

50th NHTSA Workshop on Human Subjects for Biomechanical Research

National Highway Traffic Safety Administration
Hilton Denver City Center – Denver, CO

Rodney W. Rudd, Ph.D., Chair
Sunday November 6, 2022

PROGRAM

7:30-8:45 REGISTRATION

8:45-9:00 OPENING REMARKS – NHTSA

9:00-10:20 SESSION I

Response of the Hybrid III Dummy Lumbar Spinal Column Under Vertical Impact

J. Humm¹, Narayan Yoganandan¹, J. Moore¹, T. Westerhof¹, M. Philippens²
¹ Medical College of Wisconsin, ² TNO Netherlands

Development Status of THUMS Version 7: Improvement of Lumbar Spine Model

N. Kobayashi¹, N. Fujita¹, T. Matsuda¹, Y. Kitagawa¹, Jason Hallman²
¹ Toyota Motor Corporation, ² Toyota Motor North America R&D

Which Anatomical Parameters Affect Lumbar Spine Response in Combined Loading?

Sophie Tushak, B. Gepner, J. Kerrigan
Center for Applied Biomechanics, University of Virginia

Quantifying Female Subject-Specific Knee-Thigh-Hip Responses in Simulated Frontal Impact Scenarios

Randolff Carpenter, P. Berthelson, J. Donlon, J. Forman
Center for Applied Biomechanics, University of Virginia

10:20-10:40 BREAK

10:40-12:00 SESSION II

Development of 50th Percentile Female GHBMC Detailed and Simplified Occupant Models

Andrea Robinson, B. von Kleeck, F. Gayzik
Wake Forest University School of Medicine

Toward Safety Equity between Women and Men: Parametric Human Modeling in Frontal Crashes

J. Hu¹, Y-S. Lin¹, W. Sun¹, M. Reed¹, Jason Hallman²
¹ University of Michigan Transportation Research Institute, ² Toyota Motor North America R&D

Multi-Disciplinary Investigation to Advance Ankle Injury Prediction with Respect for Occupant Variability

Jason Forman¹, R. Iyer¹, S. Mukherjee¹, J. Noss¹, M. Panzer¹, S. Holcombe², Y. Huang², K. Cunningham², S. Wang², J. Hallman³
¹ Center for Applied Biomechanics, University of Virginia, ² University of Michigan International Center for Automotive Medicine, ³ Toyota Motor North America R&D

Influence of Pre-Crash Vehicle Maneuvers on Occupant Safety Performance Response

A. Dahiya, Y. Meng, Costin Untaroiu
Center for Injury Biomechanics, Virginia Tech

12:00-1:20 LUNCH

1:20-1:35 KEYNOTE – ANN CARLSON, ACTING ADMINISTRATOR, NHTSA

1:35-2:55

SESSION III

Toward Developing Kinematic Cervical Spine Motion Corridors for Direct Frontal Head Impacts

Sabiha Sultana¹, G. Booth², J. Funk³, E. Bonugli³, J. Cormier³, C. Bain³, H. Guzman³, P. Crompton¹
¹ School of Biomedical Engineering, University of British Columbia, ² MEA Forensic Engineers and Scientists, ³ Biodynamic Research Corporation

Methodology to Account for Cadaver Versus Living Population Effect in the Development of Human Body Model Specific Probabilistic Rib Injury Criterion

Giacomo Marini¹, F. Auriault², M. Junge³, D. Sahoo²
¹ Audi AG, ² VAIVA GmbH, ³ Volkswagen AG

A Pedestrian Simplified Human Body Model with Active Muscles

M. Lalwala^{1,2}, K. Devane², B. Koya², **F. Scott Gayzik²**, J. Stitzel², A. Weaver²
¹ General Motors, ² Wake Forest University School of Medicine

Development of a Hybrid III Analogous GHBMC Male 50th Percentile Model

Seth Mischo, B. von Kleeck, F. Gayzik
Wake Forest University School of Medicine

2:55-3:15

BREAK

3:15-4:15

SESSION IV

Response of Reclined Mid-Size Female PMHS in Frontal Impact Sled Tests

Jeesoo Shin¹, J. Donlon¹, R. Richardson¹, C. Espelien¹, B. Gepner¹, J. Forman¹, M. Östling², J. Kerrigan¹
¹ Center for Applied Biomechanics, University of Virginia, ² Autoliv Development AB

An Overview of THOR-AV Design, Biofidelity, Findings, and Future Needs

Jerry Wang
Humanetics Innovative Solutions, Inc.

Quantifying Lap Belt Offset and Pelvic Angle in Upright and Reclined Postures Using an Upright Open MRI

G. Booth¹, C. Roberts¹, S. Romani², O. Mergler³, H. Zhang², B. Pipkorn⁴, G. Siegmund^{1,2}, J. Forman³, **Peter Crompton²**
¹ MEA Forensic Engineers and Scientists, ² School of Biomedical Engineering, University of British Columbia, ³ Center for Applied Biomechanics, University of Virginia, ⁴ Autoliv Inc.

4:15

ADJOURN AND CONCLUDING REMARKS

Attendance at the NHTSA Workshop is free of charge.
The NHTSA Workshop is not affiliated with the Stapp Car Crash Conference.

nhtsabioworkshop@dot.gov

<https://www-nrd.nhtsa.dot.gov/database/bio/proceedings/search.asp>