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PEGGY A. SHIBATA, M.S., P.E.
SENIOR CONSULTANT
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Ms. Shibata is a Senior Consultant for Engineering Systems Inc. (ESI). Ms. Shibata specializes in mechanical engineering and biomechanics, with particular expertise in accident reconstruction, rigid body dynamics, computational modeling and analysis, human injury tolerance, and injury analyses associated with transportation, recreational activities and equipment, and falls. Additional experience includes whole-body kinematics, balance, and the effects of aging on human motor performance and dynamics. Past research has included the evaluation of mechanical properties of cardiac tissue and studies of human motion.

Areas of Specialization

Analysis of Human Motion
Human Injury Tolerance
Injury Analysis
Human Surrogate Testing
Slips and Falls
Accident Reconstruction
Computational Modeling
Roller Coaster Characterization

Education

M.S.E., Biomedical Engineering, University of Michigan, Ann Arbor, MI, 2004
M.S., Mechanical Engineering, University of Michigan, Ann Arbor, MI, 2003
B.S., Mechanical Engineering, Minor: Bioengineering, University of Pittsburgh, Pittsburgh, PA, 2001

Licensed Professional Engineer (P.E.)

State of Michigan License No. 6201055794
NCEES..... Registration No. 41895

April 2019

Professional Affiliations/Honors

International Society for Occupational Ergonomics & Safety (ISOES)

Member

Society of Automotive Engineers (SAE)

Member

American Society of Mechanical Engineers (ASME)

Member

American Society for Testing and Materials (ASTM)

Member

Pi Tau Sigma (Mechanical Engineering Honor Society)

Member

Tau Beta Pi (Engineering Honor Society) Pennsylvania Lambda Chapter

Member

Former Officer

Positions Held

Engineering Systems Inc., Ann Arbor, MI

Senior Consultant, 2016–Present

Senior Staff Consultant, 2010-2015

Packer Engineering, Inc. Ann Arbor, MI

Senior Staff Engineer, Biomechanics, 2004-2010

Continued Education

Human Factors in Traffic Crash Reconstruction

Institute of Police Technology Management, University of North Florida, Fort Myers, FL, 2017

Driver Distraction from Electronic Devices: Insights and Implications

SAE International, 2017

Understanding Bloodstain Pattern Analysis

Bevel, Gardner, & Associates, Ann Arbor, MI, 2017

Traffic Crash Reconstruction I

Northwestern University Center for Public Safety, 2015

The University of Michigan Center for Occupational Health & Safety Engineering

Using the 3D Static Strength Prediction Program, 2013

SAE Tire and Wheel Safety Issues, 2011

ASME International 20-Hour Course
Project Management for Engineers, 2007

Engineering Dynamics Corporation 20-Hour HVE Forum Workshop, 2006

Industrial Fork Truck Operator Safety Training, 2006

Engineering Dynamics Corporation HVE Introductory Training, 2005

Traffic Accident Reconstruction II
Northwestern University Center for Public Safety, 2005

SAE Vehicle Accident Reconstruction Methods, 2004

OSHA 10-Hour General Industry Safety Standards, 2004

Publications/Presentations

“Comparative Lumbar Spine Acceleration Data During Daily and Dynamic Activities, Tasks of Daily Driving, and Low Speed Lateral Vehicle Impacts.” **P.A. Shibata**, A.E Mathias, A.E. Light, M. Meza-Arroyo, J.K. Sprague, A.L. Stern. Biomedical Sciences Instrumentation, 56th Annual Rocky Mountain Bioengineering Symposium, Milwaukee, WI. April 2019. Biomedical Sciences Instrumentation Journal, Volume 55(2). pp. 159-166.

“Head Acceleration Measurements During Vehicle Driving Tasks and Lateral Impacts Relative to Head Accelerations During Daily and Dynamic Activities.” **P.A. Shibata**, A.E Mathias, A. Light, M. Meza-Arroyo, J.K. Sprague, A.L. Stern. Biomedical Sciences Instrumentation, 56th Annual Rocky Mountain Bioengineering Symposium, Milwaukee, WI. April 2019. Biomedical Sciences Instrumentation Journal, Volume 55(2). pp. 120-127.

