GUSTAVO A. NYSTROM, PH.D., P.E.

Specialties

Reconstruction of vehicular and industrial accidents
Analysis of vehicle collisions and vehicle response to operator input
Tire research and design
Applied physics
Dynamics, impact, vibration, failure, and rollover stability
Finite element and finite difference analysis of solids and fluids

Education

Ph.D. Applied Mechanics with a minor in Computer Science, Stanford University, 1975
M.S. Applied Mechanics, Stanford University, 1973
B.S. Aeronautical and Astro. Engineering, with highest honors, University of Illinois, 1970

Experience

Amador Newtonian Engineering	(1994-)	Principal Engineer, Accident and Failure Analysis
Modeling and Computing Services	(1992-1994)	Senior Mechanical Engineer, Design Optimization
Failure Analysis Associates	(1989-1992)	Senior Engineer, Accident Reconstruction
PEDA Corporation	(1986-1989)	Staff Scientist, Computational Fluid Dynamics
Exxon Production Research	(1977-1986)	Sr. Researcher, Offshore Structure Foundations
Uniroyal Research Center	(1976-1977)	Research Engineer, Tire Mechanics
Lockheed Missiles and Space	(1970-1973)	Engineer, Structural Dynamics

Affiliations

Registered Professional Mechanical Engineer, California #M-27482
Licensed Brake Inspector, California #JC150968
Member: American Society of Mechanical Engineers (ASME)
Society of Automotive Engineers (SAE)
SAE Accident Investigation / Reconstruction Practices Committee
the Society of Forensic Engineers and Scientists
Sigma Xi (scientific research society)
the Tire Society
Rubber Division, American Chemical Society (ACS)
Former chapter president, Sigma Tau (honorary engineering society)

Other

List of 24 technical publications available upon request
Fluent speaker of Spanish
Distinguished Alumnus Award, University of Illinois Department of Aeronautical Engineering, 1996

Contact

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GUSTAVO A. NYSTROM, PH.D., P.E.
PUBLICATIONS LIST

Vehicles

"Analysis of Multi-Vehicle Rear-End Accidents" Paper #2010-01-0055, Society of Automotive Engineers, April 2010.

"Stiffness Parameters for Vehicle Collision Analysis, an Update" Paper #2001-01-0502, Society of Automotive Engineers, March 2001. ***

"Application of the NHTSA Crash Database to Pole Impact Predictions" Paper #920605, Society of Automotive Engineers, February 1992 (with G. Kost).

"Stiffness Parameters for Vehicle Collision Analysis" Paper #910119, Society of Automotive Engineers, February 1991 (with G. Kost and S. M. Werner). ***

"A Two-Dimensional Model of a 'Falling' Vehicle" Paper #910124, Society of Automotive Engineers, February 1991 (with G. Kost et al.).

"Dynamics of Aero-Driven Bodies with Collisions and Sliding Contact" Paper #AIAA-91-2938, American Institute of Aeronautics and Astronautics, Flight Simulation Technologies Conference, August 1991 (with D. T. Wang and C. K. Lombard).

"Combined Use of Upper Bound Theorems and Available Lower Bound Information" 20th Structures, Structural Dynamics, and Materials Conference, American Institute of Aeronautics and Astronautics, Paper #79-0785, April 1979.

"Structural Analysis and Design for Energy Absorption in Impact" Prepared for the U.S. Department of Transportation, Report #DOT-TST-76-44, Stanford University, December 1975 (with E. H. Lee and R. L. Mallett).

"Combined Bounds Analysis of the Deformation of Plastic Structures Under Impact" Ph.D. dissertation, Stanford University, Department of Applied Mechanics, December 1975.

"Methods of Estimating Impact Duration and Final Deformation on Collisions" SUDAM Report 75-3, Stanford University, March 1975 (with T. C. T. Ting et al.).

Design

"A New Three-Step Move Limit Strategy for Non-Hierarchic Multidisciplinary System Optimization", Paper #AIAA-94-4331, American Institute of Aeronautics and Astronautics, 5th Multidisciplinary Optimization Symposium, September 1994 (with E. D. Eason et al.).

"Non-Hierarchic Multidisciplinary Design of a Commercial Aircraft", Paper #AIAA-94-4302, American Institute of Aeronautics and Astronautics, 5th Multidisciplinary Optimization Symposium, September 1994 (with E. D. Eason et al.).

"Robustness Testing of Non-Hierarchic System Optimization Software", Paper #AIAA-94-4335, American Institute of Aeronautics and Astronautics, 5th Multidisciplinary Optimization Symposium, September 1994 (with E. D. Eason et al.).

Fluids

"Complex Wedge Cavity Solutions Using a Multi-Grid Multi-Patch Approach," 25th Joint Propulsion Conference, American Institute of Aeronautics and Astronautics, Paper #AIAA 89-2672, July 1989 (with C. K. Lombard).

"Simulation of 3-D Jet-Interaction Flowfields with CSCM on Multiple Grids," 25th Joint Propulsion Conference, American Institute of Aeronautics and Astronautics, Paper #AIAA-89-2552, July 1989 (with S. K. Hong et al.).

"Asynchronous Concurrent Implicit CFD Algorithms," 4th Conference on Hypercubes, Concurrent Computers, and Applications, March 1989 (with C. K. Lombard et al.).

"Application of the CSCM Method to the Design of Wedge Cavities," 19th Fluid Dynamics, Plasma Dynamics, and Lasers Conference, American Institute of Aeronautics and Astronautics, Paper #AIAA-87-1317, June 1987 (with E. Venkatapathy et al.).

"CSCM Methodology for Slot Injection Cooled Cavity Flow Design in a High Enthalpic Stream," 25th Aerospace Sciences Meeting, American Institute of Aeronautics and Astronautics, Paper #AIAA-87-0518, January 1987 (with J. Bardina et al.).

Soils

"Effect of Lateral Soil Movement on Subsequent Axial Pile Capacity: A Finite-Strain Analysis," 6th International Offshore Mechanics and Arctic Engineering Symposium, March 1987.

"Finite-Strain Axial Analysis of Piles in Clay," invited paper, Analysis and Design of Pile Foundation Symposium, American Society of Civil Engineers, October 1984.

"The Use of Soil Mechanics Capabilities in a General Purpose Finite Element Program," Sedimentation Consolidation Models - Prediction and Validation Symposium, American Society of Civil Engineers, October 1984.

"Sedimentation/Consolidation Models: Theory, General Report #2," Sedimentation Consolidation Models - Prediction and Validation Symposium, American Society of Civil Engineers, October 1984.

"Long-Term Settlement of a Spudcan in Soft Clay: Field Tests and Boundary Value Analyses," International Conference on Constitutive Laws for Engineering Materials, January 1983.

"The Analysis of Subsidence Associated with Geothermal Development," National Science Foundation, Research Applied to National Needs, Systems Control Inc., 3 Volumes, Report #5139, September 1976 (with R. W. Atherton et al.).

*** Paper specially honored by the Society of Automotive Engineers by publication in the SAE Transactions. It was judged to be among the most outstanding technical research papers published during the year.