffic Safety Administration

*Philippe Petit*, Manager of the Biomechanics Team, LAB PSA Renault

*Doug Stein*, Global Test Director, Autoliv ASP, Inc.

*Suzanne Tylko*, Chief of Crashworthiness Research, Innovation Centre, Transport Canada

*Jerry Wang*, Chief Engineer, Humanetics Innovative Solutions

5:00 **ANNOUNCEMENTS AND ADJOURN TO DTS RECEPTION**

**Wednesday, November 14**

**DEVELOPMENT AND VALIDATION OF ATDs AND FINITE ELEMENT MODELS**

9:00 **Validation of a Finite Element 50th Percentile THOR Anthropomorphic Test Device in Multiple Sled Test Configurations**

Kyle P. McNamara, Derek A. Jones, James P. Gaewsky, Ashley A. Weaver, Joel D. Stitzel, Wake Forest School of Medicine, Virginia Tech – Wake Forest University Center for Injury Biomechanics; Jacob B. Putnam, Jeffrey T. Somers, KBRwyle

9:30 **SC – Effect of Contact Separation on the Abdominal Response to Impact of a Human Body Model**

Philippe Beillas, Univ. Lyon, Université Claude Bernard Lyon 1, IFSTTAR, UMR_T9406, LBMC, F69622, Lyon, France; Fabien Berthet, Transpolis SAS, Lyon Saint-Exupéry Aéroport, France

9:45 **SC – Using Human Body Models to Assess Knee Ligament Injury in Knee Hyperextension**

Chin-Hsu Lin, General Motors Global Research & Development; Mitchell Hortin, Annette Irwin, General Motors Global Safety Center
10:00  SC — Comparative Responses of the PIPER 6YO Human Body Model and the Q6 ATD for Simulated Frontal and Lateral Impacts
Shreyas Sarfare, Jalaj Maheshwari, Center for Injury Research and Prevention, The Children’s Hospital of Philadelphia; Nhat Duong, Center for Injury Research and Prevention, The Children’s Hospital of Philadelphia/Drexel University, School of Biomedical Engineering; Aditya Belwadi, Center for Injury Research and Prevention, The Children’s Hospital of Philadelphia

10:15  SC — Human Surrogate Finite Element Models under Multi-Directional Loading: Applications of Aerospace Data for the Future of Automotive Environments
James P. Gaewsky, Derek A. Jones, Xin Ye, Bharath Koya, Kyle P. McNamara, Mona Z. Saffarzadeh, F. Scott Gayzik, Ashley A. Weaver, Joel D. Stitzel, Virginia Tech – Wake Forest Center for Injury Biomechanics

10:30 – 11:00  REFRESHMENT BREAK

11:00  Modelling of an Adjustable Generic Simplified Vehicle for Pedestrian Impact and Simulations of Corresponding Reference PMHS Tests Using the GHBMC 50th Percentile Male Pedestrian Simplified Model
Eric Song and Philippe Petit, LAB PSA Renault; Jerome Uriot, CEESAR

11:30  SC — Warrior Injury Assessment Manikin Oblique Vertical Testing
Hollie A. Pietsch and David R. Weyland, U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC)

11:45  Analysis of the Frequency and Mechanism of Injury to Warfighters in the Underbody-Blast Environment
Kerry Danelson, Laura Watkins, Jonathan Hendricks, Wake Forest Department of Orthopaedic Surgery; Patricia Frounfelker, WIAMan Case Review Team, Karen Pizzolato-Heine, Ray Valentine, Kathryn Loftis, Survivability/Lethality Analysis Directorate (SLAD)

12:15  JOHN W. MELVIN BEST STUDENT PAPER AWARDS
Albert I. King

12:30  ADJOURNMENT
General Chair, Warren N. Hardy, Virginia Tech Center for Injury Biomechanics