49th STAPP CAR CRASH CONFERENCE PAPER PRESENTATIONS

WEDNESDAY
WELCOME AND OPENING REMARKS -- Rolf H. Eppinger, National Highway Safety Administration

STAPP MEMORIAL LECTURE -- In Search of Head Injury Criteria
James H. McElhaney, Hudson Distinguished Professor, Biomedical Engineering and Surgery, Duke University

BIOMECHANICS OF THE HEAD/NECK
Analysis of Finite Element Models for Head Injury Investigation: Reconstruction of Four Real-World Impacts
Melanie Franklyn and Brian Fildes, Monash University Accident Research Centre, Australia; Liying Zhang and King Yang, Wayne State University; Laurie Sparke, General Motors Holden's Automotive Limited, Australia

Characterizing Occipital Condyle Loads Under High-Speed Head Rotation
Frank A. Pintar, Narayan Yogananadan, and Jamie Baisden, Medical College of Wisconsin and VA Medical Center

Neural Response of Cervical Facet Joint Capsule to Stretch: A Potential Whiplash Pain Mechanism
Ying Lu, Chaoyang Chen, Srinivasu Kallakuri, Ajit Patwardhan, and John M. Cavanaugh, Bioengineering Center, Wayne State University

Motion Analysis of the Mandible During Low-Speed, Rear-End Impacts Using High-Speed X-Rays
Nicholas A. White, King H. Yang, Paul Begeman, Robert S. Levine, and Albert I. King, Wayne State University

SIMULATION OF LOWER EXTREMITY IMPACT RESPONSE AND INJURY
Numerical Investigations of Interactions between the Knee-Thigh-Hip Complex with Vehicle Interior Structures
Yong Sun Kim, Hyeong Ho Choi, Young Nam Cho, and Yong Jae Park, Hyundai Motor Co. and KIA Motors Corp.; Jong B. Lee, King H. Yang, and Albert I. King, Wayne State University

A Study of Knee Joint Kinematics and Mechanics using a Human FE Model
Yuichi Kitagawa, Junji Hasegawa, Tsuyoshi Yasuki, Masami Iwamoto, and Kazuo Miki, Toyota Motor Corp.

Ankle Skeletal Injury Predictions Using Anisotropic Inelastic Constitutive Model of Cortical Bone Taking into Account Damage Evolution
Masami Iwamoto, Toyota Central R&D Labs., Inc.; Eiichi Tanaka, Nagoya University; Kazuo Miki, Toyota Central R&D Labs., Inc.

A Finite Element Model of the Lower Limb for Simulating Pedestrian Impacts
Costin Untaroiu, Kurosh Darvish, and Jeff Crandall, Center of Applied Biomechanics, University of Virginia; Bing Deng and Jenne-Tai Wang, General Motors Research and Development

THURSDAY
BIOMECHANICS OF SKELETAL AND INTERNAL THORACIC INJURIES
Characterization of PMHS Ribs: A New Test Methodology
Estelle Charpail, LAB PSA Peugeot-Citroën Renault/Laboratoire de Biomécanique, ENSAM; Xavier Trosseille, LAB PSA Peugeot-Citroën Renault; Sébastien Laporte and François Lavaste, Laboratoire de Biomécanique, ENSAM; and Guy Vallancien, Université René Descartes, France

Material Properties of Human Rib Cortical Bone from Dynamic Tension Coupon Testing
Andrew R. Kemper, Craig McNally, Eric A. Kennedy, Sarah J. Manoogian, Amber L. Rath, Tracy P. Ng, Joel D. Stitzel, Eric P. Smith, and Stefan M. Duma, Virginia Tech Wake Forest, Center for Injury Biomechanics; Fumio Matsuoka, Toyota Motor Corporation

Structural and Material Changes in the Aging Thorax and Their Role in Crash Protection for Older Occupants
Richard Kent, Sang-Hyun Lee, and Kurosh Darvish, University of Virginia; Stewart Wang, Craig S. Poster, Aaron W. Lange, Chris Brede, and David Lange, University of Michigan Program for Injury Research and Education; Fumio Matsuoka, Toyota Motor Corporation

Development of a Three-Dimensional Finite Element Chest Model
Hideyuki Kimpara, Jong B. Lee, King H. Yang, and Albert I. King, Bioengineering Center, Wayne State University; Masami Iwamoto, Isao Watanabe, and Kazuo Miki, Toyota Central R&D Labs., Inc.

