Peggy A. Shibata

MS, PE

Senior Consultant

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, whole-body kinematics, balance, gait, human injury tolerance, and injury analysis associated with transportation, recreational activities and equipment, and falls. Relevant experience includes the evaluation of biomechanical and safety issues related to consumer products, assessment of product design relative to applicate safety standards, and adult and pediatric surrogate testing.

Education

MES, Biomedical Engineering. University of Michigan. 2004

MSE, Mechanical Engineering. University of Michigan. 2003

BS, Mechanical Engineering, Minor: Bioengineering, University of Pittsburgh. 2001

Licenses & Certifications

- State of Michigan P.E. License 6201055794
- National Council of Examiners for Engineering and Surveying (NCEES) Reg. No. 41895

Positions Held

Engineering Systems Inc., Ann Arbor, Michigan

- Senior Consultant, 2016 – Present
- Senior Staff Consultant, 2010 – 2015

Packer Engineering, Ann Arbor, Michigan

- Senior Staff Engineer, Biomechanics, 2004 – 2010

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Areas of Specialization

- Accident Reconstruction
- Amusement Rides and Devices
- Analysis of Human Motion
- Consumer Products
- Human Factors
- Human Injury Tolerance
- Human Surrogate Testing
- Injury Analysis
- Slips, Trips, and Falls

Continuing Education

- **Passenger Restraint Safety Systems** – Institute of Police Technology and Management, University of North Florida, Aurora, IL, 2025
- **Certified Ergonomics Assessment Specialist** – The Back School, Atlanta, GA, 2023
- **Using Warnings and Instructions to Increase Safety and Reduce Liability** – University of Wisconsin-Madison, 2023
- **Traffic Signal Timing Records Interpretation and Analysis** – Traffic Signal Academy, University of Tennessee, 2020
- **Safety Belt Examinations** – Institute of Police Technology Management, University of North Florida, Jacksonville, FL, 2020
- **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
- **Safety Belt Examinations** – Institute of Police Technology Management, University of North Florida, Jacksonville, FL, 2020
- **SAE Tire and Wheel Safety Issues**, 2011
- **Project Management for Engineers** – ASME International 20-Hour Course, 2007
- **HVE Forum** – Engineering Dynamics Corporation 20-Hour Workshop, 2006
- **Industrial Fork Truck Operator Safety Training**, 2006
- **HVE Introductory Training** – Engineering Dynamics Corporation, 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

Professional Affiliations/Honors

Americal Society for Testing and Materials (ASTM)

- Active Voting Member, Committee F24 on Amusement Rides and Devices
- Active Voting Member, Subcommittee F24.10 – Test Methods and Component Parts
- Active Voting Member, Subcommittee F24.24 – Design, Manufacture, Installation and Commissioning
- Active Voting Member, Subcommittee F24.70 – Water Related Amusement Rides and Devices

International Society for Occupational Ergonomics & Safety (ISOES)

- Member

Society of Automotive Engineers (SAE)

- Member

American Society of Mechanical Engineers (ASME)

- Member

Pi Tau Sigma (Mechanical Engineering Honor Society)

Tau Beta Pi (Engineering Honor Society) Pennsylvania Lambda Chapter

Publications

“Aboveground Swimming Pool Child Access Prevention Through Product Design,” D.B. Brickman, J.P. Mohorovic, K.B. Zakutansky, A.C. Mathias, and **P.A. Shibata**, Proceedings of the XXXVIth Annual International Occupational Ergonomics and Safety Conference, Denver, CO, Hybrid, August 5-6, 2024.

“Flip-Flops: A Survey of Risk Perception and Acceptance,” D.M. Fortenbaugh, **P.A. Shibata**, M. Meza-Arroyo, K.R. Thobe, and T.D. Welch, Proceedings of the Human Factors and Ergonomics Society Annual Meeting, Vol. 66, No. 1, pp. 513-517, 2022.

Final Report: “Compliance Testing for Locomotive LED Headlights and Auxiliary Lights, Phase I,” M. Meza-Arroyo, **P.A. Shibata**, J.K. Sprague, and S. Woods, U.S. Department of Transportation Federal Railroad Administration, Office of Railroad Policy and Development Office of Research and Development, Washington, DC, 2021.

