

## **BIOGRAPHICAL SKETCH**

**SOTIRIOS NATSIAVAS**

Professor

Director of the Machine Dynamics Laboratory

Department of Mechanical Engineering

Aristotle University

54 124 Thessaloniki, Greece

**Tel.:** +30 2310 99 6088

**e-mail:** [natsiava@auth.gr](mailto:natsiava@auth.gr)

**web page:** <http://lmd.meng.auth.gr/>

**Education:**

Ph.D. in Mechanical Engineering	California Institute of Technology, USA, 1987
M.S. in Mechanical Engineering	California Institute of Technology, USA, 1983
Diploma in Mechanical Engineering	Aristotle University, Thessaloniki, Greece, 1982

**Academic Experience:**

2001 - present	Professor, Department of Mechanical Engineering, Aristotle University, Thessaloniki, Greece
1997 - 2001	Associate Professor, Department of Mechanical Engineering, Aristotle University, Thessaloniki, Greece
1993 - 1997	Assistant Professor, Department of Mechanical Engineering, Aristotle University, Thessaloniki, Greece
1993 - 1994	Associate Professor, Department of Mechanical and Aerospace Engineering, Arizona State University, Tempe, AZ, USA
1987 - 1993	Assistant Professor, Department of Mechanical and Aerospace Engineering, Arizona State University, Tempe, AZ, USA
06/1987 – 08/1987	Research Fellow, Division of Engineering and Applied Science, California Institute of Technology, Pasadena, CA, USA
01/1987 – 06/1987	Instructor of Engineering, Division of Engineering and Applied Science, California Institute of Technology, Pasadena, CA, USA
09/1982 – 01/1987	Research, Laboratory and Teaching Graduate Assistant, Department of Mechanical Engineering, California Institute of Technology, USA

**Fields of Study:**

Linear and Nonlinear Vibrations, Analytical Dynamics, Structural and Multibody Dynamics, Vehicle Dynamics, Structural Stability, Mechanics of Solids, Fluid-Structure and Ground-Structure Interaction.

**Honors and Awards:**

2020	EASD Senior Research Prize, European Association of Structural Dynamics.
2008	Fellow, American Society of Mechanical Engineers (ASME).
2008	Honorary Member, TechNet Alliance.
1990	Award for Teaching Excellence (College of Engineering and Applied Sciences, Arizona State University).

- 1987 Ernest E. Sechler Award (Awarded annually to a student who has made the most significant contribution to the Teaching and Research efforts of the Graduate Aeronautical Laboratories of Caltech - GALCIT).
- 1982 Bodossakis Foundation Award.
- 1977-82 National Scholarship Fellow (Five times, for performance during undergraduate studies).
- 1979 Greek Organization for Telecommunications Award.
- 1977 National Chamber of Engineers Award (Ranked first in Mechanical Engineering among about twenty thousand candidates in Engineering and Applied Science).

**Associations:**

- Technical Chamber of Greece (1982)
- American Society of Mechanical Engineers (ASME, 1986)
- American Academy of Mechanics (1988)
- European Mechanics Society (EUROMECH, 1995)
- Hellenic Union of Theoretical and Applied Mechanics (2001).

**PUBLICATIONS**

**Textbooks:**

- Natsiavas, S., “Vibration of Mechanical Systems,” (in Greek) Ziti Publ. Co., Thessaloniki, 2001.
- Natsiavas, S., “Oscillations of Dynamical Systems with Nonlinear Characteristics,” (in Greek) Ziti Publ. Co., Thessaloniki, 2000.
- Natsiavas, S., “Applied Dynamics,” (in Greek, 2<sup>nd</sup> edition) Ziti Publ. Co., Thessaloniki, 2022.

**Chapters in Books:**

- Natsiavas, S., Passas, P. and Paraskevopoulos, E., “A novel time-stepping method for multibody systems with frictional impacts,” *2nd International Nonlinear Dynamics Conference NODYCON 2021*, Rome, Italy, 2021.
- Koutras, E., Paraskevopoulos, E. and Natsiavas, S. “Co-simulation in mechanical systems with nonlinear components,” *2nd International Nonlinear Dynamics Conference NODYCON 2021*, Rome, Italy, 2021.

