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 Yoganandan, 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, Virgnia 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; Debora 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

Srini Sundararajan, Priya Prasad, and Stephen W. Rouhana, Ford Motor Company; Constantine K. Demetropoulos, 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 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 Richard F. Banglmaier, Katie M. Pecoraro, Jim R. Feustel, Robert W. MacFarland, Risa D. Scherer, and Stephen W. Rouhana, Ford Motor Company