Final Report: “Compliance Testing for Locomotive LED Headlights and Auxiliary Lights, Phase III,” M. Meza-Arroyo, **P.A. Shibata**, and J.K. Sprague, U.S. Department of Transportation Federal Railroad Administration, Office of Railroad Policy and Development Office of Research and Development, Washington, DC, 2021.

Final Report: “Compliance Testing for Locomotive LED Headlights and Auxiliary Lights, Phase II,” M. Meza-Arroyo, **P.A. Shibata**, and S. Woods, U.S. Department of Transportation Federal Railroad Administration, Office of Railroad Policy and Development Office of Research and Development, Washington, DC, 2019.

Final Report: “Compliance Testing for Locomotive LED Headlights and Auxiliary Lights, Phase I,” M. Meza-Arroyo, **P.A. Shibata**, and S. Woods, U.S. Department of Transportation Federal Railroad Administration, Office of Railroad Policy and Development Office of Research and Development, Washington, DC, 2018.

“Comparative Lumbar Spine Acceleration Data During Daily and Dynamic Activities, Tasks of Daily Driving, and Low Speed Lateral Vehicle Impacts,” **P.A. Shibata**, A.C. Mathias, A.E. Light, M. Meza-Arroyo, J.K. Sprague, and A.L. Stern, Biomedical Sciences Instrumentation, 56th Annual Rocky Mountain Bioengineering Symposium, Milwaukee, WI, Biomedical Sciences Instrumentation Journal, Vol. 55, No. 2, pp. 159-166, April 2019.

“Head Acceleration Measurements During Vehicle Driving Tasks and Lateral Impacts Relative to Head Accelerations During Daily and Dynamic Activities,” **P.A. Shibata**, A.C. Mathias, A. Light, M. Meza-Arroyo, J.K. Sprague, and A.L. Stern, Biomedical Sciences Instrumentation, 56th Annual Rocky Mountain Bioengineering Symposium, Biomedical Sciences Instrumentation Journal, Vol. 55, No. 2, p. 120-127, Milwaukee, WI, April 2019.

“Enhancing Contrast-Sensitivity Charts for Validating Visual Representations of Low-Illumination Scenes,” J.K. Sprague, M. Meza-Arroyo, **P.A. Shibata**, and 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, and 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, and J.A. Stegemann, Proceedings of the XXVIIIth Annual International Occupational Ergonomics and Safety Conference, pp. 126-131, Chicago, IL, 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.H. 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,” A.C. Mathias, **P.A. Shibata**, and J.K. Sprague, Biomed Sci Instrum, Presented at the 51st Annual Rocky Mountain Bioengineering Symposium, Denver, CO, Vol 50, pp.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 International, SAE Technical Paper 2014-01-0442, 2014.

"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, Vol.30, pp. 574-583, 2011.

"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.

"Determined 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, The American Society of Mechanical Engineers, J.S. Wayne, F. Guilak, G.A. Livesay and J.W. Holmes, eds., #b0055211, Vail, CO, 2005.

"Kinematic Analysis of the 180° Standing Turn: Effects of Age on Strategies Adopted by Healthy Young and Older Women," **P.A. Meinhart-Shibata**, M. Kramer, J.A. Ashton-Miller, and C. Persad, Gait and Posture, Vol. 22, pp.119-125, 2005.

"Evidence of Age, Effects on Standing Turn Strategies in Healthy Females," **P.A. Meinhart-Shibata**, J.A. Ashton-Miller, C. Persad, and N. Alexander, Program from the 56th Annual Scientific Meeting of the Gerontological Society of America, The Gerontologists, Vol. 43, Special Issue No. 1, p. 379, San Diego, CA, 2003.

"A Kinematic Analysis of Effects of Age on Standing Turn Execution in Healthy Females," **P.A. Meinhart-Shibata**, J.A. Ashton-Miller, and C. Persad, Proceedings of the 27th Annual Meeting of the American Society of Biomechanics, Toledo, OH, 2003.

Presentations

"Human Factors in Claims/Litigation," Co-Lecturer, **P.A. Shibata** with Jack L. Auflick, PhD, Technical Presentation for Toledo Claims Association, Toledo, OH, January 10, 2013.

"Biomechanics: Understanding Its Use in Claims and Litigation," Co-Lecturer, **P.A. Shibata** with Erick H. Knox, PhD, PE, Continuing Education Technical Presentation for attorneys and insurance professionals, ESi Open House Event, Ann Arbor, MI, May 17, 2012.