- Natsiavas S., Paraskevopoulos E. (2020) Boundary Layer Dynamics of Multibody Systems Involving Impact and Friction. In: Lacarbonara W., Balachandran B., Ma J., Tenreiro Machado J., Stepan G. (eds) *Nonlinear Dynamics of Structures, Systems and Devices*. Springer, Cham. [https://doi.org/10.1007/978-3-030-34713-0\\_10](https://doi.org/10.1007/978-3-030-34713-0_10)
- Potosakis N., Paraskevopoulos E., Natsiavas S. (2020) Nonlinear Dynamics of Multibody Systems Using an Augmented Lagrangian Formulation. In: Lacarbonara W., Balachandran B., Ma J., Tenreiro Machado J., Stepan G. (eds) *Nonlinear Dynamics of Structures, Systems and Devices*. Springer, Cham. [https://doi.org/10.1007/978-3-030-34713-0\\_1](https://doi.org/10.1007/978-3-030-34713-0_1)
- Natsiavas, S. and Giagopoulos, D., “Nonlinear Dynamics of Gear Meshing and Vibro-impact Phenomenon,” Chapter in the Book *Tribology and Dynamics of Engine and Powertrain* (edited by H. Rahnejat), Woodhead Publishing Company, Cambridge, UK, 2008.
- Giagopoulos, D., Salpistis, C. and Natsiavas, S., “Dynamics and Parametric Identification of Geared Rotordynamic Systems,” Chapter in the Book *Chaotic Dynamics and Control of Systems and Processes in Mechanics*, (edited by G. Rega and F. Vestroni), pp. 107-116, Springer, Netherlands, 2005.
- Natsiavas, S., “Dynamics of Piecewise Linear Oscillators,” Chapter in the Book *Applied Nonlinear Dynamics and Chaos of Mechanical Systems with Discontinuities*, (edited by M. Wiercigroch and A. de Kraker), World Scientific, London, 2000.
- Theodossiades, S. and Natsiavas, S., “Dynamics of Gear-Pair Systems with Backlash,” Chapter in the Book *Dynamics of Vibro-Impact Systems*, (edited by V.I. Babitsky), pp. 69-78, Springer-Verlag, Berlin, 1999.
- Natsiavas, S. and Verros, G., “Dynamics of Piecewise Linear Oscillators with Viscous and Constant Damping,” Chapter in the Book *Unilateral Multibody Contacts*, (edited by F. Pfeiffer and C. Glocker), pp. 223-231, Kluwer Academic Publishers, Dordrecht, 1999.

**Archival Refereed Journal Papers:**

- Natsiavas, S., Passas, P. and Tzaferis, K., “On the selection of a proper connection in describing the dynamics of constrained mechanical systems,” *Nonlinear Dynamics*, Vol. 111, pp. 9753–9775, 2023.
- Natsiavas, S., Passas, P. and Paraskevopoulos, E., “Nonlinear dynamics of constrained multibody systems based on a natural ODE formulation,” *Nonlinear Dynamics*, Vol. 110, pp. 2951-2977, 2022.
- Koutras, E., Paraskevopoulos, E., and Natsiavas, S., “A novel co-simulation approach for mechanical systems,” *Multibody System Dynamics*, Vol. 55, pp. 83-102, 2022.
- Passas, P. and Natsiavas, S. “A time-stepping method for multibody systems involving frictional impacts and phases with persistent contact,” *Mechanism and Machine Theory*, Vol. 169, p. 104591, 2022.
- Passas, P., Natsiavas, S. and Paraskevopoulos, E., “Numerical integration of multibody dynamic systems involving nonholonomic equality constraints,” *Nonlinear Dynamics*, Vol. 105, pp. 1191-1211, 2021.
- Stoura, C., Paraskevopoulos, E., Dimitrakopoulos, E. and Natsiavas, S., “A dynamic partitioning method to solve the vehicle-bridge interaction problem,” *Computers and Structures*, Vol. 251, p. 106547, 2021.
- Natsiavas, S., Passas, P. and Paraskevopoulos, E., “A time-stepping method for multibody systems with frictional impacts based on a return map and boundary layer theory,” *International Journal of Non-Linear Mechanics*, Vol. 131, p. 103683, 2021.
- Giagopoulos, D., Arailopoulos, A. and Natsiavas, S., “A Model-Based Fatigue Damage Estimation Framework of Large Scale Structural Systems,” *Structural Health Monitoring*, Vol. 20, pp. 834-847, 2021.
- Paraskevopoulos, E., Passas, P. and Natsiavas, S., “A novel return map in non-flat configuration spaces of multibody systems with impact,” *International Journal of Solids and Structures*, Vol. 202, pp. 822-834, 2020.
- Potosakis, N., Paraskevopoulos, E. and Natsiavas, S., “Application of an augmented Lagrangian approach to multibody systems with equality motion constraints,” *Nonlinear Dynamics*, Vol. 99, pp. 753–776, 2020.
- Natsiavas, S., “Analytical modeling of discrete mechanical systems involving contact, impact and friction,” *ASME Journal of Applied Mechanics Reviews*, Vol. 71, p. 050802-25, 2019.

