



Belt Fit for All Occupants – Stapp Practicum



Emory Conference Center Hotel
Silverbell Pavillion
Atlanta, GA

MONDAY, NOVEMBER 3

7:00 BREAKFAST, PROVIDED IN THE SILVERBELL PAVILION

8:00 Importance of Seatbelts & Crash Statistics
Matthew Brumbelow, IIHS
Jonathan Rupp, Emory University
Q & A

8:30 Modeling of All Occupants
Jingwen Hu, University of Michigan
Group break-out sessions

9:30 – 10:00 REFRESHMENT BREAK

10:00 Belt Fit and Submarining
Toshiharu Azuma, Nagoya University
Allison Guettler, The Ohio State University
Group break-out sessions

11:30 Adaptive and Optimal Restraints and Occupant Sensing
Analia Jarvis, Autoliv
Trevor DeLand, Toyota
Discussion

1:00 – 2:00 LUNCH, PROVIDED IN THE DINING ROOM IN THE EMORY CONFERENCE CENTER

2:00 WAYMO Driving Experience
SILVERBELL PAVILION
Practicum participants may ride in self-driving vehicles

5:30 – 8:30 STAPP UNIVERSITY WELCOME RECEPTION
Miller-Ward Alumni House | 815 Houston Mill Road | Atlanta, GA 30329

THANK YOU TO WAYMO FOR SUPPORTING THE PRACTICUM

WAYMO



STAPP 2025 TECHNICAL PROGRAM



Emory Conference Center Hotel
Silverbell Pavillion
Atlanta, GA

TUESDAY, NOVEMBER 4

8:00 BREAKFAST, PROVIDED IN THE SILVERBELL PAVILLION

9:00 Welcome and Opening Remarks
General Chair, John Bolte IV, Injury Biomechanics Global

KEYNOTE PRESENTATION

9:20 Euro NCAP and the New Era of Vehicle Safety Assessment
Michiel van Ratingen, Secretary General at Euro NCAP

10:00 - 10:20 REFRESHMENT BREAK

COMPUTATIONAL INJURY BIOMECHANICS

Co-Chairs: Jingwen Hu, University of Michigan
Saeed Barbat, Ford Motor Company

10:20 FP: Proposed Reformulation of Brain Injury Criteria (BrIC) Using Head Rotation-Induced Brain Injury Thresholds Simulated and Derived Directly from a Subhuman Primate Finite Element Model
Dominic Demma, Wayne State University & Explico Inc, Ying Tao, Liying Zhang, Wayne State University; Priya Prasad, Prasad Engineering LLC

10:50 SC: Brain Strain Produced by Local Inertial Force Components
Xianghao Zhan, August Domel, Michael Fanton, Samuel Raymond, Hossein Vahid Alizadeh, Nicholas Cecchi, Michael Zeineh, David Camarillo, Stanford University; Yuzhe Liu, Beihang University, China & Stanford University; Zhou Zhou, Stanford University & KTH Royal Institute of Technology, Sweden; Gerald Grant, Stanford University & Duke University; Svein Kleiven, KTH Royal Institute of Technology, Sweden

11:10 SC: Bridging HBM Connect® and ATD Chest Metrics Using Functional Mapping for Crash Application
Chirag Shah, Tushar Arora, Gopinath Velmurugan, Pradeep Kulavi, Stephen Fu, Anurag Soni, Renuka Jagadish, Humanetics Group

11:30 – 1:00 LUNCH, PROVIDED IN THE DINING ROOM IN THE EMORY CONFERENCE CENTER

HEAD & BRAIN INJURY BIOMECHANICS

Co-Chairs: Duane Cronin, University of Waterloo
Frank Pintar, Medical College of Wisconsin

- 1:00 FP: Traumatic Brain Injury in Vulnerable Road Users: Analysis of German In-Depth Crash Data to Inform Targeted Prevention**
Shiyang Meng, Autoliv Research & KTH Royal Institute of Technology, Sweden; Ron Schindler, Autoliv Research, Sweden & Autoliv BV & Co. KG, Germany; Svein Kleiven, KTH Royal Institute of Technology, Sweden; Nils Lubbe, Autoliv Research & Chalmers University of Technology, Sweden
- 1:30 FP: Comparison of Concussion Risk Functions Generated from Two Different Datasets**
Madelen Fahlstedt, KTH Royal Institute of Technology & Mips AB, Sweden; Shiyang Meng, Autoliv Research & KTH Royal Institute of Technology, Sweden; Declan Patton, Children's Hospital of Philadelphia; Andrew McIntosh, Monash University Accident Research Centre, Australia; Svein Kleiven, KTH Royal Institute of Technology, Sweden
- 2:00 SC: Comparison of Skull Deformations During Head Drop Tests from Experimental Accelerometers and Finite Element Simulations**
Carolyn Hampton, DEVCOM Army Research Laboratory; Karthik Somasundaram, Medical College of Wisconsin
- 2:20 SC: Validation of Impact-Absorbing Pavement Under Head Oblique Impacts**
Qi Huang, Zhou Zhou, Chengbin Li, Svein Kleiven, KTH Royal Institute of Technology, Sweden; Christina Makoundou, University of Antwerp, Belgium; Cesare Sangiorgi, University of Bologna, Italy