Development of a Finite-Element-Based Injury Metric for Pulmonary Contusion—Part I: Model Development and Validation
Joel D. Stitzel and F. Scott Gayzik, Virginia Tech – Wake Forest University Center for Biomechanics/Wake Forest University School of Medicine; Jason Hoth, Jennifer Mercier, and H. Donald Gage, Wake Forest University School of Medicine; Kathryn A. Morton, University of Utah Health Sciences Center; Stefan M. Duma, Virginia Tech – Wake Forest University Center for Injury Biomechanics; R. Mark Payne, Wake Forest University School of Medicine
SHOULDER AND TORSO BIOMECHANICS

Shoulder Injury and Response Due to Lateral Glenohumeral Joint Impact: An Analysis of Combined Data
Sung-Woo Koh, John M. Cavanaugh, Matthew J. Mason, and Steven A. Petersen, Wayne State University; Debra R. Marth and Stephen W. Rouhana, Ford Motor Company; John H. Bolte IV, The Ohio State University

Thoracic Injury Investigation Using PMHS in Frontal Airbag Out-of-Position Situations
Matthieu Lebarbé, Pascal Potier, and Pascal Baudrit, Ceesar, France; Philippe Petit and Xavier Trosseille, LAB PSA Peugeot-Citroën Renault, France; Guy Vallancien, Université René Descartes, France.

Biomechanical Analysis of Human Abdominal Impact Responses and Injuries through Finite Element Simulations of a Full Human Body Model
Jesse S. Ruan, Raed El-Jawahri, Saeed Barbat, and Priya Prasad, Ford Motor Company

Characteristics of PMHS Lumbar Motion Segment in Lateral Shear
Srinivas Sundararajan, Priya Prasad, and Stephen W. Rouhana, Ford Motor Company; Constantine K. Demetriouopoulos, William Beaumont Hospital; King H. Yang and Albert I. King, Wayne State University; Lutz Nolte, Muller Biomechanics Institute

FRIDAY

ATD PERFORMANCE AND UTILIZATION

Development of ATD Installation Procedures Based on Rear-Seat Occupant Postures
Matthew P. Reed, Sheila M. Ebert-Hamilton, and Lawrence W. Schneider, University of Michigan Transportation Research Institute

Side Impact Response Corridors for the Rigid Flat-Wall and Offset-Wall Side-Impact Tests of NHTSA Using the ISO Method of Corridor Development
Annette L. Irwin, Aleta Sutterfield, Timothy P. Hsu, Agnes Kim, Harold J. Mertz, Stephen W. Rouhana, and Risa Scherer, Occupant Safety Research Partnership

Objective Biofidelity Rating of a Numerical Human Occupant Model in Frontal to Lateral Impact
Ronald de Lange, Lex van Rooij, Herman Mooi, and Jac S.H.M. Wismans, TNO Science and Industry

Evaluation of the ES-2re Dummy in Biofidelity, Component, and Full Vehicle Crash Tests
Aleta Sutterfield, Katie M. Pecoraro, Stephen W. Rouhana, Lan Xu, Joe Abramczyk, Jeff Berliner, Annette Irwin, Jack Jensen, Harold J. Mertz, Guy S. Nusholtz, Hollie Pietsch, and Risa Scherer, Occupant Safety Research Partnership; Suzanne Tylko, Transport Canada

Development and Evaluation of a Proposed Neck Shield for the 5th Percentile Hybrid III Female Dummy