- Natsiavas, S. and Paraskevopoulos, E., “A boundary layer approach to multibody systems involving single frictional impacts,” *ASME Journal of Computational and Nonlinear Dynamics*, Vol. 14, p. 011002-16, 2019.
- Natsiavas, S. and Paraskevopoulos, E., “An analytical dynamics approach for mechanical systems involving a single frictional contact using b-geometry,” *International Journal of Solids and Structures*, Vol. 148-149, pp. 140-156, 2018.
- Paraskevopoulos, E. and Natsiavas, S., “A geometric solution to the general single contact frictionless problem by combining concepts of analytical dynamics and b-calculus,” *International Journal of Non-Linear Mechanics*, Vol. 95, pp. 117-131, 2017.
- Pournaras, A., Karaoulanis, F. and Natsiavas, S., “Dynamics of mechanical systems involving impact and friction using a new contact detection algorithm,” *International Journal of Non-Linear Mechanics*, Vol. 94, pp. 309-322, 2017.
- Natsiavas, S. and Paraskevopoulos, E., “Application of Newton’s law of motion to constrained mechanical systems possessing configuration manifolds with time dependent geometric properties,” *Nonlinear Dynamics*, Vol. 85, pp. 2583-2610, 2016.
- Paraskevopoulos, E. and Natsiavas, S., “Weak formulation and first order form of the equations of motion for a class of constrained mechanical systems,” *International Journal of Non-Linear Mechanics*, Vol. 77, pp. 208-22, 2015.
- Giagopoulos, D. and Natsiavas, S., “Dynamic Response and Identification of Critical Points in the Superstructure of a Vehicle using a Combination of Numerical and Experimental Methods,” *Experimental Mechanics*, Vol. 55, pp. 529-542, 2015.
- Natsiavas, S. and Paraskevopoulos, E., “A Set of Ordinary Differential Equations of Motion for Constrained Mechanical Systems,” *Nonlinear Dynamics*, Vol. 79, pp. 1911-1938, 2015.
- Paraskevopoulos, E. and Natsiavas, S., “On Application of Newton's Law to Mechanical Systems with Motion Constraints,” *Nonlinear Dynamics*, Vol. 72, pp. 455-475, 2013.
- Paraskevopoulos, E. and Natsiavas, S., “A New Look into the Kinematics and Dynamics of Finite Rigid Body Rotations using Lie Group Theory,” *International Journal of Solids and Structures*, Vol. 50, pp. 57-72, 2013.
- Valsamos, G., Sikelis, K. and Natsiavas, S., “Stochastic Dynamics and Fatigue Analysis of Large Scale Mechanical Models using Multilevel Substructuring,” *Proceedings of the Institution of Mechanical Engineers Part K: Journal of Multi-Body Dynamics*, Vol. 226, pp. 343-358, 2012.

- Papadimitriou, C., Ntotsios, E., Giagopoulos, D. and Natsiavas, S., “Variability of Updated Finite Element Models and their Predictions Consistent with Vibration Measurements,” *Structural Control and Health Monitoring*, Vol. 19, pp. 630-654, 2011.
- Theodosiou, C., Pournaras, A. and Natsiavas, S., “On Periodic Steady State Response and Stability of Filippov-Type Mechanical Models,” *Nonlinear Dynamics*, Vol. 66, pp. 355-376, 2011.
- Theodosiou, C., Sikelis, K. and Natsiavas, S., “Periodic Steady State Response of Large Scale Mechanical Models with Local Nonlinearities,” *International Journal of Solids and Structures*, Vol. 46, pp. 3565-3576, 2009.
- Theodosiou, C. and Natsiavas, S., “Dynamics of Finite Element Structural Models with Multiple Unilateral Constraints,” *International Journal of Non-Linear Mechanics*, Vol. 44, pp. 371-382, 2009.
- Georgiou, G. and Natsiavas, S., “Optimal Selection of Suspension Parameters in Large Scale Vehicle Models,” *Vehicle System Dynamics*, Vol. 47, pp. 1147-1166, 2009.
- Georgiou, G., Badarlis, A. and Natsiavas, S., “Modeling and Ride Dynamics of a Flexible Multibody Model of an Urban Bus,” *Proceedings of the Institution of Mechanical Engineers Part K: Journal of Multi-Body Dynamics*, Vol. 222, pp. 143-154, 2008.
- Metallidis, P., Stavrakis, I. and Natsiavas, S., “Parametric Identification and Health Monitoring of Complex Ground Vehicle Models,” *Journal of Vibration and Control*, Vol. 14, pp. 1021-1036, 2008.
- Papalukopoulos, C. and Natsiavas, S., “Nonlinear Biodynamics of Passengers Coupled with Quarter Car Models,” *Journal of Sound and Vibration*, Vol. 304, pp. 50-71, 2007.
- Papalukopoulos, C. and Natsiavas, S., “Dynamics of Large Scale Mechanical Models using Multi-level Substructuring,” *ASME Journal of Computational and Nonlinear Dynamics*, Vol. 2, pp. 40-51, 2007.
- Georgiou, G., Verros, G. and Natsiavas, S., “Multi-Objective Optimization of Quarter Car Models with a Passive or Semi-Active Suspension System,” *Vehicle System Dynamics*, Vol. 45, pp. 77-92, 2007.
- Giagopoulos, D. and Natsiavas, S., “Hybrid (Numerical-Experimental) Modeling of Complex Structures with Linear and Nonlinear Components,” *Nonlinear Dynamics*, Vol. 47, pp. 193-217, 2007.