2:40 – 3:00 REFRESHMENT BREAK

OCCUPANT PROTECTION, SENSING, & VRU SAFETY

Co-Chairs: Kristy Arbogast, University of Pennsylvania Perelman School of Medicine
Svein Kleiven, KTH Royal Institute of Technology

- 3:00 FP: Quantifying Naturalistic Changes in Occupant Postures in Belt-Positioning Booster Seats Utilizing Pressure Mats**
Rosalie Connell, Gretchen Baker, Julie Mansfield, The Ohio State University
- 3:30 SC: Rear Row Frontal Airbags and Their Interaction with Rear-Facing and Forward-Facing Child Restraint Systems (CRS)**
Julie Mansfield, Gretchen Baker, The Ohio State University
- 3:50 FP: Pedestrian Injury Case Reconstruction Through Data Fusion and Machine Learning**
Xiaoyang Song, Wenbo Sun, Jingwen Hu, Carol Flannagan, Jared Karlow, Patrick Bowman, University of Michigan; Iskander Farooq, Anil Kalra, Ford Motor Company
- 4:20 TP: Human Detection Capability of Vehicle Front Sonar Sensors in Light and Small Passenger Cars and Minivan**
Yasuhiro Matsui, National Traffic Safety and Environment Laboratory, Japan; Shoko Oikawa, Tokyo Metropolitan University, Japan

4:50 ANNOUNCEMENTS

5:30 – 8:30 STAPP RECEPTION SPONSORED BY HUMANETICS & THE STAPP ASSOCIATION
Michael C. Carlos Museum | Ackerman Hall | 571 South Kilgo Circle | Atlanta, GA

WEDNESDAY, NOVEMBER 5

8:00 BREAKFAST, PROVIDED IN THE SILVERBELL PAVILLION

INVITED PRESENTATION

9:00 Automated Vehicle Safety Research at Waymo
Eamon Campolettano, Senior Safety Researcher, Waymo, LLC

EXPERIMENTAL BIOMECHANICS & INJURY RESPONSE

Co-Chairs: Kerry Danelson, Wake Forest University School of Medicine
John Cavanaugh, Wayne State University, Retired

9:40 FP: PMHS Sled Testing of Reclined Small Female Occupants: Pelvic Dynamics and Injury Evaluation
Karthik Somasundaram, Klaus Driesslein, Frank Pintar, Medical College of Wisconsin

10:10 – 10:30 REFRESHMENT BREAK

10:30 SC: A Preliminary Investigation of Costal Cartilage and the Costochondral Junction in Three-Point Bending
Christopher Lopez, Andrew Kemper, Devon Albert, Virginia Tech University; Amanda Agnew, The Ohio State University

10:50 SC: Effect of Dual Lap Belt Load-Limiters in Reclined Frontal Impact Sled Tests with PMHS of Varying Anthropometry and Sex
Jeesoo Shin, Rachel Newman, John Paul Donlon, Sara Sochor, Bronislaw Gepner, Jason Kerrigan, University of Virginia; Martin Östling, Krystoffer Mroz, Autoliv Development AB, Sweden

11:10 SC: A Simple Approach to Measuring Moment of Inertia of Body Segments and Fixturing Used in Biomechanical Experiments
Vikram Pradhan, Michael Godfrey, Transportation Research Center Inc.; Ann Mallory, Vehicle Research and Test Center NHTSA; Yun-Seok Kang, The Ohio State University

11:30 – 1:00 LUNCH, PROVIDED IN THE DINING ROOM IN THE EMORY CONFERENCE CENTER

BLAST & HIGH-RATE BIOMECHANICS

Co-Chairs: Warren Hardy, The Ohio State University
John Bolte IV, Injury Biomechanics Global

1:00 FP: The Dynamic Behaviour of a Seat Within a Vehicle During Under Body Blast
Thanyani Pandelani, University of South Africa & Imperial College London; Nicolas Newell, Spyros Masouros, Imperial College London; David Reinecke, Council for Scientific and Industrial Research (CSIR), South Africa

1:30 SC: Attenuation of Low-Density Projectiles by Fabric in High-Rate Impacts
William Lindahl, Karthik Somasundaram, Frank Pintar, Medical College of Wisconsin; Carolyn Hampton, Michael Kleinberger, US DEVCOM Army Research Laboratory

JOHN PAUL STAPP 2024 BEST PAPER AWARD

- 1:50** Presented by the General Chair, John Bolte IV to Miguel Corrales, Duane Cronin (University of Waterloo); Sven Holcombe (University of Michigan); Amanda Agnew, Yun-Seok Kang, (The Ohio State University) for their paper *“Isolated Rib Response and Fracture Prediction for Young Mid-Size Male, Enabled by Population Specific Material Models and Rib Cross-Sectional Geometry”*.

