

Exponent®
Engineering & Scientific Consulting

Stephen Werner, Ph.D., P.E.

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Professional Profile

Dr. Stephen Werner is a Principal Engineer in Exponent's Vehicle Engineering practice. He specializes in the analysis of vehicle accidents, including bicycles, motorcycles, passenger vehicles, and medium/heavy trucks; mechanical and biomechanical analysis of slip and fall accidents; development of computer software for analysis and simulation of mechanical engineering systems; performance of bicycle and motorcycle helmets; machine design; and underwater inspection and photography.

Dr. Werner's research includes static and dynamic analysis of wheeled on-road and off-road vehicles; design and strength analysis of mechanical systems and components; impact performance of helmets; design and failure analysis of polymer matrix composite materials; and the design of automotive and machine elements including brakes, clutches, rotating shafts, hydrodynamic and rolling contact bearings, helical and flat springs, and bolted and welded joints.

Prior to joining Exponent, Dr. Werner served as a Teaching Assistant in Machine Design and Composite Materials at the University of California at Berkeley and also held the position of SEED Production Engineer for the Hewlett-Packard Corporation.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, University of California, Berkeley, 1986

M.S., Mechanical Engineering, University of California, Berkeley, 1983

B.S., Mechanical Engineering, University of California, Berkeley, 1982

Tau Beta Pi; Pi Tau Sigma

Licenses and Certifications

Professional Engineer, Alabama, #PE28127

Professional Engineer Mechanical, Arizona, #36270

Professional Engineer Mechanical, California, #26387

Professional Engineer, Illinois, #062063468

United Bicycle Institute, Certified Bicycle Technician

Certified PADI Divemaster

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League of American Bicyclists, League Cycling Instructor

Professional Affiliations

Society of Automotive Engineers (member)

American Society of Mechanical Engineers (member)

American Society for Testing and Materials (member)

- F08.10 Bicycle Standards Committee

Publications

Marine M, Werner S. “Crash-Induced Yaw Motion Effects on Airbag Control Module Delta-V,” Collision Magazine, Volume 15, Issue 1, June 2021.

Marine M, Cuadrado J, Werner S. Restitution in frontal impact simulations using the EDSMAC4 and SIMON/DyMESH Collision Models. HVE-WP-2013-1, 2013 HVE Forum, San Diego, CA, March 11-15, 2013.

Frank TA, Smith JW, Hansen DC, Werner SM. Motorcycle rider trajectory in pitch-over brake applications and impacts. SAE Technical Paper Series, 2008-01-0164, SAE World Congress and Exhibition, Detroit, MI, April 2008.

Kuzel M, Richards D, Werner S. The effect of stiffness coefficients on output variables in EDSMAC4 simulations. SAE 2006-01-1396, SAE 2006 World Congress, Society of Automotive Engineers, Warrendale, PA, April 2006.

Werner SM, Newberry WN, Fijan RS, Winter M. Modeling of bicycle rider collision kinematics. SAE Technical Paper Series, 2001-01-0765, SAE 2001 World Congress, Detroit, MI, March 7, 2001.

Pywell JF, Bahling GS, Werner SM. An examination of dummy head kinematics prior to vehicle rollover. SAE Technical Paper Series, 2001-01-0720, SAE 2001 World Congress, Detroit, MI, March 7, 2001.

Croteau JJ, Werner SM, Habberstad JL, Golliher JW. Determining closing speed in rear impact collisions with offset and override. SAE Technical Paper Series, 2001-01-1170, SAE 2001 World Congress, Detroit, MI, March 8, 2001.

Larson RE, Smith JW, Werner SM, Fowler GF. Vehicle rollover testing, methodologies in recreating rollover collisions. SAE Technical Paper Series, 2000-01-1641, SAE Automotive Dynamics & Stability Conference, Troy, MI, May 15-17, 2000.

Werner SM, Larson RE. Heavy truck rollover crashworthiness: Testing methods and development of recommended practices. SAE Technical Paper Series, 2000-01-0467, SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.

Leonard MM, Werner SM, Croteau JJ, Tuskan SM, Habberstad JL. HVE EDSMAC4 Trailer Model Simulation Comparison with Crash Test Data. SAE Technical Paper Series, 2000-01-0468, SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.

Marine MC, Werner SM. Delta-V analysis from crash test data for vehicles with post impact yaw motion.

Advances in Safety Technology (SP-1321) from the International Congress and Exposition, pp. 85-95, Detroit, MI, February 23-26, 1998.

Ayres T, Werner S, Kost G, Schmidt R, Young D. Risk analysis and bicycling injuries. American Society of Mechanical Engineers, Safety Engineering and Risk Analysis, Vol. 8, 1998.

Werner S, Larson R, Marine M, Behrens, T. Heavy truck crashworthiness Phase III—Testing and analysis for recommended practice development. SAE CRP-13, April 1997.

Cheng L, et al. Heavy truck crashworthiness—90° rollover accidents. Proceedings, 15th International Technical Conference on the Enhanced Safety of Vehicles, Paper No. 96-S11-0-14, Melbourne, Australia, May 1996.

Cheng L, et al. Heavy truck crashworthiness—Collision accidents. Proceedings, 15th International Technical Conference on the Enhanced Safety of Vehicles, Paper No. 96-S11-0-13, Melbourne, Australia, May 1996.

Cheng LY, Khatua TP, Lau E, Werner SM, Ray R. Heavy truck crashworthiness—Case studies of heavy truck accident involving truck occupant fatality. Proceedings, 15th International Technical Conference on the Enhanced Safety of Vehicles, Paper 96-S11-0-12, Sydney, Australia, 1996.

Cheng L, et al. Heavy truck crashworthiness (statistics, accident reconstruction, occupant dynamics simulation). SAE Cooperative Research Report, CRP-9, March 1995.

Clarke R, Prasad A, Khatua T, Cheng L, Girvan D, Ray R, Werner S. U.S. efforts to improve heavy truck occupant crash protection and reduce aggressivity in frontal truck/car collisions. Proceedings, 14th International Technical Conference on Enhanced Safety of Vehicles, Vol. 2, pp. 1762-1775, Munich, Germany, May 1994.

Werner S, Kost G. Use of Monte Carlo simulation techniques in accident reconstruction. Paper #940719, Society of Automotive Engineers, February 1994.

Werner S, Carnell P. Querying the NHTSA test database for vehicle performance characteristics. Paper #940917, Society of Automotive Engineers, February 1994.

Nystrom GA Werner S, Kost G. Stiffness parameters for vehicle collision analysis. Paper #910119, Society of Automotive Engineers, February 1991.

Werner S, Dharan CKH. The dynamic response of graphite fiber-epoxy laminates at high shear strain rates. Journal of Composite Materials 1986; 20, July.

Reports

Cheng L, et al. SAE truck crashworthiness research—A progress report. Presentation, International Truck & Bus Meeting and Exposition, Detroit, Michigan, 1993.

Cheng L, et al. Wheelchair/occupant securement system (California). Report No. FTA/DMT CA-08-PB93-140747, 1993.

Presentations

Werner SM. Rollover research. Presentation to NHTSA Engineers, June 2000.

Werner SM. Heavy truck rollover crashworthiness: Testing methods and development of recommended practices. SAE Heavy Vehicle Rollover TOPTEC, July 2000.