- Giagopoulos, D., Salpistis, C. and Natsiavas, S., “Effect of Nonlinearities in the Identification and Fault Detection of Gear-Pair Systems,” *International Journal of Non-Linear Mechanics*, Vol. 41, pp. 213-230, 2006.
- Verros, G., Natsiavas, S. and Papadimitriou, C., “Design Optimization of Quarter Car Models with Passive and Semi-active Suspensions under Random Excitation,” *Journal of Vibration and Control*, Vol. 11, pp. 581-606, 2005.
- Goudas, I. and Natsiavas, S., “Nonlinear Dynamics of Engine Mechanisms with a Flexible Connecting Rod,” *Proceedings of the Institution of Mechanical Engineers Part K: Journal of Multi-Body Dynamics*, Vol. 218, pp. 67-80, 2004.
- Goudas, I., Stavrakis, I. and Natsiavas, S., “Dynamics of Slider-Crank Mechanisms with Flexible Supports and Non-ideal Forcing,” *Nonlinear Dynamics*, Vol. 35, pp. 205-227, 2004.
- Metallidis, P., Verros, G., Natsiavas, S. and Papadimitriou, C., “Fault Detection and Optimal Sensor Location in Vehicle Suspensions,” *Journal of Vibration and Control*, Vol. 9, pp. 337-359, 2003.
- Metallidis, P. and Natsiavas, S., “Linear and Nonlinear Dynamics of Reciprocating Engines,” *International Journal of Non-Linear Mechanics*, Vol. 38, pp. 723-738, 2003.
- Verros, G. and Natsiavas, S., “Ride Dynamics of Nonlinear Vehicle Models using Component Mode Synthesis,” *ASME Journal of Vibration and Acoustics*, Vol. 124, pp. 427-434, 2002.
- Verros, G. and Natsiavas, S., “Dynamics of Vehicles with Semi-active Suspensions Exhibiting Wheel Hop,” *Vehicle System Dynamics (Supplement)*, Vol. 35, pp. 135-148, 2001.
- Theodossiades, S. and Natsiavas, S., “On Geared Rotordynamic Systems with Oil Journal Bearings,” *Journal of Sound and Vibration*, Vol. 243, pp. 721-745, 2001.
- Theodossiades, S. and Natsiavas, S., “Periodic and Chaotic Dynamics of Motor-Driven Gear-Pair Systems with Backlash,” *Chaos, Solitons and Fractals*, Vol. 12, pp. 2427-2440, 2001.
- Theodossiades, S. and Natsiavas, S., “Nonlinear Dynamics of Gear-Pair Systems with Periodic Stiffness and Backlash,” *Journal of Sound and Vibration*, Vol. 229, pp. 287-310, 2000.



- Metallidis, P. and Natsiavas, S., "Vibration of a Continuous System with Clearance and Motion Constraints," *International Journal of Non-Linear Mechanics*, Vol. 35, pp. 675-690, 2000.
- Verros, G. and Natsiavas, S., "Forcing Induced Asymmetry on Dynamical Systems with Cubic Nonlinearities," *Journal of Sound and Vibration*, Vol. 233, pp. 279-295, 2000.
- Verros, G., Natsiavas, S. and Stepan, G., "Control and Dynamics of Quarter-Car Models with Dual-Rate Damping," *Journal of Vibration and Control*, Vol. 6, pp. 1045-1063, 2000.
- Natsiavas, S., Theodossiades, S. and Goudas, I., "Dynamic Analysis of Piecewise Linear Oscillators with Time Periodic Coefficients," *International Journal of Non-Linear Mechanics*, Vol. 35, pp. 53-68, 2000.
- Natsiavas, S. and Theodossiades, S., "Vibration of Thin Circular Spinning Rings," *The Shock and Vibration Digest*, Vol. 31, pp. 101-114, 1999.
- Natsiavas, S. and Verros, G., "Dynamics of Oscillators with Strongly Nonlinear Asymmetric Damping," *Nonlinear Dynamics*, Vol. 20, pp. 221-246, 1999.
- Natsiavas, S., Bouzakis, K.D. and Aichouh, P., "Dynamics of a Simplified Model in Metal Cutting with Nonlinear Friction," *Journal of the Balkan Tribological Association*, Vol. 5, pp. 83-93, 1999.
- Natsiavas, S. and Beck, J.L., "Almost Classically Damped Continuous Linear Systems," *ASME Journal of Applied Mechanics*, Vol. 65, pp. 1022-1031, 1998.
- Verros, G. and Natsiavas, S., "Self-Excited Oscillators with Asymmetric Nonlinearities and one-to-two Internal Resonance," *Nonlinear Dynamics*, Vol. 17, pp. 325-346, 1998.
- Natsiavas, S., "Stability of Piecewise Linear Oscillators with Viscous and Dry Friction Damping," *Journal of Sound and Vibration*, Vol. 217, pp. 507-522, 1998.
- Natsiavas, S. and Theodossiades, S., "Regular and Chaotic Forced Vibration of Thin Rotating Rings," *International Journal of Non-Linear Mechanics*, Vol. 33, pp. 843-855, 1998.
- Mitsi, S., Natsiavas, S. and Tsiafis, I., "Dynamics of Nonlinear Oscillators under Simultaneous Internal and External Resonances," *Nonlinear Dynamics*, Vol. 16, pp. 23-39, 1998.
- Chen, C.S., Natsiavas, S. and Nelson, H.D., "Coupled Lateral-Torsional Vibration of a Gear-Pair System Supported by a Squeeze Film Damper," *ASME Journal of Vibration and Acoustics*, Vol. 120, pp. 860-867, 1998.