2:00 – 2:30 REFRESHMENT BREAK

OCCUPANT PROTECTION, SEX & SIZE EFFECTS – PART I

Co-Chairs: Jonathan Rupp, Emory University School of Medicine
Greg Crawford, General Motors

- 2:30 FP: Improve Safety Balance Between Women and Men in Frontal Crashes Through Parametric Human Modeling and Adaptive Design Optimization**
Wenbo Sun, Jingwen Hu, Yang-Shen Lin, Kyle Boyle, Matthew Reed, University of Michigan; Zhaonan Sun, Jason Hallman, Toyota Collaborative Safety Research Center
- 3:00 TP: Occupant Sex Equity and Vehicle Safety: Historical Activities, Research, and Countermeasure**
Priya Prasad, Prasad Engineering, LLC; Dainius Dalmotas, DJ Dalmotas Consulting, Inc.
- 3:30 SC: A 50th Percentile Female Human Body Model for Research on Equitable Occupant Protection**
Takao Matsuda, Noriyuki Fujita, Mitsuaki Goto, Yuichi Kitagawa, Toyota Motor Corporation
- 3:50 FP: Female PMHS Thoracic Biomechanical Response Corridors with Preliminary Consideration of the influence of Breast Tissue in Frontal Impacts**
Gretchen Baker, Yun-Seok Kang, Angelo Marcallini Jr, Ryan Lang, Amanda Agnew, The Ohio State University; Erin Hutter, Kevin Moorhouse, Vehicle Research and Test Center NHTSA

INVITED PRESENTATION

- 4:20 Transforming Roads, Unleashing Smart Technologies: Texas TRUST Project -- Saving Lives with Connectivity: Accelerating Vehicle to Everything (V2X) Deployment**
Robert E. Brydia, Division Head, System Operations and Technologies; Transportation Operations Group; Texas A&M Transportation Institute

4:50 ANNOUNCEMENTS

5:30 – 8:30 STAPP BANQUET SPONSORED BY KYOWA

Claudia Nance Rollins Building | 8th Floor - Klamon Room | 401 Rollins Way | Atlanta, GA

THURSDAY, NOVEMBER 6

8:00 BREAKFAST, PROVIDED IN THE SILVERBELL PAVILLION

OCCUPANT PROTECTION, SEX & SIZE EFFECTS – PART II

Co-Chairs: Cynthia Bir, Wayne State University
Yasuhiro Matsui, National Traffic Safety and Environment Laboratory

- 9:00 FP: Pelvis Lap Belt Engagement of Small-Sized Females in Frontal Impacts Using Seat-Integrated Restraints and Vehicle Seats for Alternative Seating Positions**
Rachel Newman, Jeessoo Shin, Sara Sochor, Neal Morgan, Bronislaw Gepner, Jason Kerrigan, University of Virginia; Yongtae Kim, Sung Rae Kim, Hyundai Motor Company
- 9:30 SC: Small Female Acceleration Response Corridors and Updated THOR-05F BioRank: Preliminary Results from Nearside Frontal Oblique Impact Tests**
Jared Koser, Tyler Rooks, Narayan Yoganandan, Medical College of Wisconsin
- 9:50 SC: Sex-Specific ATD Assessments for Lower Extremity Injuries**
Michael Jorgensen, Donald Sherman, Cameron Bass, Cynthia Bir, Wayne State University

10:10 – 10:30 REFRESHMENT BREAK

- 10:30 FP: Comparison of Female and Male Post Mortem Human Subject Kinematic Responses and Injuries in Rear-Facing Seat Configurations in High-Speed Frontal Impacts**
Yun-Seok Kang, Gretchen Baker, Angelo Marcallini Jr, Amanda Agnew, John Bolte IV, The Ohio State University; Rakshit Ramachandra, Transportation Research Center Inc.; Hyunjung Kwon, Craig Foster, Kevin Moorhouse, Vehicle Research and Test Center NHTSA

JOHN W. MELVIN BEST STUDENT PAPER AWARD

- 11:00** Presented by Saeed Barbat, Ford Motor Company, and Jonathan Rupp, Emory University, representing the Stapp Education and Scholarship Subcommittee
- 11:10 CLOSING REMARKS**
2025 Conference Host and 2026 General Chair, Jonathan Rupp, Emory University
- 11:30 ADJOURN**

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