“Enhancing Contrast-Sensitivity Charts for Validating Visual Representations of Low-Illumination Scenes.” J.K. Sprague, M. Meza-Arroyo, **P.A. Shibata**, J.A. Auflick “SAE Technical Paper 2019-01-1009, 2019.

“The Kinematic Analysis of Occupant Excursions and Accelerations During Staged Low Speed Far-Side Lateral Vehicle-to-Vehicle Impacts,” **P.A. Shibata**, J.M. Roberts, J.K. Sprague, A.E. Light, J.A. Stegemann, M. Meza-Arroyo, S.P. Capser, SAE Technical paper 2019-01-1030, 2019.

“Analysis of an Unexpected Impact to the Crown of the Head”, **P.A. Shibata**, A.L. Stern, J.M. Roberts, J.A Stegemann, “Proceedings of The XXVIIIth Annual International Occupational Ergonomics and Safety Conference, Chicago, IL, pp. 126-131, June 9-10, 2016

“Human Factors Techniques in the Analysis of Low Illumination Accidents: Integrating Conspicuity, Validated Photography, and Scientific Animation”, J.L. Auflick, J.K. Sprague, **P.A. Shibata**, and, D. Kruger, Proceedings of the Human Factors and Ergonomics Society 59th Annual Meeting, Los Angeles, CA, October 26-29, 2015

- "A Link Between Occupant and Vehicle Accelerations During Common Driving Tasks." Biomed Sci Instrum, A.C. Mathias, **P.A. Shibata**, and J.K. Sprague presented at the 51st Annual Rocky Mountain Bioengineering Symposium, Denver, Colorado, 50:197-204 (2014)
- "Analysis of Nighttime Vehicular Collisions and the Application of Human Factors: An Integrated Approach" J.K. Sprague, **P.A. Shibata**, and J.L. Auflick, SAE Technical Paper 2014-01-0442 SAE International: 2014.
- "Human Factors in Claims/Litigation," Technical Presentation for Toledo Claims Association, Toledo, Ohio, **Co-Lecturer** with Jack L. Auflick, Ph.D., January 10, 2013
- "Biomechanics: Understanding Its Use In Claims and Litigation," Continuing Education Technical Presentation for attorneys and insurance professionals, ESI-Ann Arbor, Michigan Open House Event, **Co-Lecturer** with Erick H. Knox, Ph.D., P.E., May 17, 2012
- "Age and gender moderate the effects of localized muscle fatigue on lower extremity joint torques used during quiet stance", L.A. Wojcik, M.A. Nussbaum, D. Lin, **P.A. Shibata**, and M.L. Madigan, Human Movement Science, 30, (2011) 574-583.
- "Age and Gender Differences in the Effects of Localized Muscle Fatigue on Joint Torques Used During Bipedal Stance", L.A. Wojcik, D. Lin, M.A. Nussbaum, **P.A. Shibata**, and M.L. Madigan, Proceedings of the ASME 2009 Summer Bioengineering Conference, American Society of Mechanical Engineers, SBC2009-204239.
- "Determining Angular Head Accelerations Using an External Array of Linear Accelerometers: A Preliminary Analysis of Everyday Activities," L.A. Wojcik, **P.A. Shibata**, and J.K. Sprague, Proceedings of the 2005 Summer Bioengineering Conference, J.S. Wayne, F. Guilak, G.A. Livesay, and J.W. Holmes, eds., The American Society of Mechanical Engineers, #b0055211, Vail, Colorado, 2005.
- "Kinematic analyses of the 180o standing turn: Effects of age on strategies adopted by healthy young and older women", **P.A. Meinhart-Shibata**, M. Kramer, J.A. Ashton-Miller, C. Persad, Gait and Posture 2005; 22:119-125.
- "Evidence of Age, Effects on Standing Turn Strategies in Healthy Females", **P.A. Meinhart-Shibata**, J.A. Ashton-Miller, C. Persad, N. Alexander, Program from the 56th Annual Scientific meeting of The Gerontological Society of America, The Gerontologist, Vol. 43, (Special Issue I), p. 379, San Diego, CA 2003.
- "A Kinematic Analysis of Effects of Age on Standing Turn Execution in Healthy Females", **P.A. Meinhart**, J.A. Ashton-Miller, C. Persad, Proceedings of the 27th Annual Meeting of the American Society of Biomechanics (Toledo, OH 2003).