- Natsiavas, S. and Metallidis, P., “External Primary Resonance of Self-Excited Oscillators with 1:3 Internal Resonance,” *Journal of Sound and Vibration*, Vol. 208, pp. 211-224, 1997.
- Natsiavas, S., Bouzakis, K.D. and Aichouh, P., “Free Vibration in a Class of Self-Excited Oscillators with 1:3 Internal Resonance,” *Nonlinear Dynamics*, Vol. 12, pp. 109-128, 1997.
- Chen, C.S., Natsiavas, S. and Nelson, H.D., “Stability Analysis and Complex Dynamics of a Nonlinear Geared Rotordynamic System,” *ASME Journal of Vibration and Acoustics*, Vol. 119, pp. 85-88, 1997.
- Natsiavas, S. and Tratskas, P., “On Vibration Isolation of Mechanical Systems with Nonlinear Foundations,” *Journal of Sound and Vibration*, Vol. 194, pp. 173-185, 1996.
- Natsiavas, S., Begley, C.J. and Peterson, P.J., “On the Seismic Behavior of Unanchored Liquid Containers,” *Transactions of ASME, Journal of Pressure Vessel Technology*, Vol. 118, pp. 257-264, 1996.
- Natsiavas, S., “Modal Interactions in Self-Excited Oscillators under External Primary Resonance,” *Journal of Sound and Vibration*, Vol. 184, pp. 261-280, 1995.
- Natsiavas, S., “On the Dynamics of Rings Rotating with Variable Spin Speed,” *Nonlinear Dynamics*, Vol. 7, pp. 345-363, 1995.
- Natsiavas, S., “Nonlinear Parametric Resonance of Spinning Rings,” *Journal of Sound and Vibration*, Vol. 184, pp. 93-109, 1995.
- Natsiavas, S., “Free Vibration of two Coupled Nonlinear Oscillators,” *Nonlinear Dynamics*, Vol. 6, pp. 69-86, 1994.
- Natsiavas, S., “Dynamics and Stability of Nonlinear Free Vibration of Thin Rotating Rings,” *International Journal of Non-Linear Mechanics*, Vol. 29, pp. 31-48, 1994.
- Natsiavas, S., “Dynamics of Multiple Degree of Freedom Oscillators with Colliding Components,” *Journal of Sound and Vibration*, Vol. 165, pp. 439-453, 1993.
- Natsiavas, S., “Vibration Absorbers for a Class of Self-Excited Mechanical Systems,” *Transactions of ASME, Journal of Applied Mechanics*, Vol. 60, pp. 382-387, 1993.
- Natsiavas, S., “Mode Localization and Frequency Veering in a Damped System with Dissimilar Components,” *Journal of Sound and Vibration*, Vol. 165, pp. 137-147, 1993.
- Natsiavas, S., “Steady State Oscillations and Stability of Nonlinear Dynamic Vibration Absorbers,” *Journal of Sound and Vibration*, Vol. 156, pp. 227-245, 1992.

- Natsiavas, S. and Gonzalez, H., “Vibration of Harmonically Excited Oscillators with Asymmetric Constraints,” *ASME Journal of Applied Mechanics*, Vol. 59, pp. 284-290, 1992.
- Yi, W. and Natsiavas, S., “Seismic Response of Unanchored Fluid-Filled Tanks using Finite Elements,” *ASME Journal of Pressure Vessel Technology*, Vol. 114, pp. 74-79, 1992.
- Natsiavas, S. and Hagler, L.B., “Modal Interaction and Bifurcations in Two-Degree-of-Freedom Duffing Oscillators,” *Nonlinear Dynamics*, Vol. 2, pp. 405-417, 1991.
- Natsiavas, S. and Nelson, H.D., “Elimination of Rigid Body Modes from Asymmetric Dynamical Systems,” *The International Journal of Analytical and Experimental Modal Analysis*, Vol. 6, pp. 1-11, 1991.
- Natsiavas, S., “Dynamics of Piecewise Linear Oscillators with van der Pol Type Damping,” *International Journal of Non-Linear Mechanics*, Vol. 26, pp. 349-366, 1991.
- Natsiavas, S., “Stability and Bifurcation Analysis for Oscillators with Motion Limiting Constraints,” *Journal of Sound and Vibration*, Vol. 141, pp. 97-102, 1990.
- Natsiavas, S., “On the Dynamics of Oscillators with Bilinear Damping and Stiffness,” *International Journal of Non-Linear Mechanics*, Vol. 25, pp. 535-554, 1990.
- Natsiavas, S., “Simplified Models for the Dynamic Response of Tall Unanchored Liquid Containers,” *ASME Journal of Pressure Vessel Technology*, Vol. 112, pp. 124-131, 1990.
- Natsiavas, S., “Periodic Response and Stability of Oscillators with Symmetric Trilinear Restoring Force,” *Journal of Sound and Vibration*, Vol. 134, pp. 315-331, 1989.
- Natsiavas, S., “An Analytical Model for Unanchored Fluid-Filled Tanks under Base Excitation,” *ASME Journal of Applied Mechanics*, Vol. 55, pp. 648-653, 1988.
- Natsiavas, S. and Babcock, C.D., “Behavior of Unanchored Fluid-Filled Tanks Subjected to Ground Excitation,” *ASME Journal of Applied Mechanics*, Vol. 55, pp. 654-659, 1988.
- Natsiavas, S. and Babcock, C.D., “Nonlinear Ground/Structure Interaction and Buckling of a Liquid-Filled Tank under Ground Excitation,” *Buckling of Structures*, (ed. I. Elishakoff et al.), Vol. 19, pp. 267-284, 1988.
- Natsiavas, S. and Babcock, C.D., “Buckling at the Top of a Fluid-Filled Tank During Base Excitation,” *ASME Journal of Pressure Vessel Technology*, Vol. 109, pp. 374-380, 1987.

**Referred Conference Proceedings Papers:**

- Koutras, E., Paraskevopoulos, E. and Natsiavas, S., “A general co-simulation framework based on a novel weak formulation at the interface level,” *3rd International Nonlinear Dynamics Conference NODYCON 2023*, Rome, Italy, 2023.
- Ntinopoulos, I., Paraskevopoulos, E. and Natsiavas, S., “Stability analysis for multibody systems subject to bilateral motion constraints,” *3rd International Nonlinear Dynamics Conference NODYCON 2023*, Rome, Italy, 2023.
- Koutras, E. Paraskevopoulos, E. and Natsiavas, S., “A general co-simulation framework based on a novel weak formulation at the interface level,” *ECCOMAS Thematic Conference on Multibody Dynamics*, Lisbon, Portugal, 2023.
- Koutras, E., Leila, F.M., Ribaric, A. and Natsiavas, S. “A new contact and road model for multi-body dynamic simulation of wheeled vehicles on soft-soil terrain,” *ECCOMAS Thematic Conference on Multibody Dynamics*, Lisbon, Portugal, 2023.
- Ntinopoulos, I., Paraskevopoulos, E. and Natsiavas, S., “Dynamics of linear structural systems subject to linear constraints,” *EURODYN 2023, XII International Conference on Structural Dynamics*, Delft, Netherlands, 2023.
- Paraskevopoulos, E., Passas, P. and Natsiavas, S., “Time integration of multibody systems with frictional impacts using a return map to non-flat configuration manifolds,” *10<sup>th</sup> European Nonlinear Oscillations Conference (ENOC 2020)*, Lyon, France, 2022.
- Koutras, E., Paraskevopoulos, E. and Natsiavas, S., “A new co-simulation approach for mechanical systems with nonlinear components,” *10<sup>th</sup> European Nonlinear Oscillations Conference (ENOC 2020)*, Lyon, France, 2022.
- Natsiavas, S., Passas, P. and Paraskevopoulos, E., “A geometric time-stepping method for multibody systems with frictional impacts,” *8th International Conference on Nonlinear Vibrations, Localization and Energy Transfer (NNM2021)*, Ascona, Switzerland.
- Natsiavas, S., Passas, P. and Paraskevopoulos, E., “Dynamics of multibody systems with nonholonomic constraints,” *10th International Congress on Computational Mechanics (GRACM)*, Athens, Greece, 2021.
- Koutras, E., Paraskevopoulos, E. and Natsiavas, S., “A new co-simulation approach for mechanical systems,” *International Symposium on Co-Simulation and Solver Coupling in Dynamics (COSIM 2021)*, Ferrol, Spain, 2021.
- Natsiavas, S., Passas, P. and Paraskevopoulos, E., “A novel time-stepping method for multibody systems with frictional impacts,” *2nd International Nonlinear Dynamics Conference NODYCON 2021*, Rome, Italy, 2021.

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- Natsiavas, S., “Dynamics of mechanical multibody systems with motion constraints,” *EURODYN 2020, X International Conference on Structural Dynamics*, Athens, Greece, 2020.
- Paraskevopoulos, E., Passas, P. and Natsiavas, S., “A new time integration scheme in multibody dynamics involving frictional impact based on a return map to non-flat configuration manifolds,” *EURODYN 2020, X International Conference on Structural Dynamics*, Athens, Greece, 2020.
- Lialios D., Karaoulanis, F. and Natsiavas, S., “Aspects of co-simulating dynamical systems consisting of baler belts and agricultural material,” *12th HSTAM International Congress on Mechanics*, Thessaloniki, Greece, 2019.
- Paraskevopoulos, E. and Natsiavas, S., “A new time stepping scheme for multibody systems with impact and friction,” *12th HSTAM International Congress on Mechanics*, Thessaloniki, Greece, 2019.
- Natsiavas, S. and Paraskevopoulos, E., “Dynamics of multibody systems with impact and friction using theory of manifolds with a boundary,” *12th HSTAM International Congress on Mechanics*, Thessaloniki, Greece, 2019.
- Natsiavas, S. and Paraskevopoulos, E., “Dynamics of multibody mechanical systems subject to a frictional impact based on a boundary layer theory,” *14th International Conference on Vibration Problems (ICOVP 2019)*, Crete, Greece, 2019.
- Natsiavas, S., “On the dynamics of mechanical systems subject to motion constraints,” *14th International Conference on Vibration Problems (ICOVP 2019)*, Crete, Greece, 2019.
- Paraskevopoulos, E., Stefanidou, S.P. and Natsiavas, S., “A novel approach for the analysis of a coupled train-railway bridge: basic principles and methodology,” *7th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2019)*, Crete, Greece, 2019.
- Potosakis, N., Paraskevopoulos, E. and Natsiavas, S., “Nonlinear dynamics of multibody systems using an augmented Lagrangian formulation,” *1st International Nonlinear Dynamics Conference NODYCON 2019*, Rome, Italy, 2019.

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- Potosakis, N., Paraskevopoulos, E. and Natsiavas, S., “An augmented Lagrangian approach for multibody dynamics based on a three field weak formulation,” *IUTAM Symposium ‘Exploiting Nonlinear Dynamics for Engineering Systems’ ENOLIDES*, Novi Sad, Serbia, 2018.
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- Natsiavas, S. and Babcock, C.D., “Buckling at the Top of a Fluid-Filled Tank During Base Excitation,” *5th National Congress of ASME on PVP Technology*, San Diego, California, 1987.

**Papers Presented at Meetings:**

1. Natsiavas, S., “Application of boundary layer theory to multibody systems involving impact and friction,” *Shechtman–Suresh Convocation & Honorary Symposium*, Aristotle University, Thessaloniki, Greece, 2018.
2. Natsiavas, S., “A boundary layer approach for mechanical systems with frictional contacts,” *7th Symposium of the European Network for Nonsmooth Dynamics*, Stuttgart, Germany, 2018.

3. Natsiavas, S. and Paraskevopoulos, E., "On a consistent application of Newton's law to mechanical systems with equality motion constraints," *9th Greek-German-Polish Conference on Mechanics*, Kolymbari-Chania, Greece, 2016.
4. Natsiavas, S., "On a consistent application of Newton's law to mechanical systems with motion constraints," *Investigating Dynamics in Engineering and Applied Science*, Budapest, Hungary, July 3-5, 2014.
5. Natsiavas, S., Valsamos, G. and Sikelis, K., "Stochastic Response and Fatigue Analysis of Large Scale Mechanical Models using Multi-Level Dynamic Substructuring," *4th CAE PhilonNet Conference "Driving Innovation with Simulation,"* Athens, Greece, 2010.
6. Natsiavas, S., Georgiou, G. and Valsamos, G., "Multibody Dynamics and Fatigue of a City Bus Model," *3rd CAE PhilonNet Conference "Driving Innovation with Simulation,"* Athens, Greece, 2009.
7. Natsiavas, S., "Vehicle Dynamics," *TechNet Alliance Fall Meeting 2008*, Darmstadt, Germany, 2008.
8. Theodosiou, C., Sikelis, K. and Natsiavas, S., "Periodic Steady State Response of Complex Finite Element Structural Models using Multi-level Substructuring," *First SIMULIA Users Conference*, Athens, Greece, 2008.
9. Giagopoulos, D. and Natsiavas, S., "DYNAMIS: A new Solver for Linear and Nonlinear Finite Element Models," *2nd ANSA &  $\mu$ ETA International Congress*, Halkidiki, Greece, 2007.
10. Giagopoulos, D., Metallidis, P. and Natsiavas, S., "Hybrid Modeling of Complex Structures Involving Nonlinear Components," *Eleventh Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 2006.
11. Papalukopoulos, C. and Natsiavas, S., "Driver Biodynamics Coupled with Dynamics of Large Scale Vehicle Models," *Third International Conference on Whole-Body Vibration Injuries*, Nancy, France, 2005.
12. Papalukopoulos, C., Giagopoulos, D. and Natsiavas, S., "Comparison of Substructuring Methodologies in Large Scale Mechanical Models," *MSC.Software Users Conference*, Athens, Greece, 2004.
13. Giagopoulos, D., Salpistis, C. and Natsiavas, S., "Effect of Nonlinearities in the Identification and Fault Detection of Geared Systems," *Tenth Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 2004.

14. Metallidis, P., Goudas, I., Stavrakis, I. and Natsiavas, S., "On Periodic Response and Stability of Multibody Systems," *Tenth Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 2004.
15. Goudas, I., Metallidis, P., Stavrakis, I. and Natsiavas S., "Dynamics of Engine Mechanisms with Flexible Members and Bearings," *Fifth EUROMECH Solid Mechanics Conference*, Thessaloniki, Greece, 2003.
16. Giagopoulos, D., Papalukopoulos, C., Salpistis, C. and Natsiavas, S., "Parametric Identification of Systems with Piecewise Linear Characteristics," *Fifth EUROMECH Solid Mechanics Conference*, Thessaloniki, Greece, 2003.
17. Theodosiou, C., Verros, G. and Natsiavas S., "Dynamics of Oscillators with Strongly Nonlinear Damping," *Fourth European Nonlinear Oscillations Conference*, Moscow, Russia, 2002.
18. Giagopoulos, D., Salpistis, S. and Natsiavas S., "Stochastic Road Excitation of Vehicle Models with Nonlinear Suspensions," *Ninth Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 2002.
19. Theodosiou, C., Aichouh, P., Natsiavas, S. and Papadimitriou, C., "Reliability Analysis of Unanchored Fluid-Filled Tanks Subjected to Base Excitation," *EUROMECH Colloquium on Nonlinear Dynamics, Control and Condition Monitoring*, Aberdeen, Scotland, 2001.
20. Metallidis, P., Verros, G., Natsiavas, S. and Papadimitriou, C., "Fault Detection in Vehicles with Nonlinear Suspension Characteristics," *Mechanics and Materials 2001 Conference*, San Diego, California, 2001.
21. Verros, G. and Natsiavas, S., "Nonlinear Dynamics of Large Order Vehicle Models," *Fourth EUROMECH Solid Mechanics Conference*, Metz, France, 2000.
22. Theodossiades, S. and Natsiavas, S., "Dynamics of Motor-Driven Gear-Pair Systems," *Eighth Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 2000.
23. Natsiavas, S., Vaklavas, G. and Verros, G., "Dynamics and Control of Vehicles with Dual-Rate Suspension Dampers," *ICTAM 2000*, Chicago, Illinois, 2000.
24. Natsiavas, S., "Effect of Dry Friction in Mechanical Processes," *COST Action P4 Workshop*, Budapest, Hungary, 1999.
25. Metallidis, P. and Natsiavas, S., "Vibration of a Flexible Rod with Clearance and Motion Limiting Constraints," *3rd European Nonlinear Oscillations Conference*, Copenhagen, Denmark, 1999.

26. Verros, G, Natsiavas, S. and Stepan, G., "Dynamics of a Quarter-Car Model with Semi-Active Suspension," *3rd European Nonlinear Oscillations Conference*, Copenhagen, Denmark, 1999.
27. Metallidis, P. and Natsiavas, S., "Exact Periodic Response and Stability of a Continuous Mechanical Oscillator with Clearance and Impacts," *ASME Mechanics and Materials Conference*, Blacksburg, Virginia, 1999.
28. Natsiavas, S., "Nonlinear Dynamics and Vibration of Metal Cutting Processes," *COST Action P4 Workshop*, Dortmund, Germany, 1998.
29. Natsiavas, S. and Verros, G., "Effect of Suspension Nonlinearities on Vehicle Dynamics," *Computational Mechanics Conference*, Miskolc, Hungary, 1998.
30. Theodossiades, S., Goudas, I. and Natsiavas, S., "Response and Stability of Piecewise Linear Oscillators under Parametric and External Excitation," *Seventh Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 1998.
31. Verros, G. and Natsiavas, S., "Dynamics of Self-Excited Oscillators with 1:2 Internal Resonance," *Seventh Conference on Nonlinear Vibrations, Stability and Dynamics of Structures*, Blacksburg, Virginia, 1998.
32. Natsiavas, S. and Theodossiades, S., "Nonlinear Forced Vibration of Rotating Circular Rings," *Third EUROMECH Solid Mechanics Conference*, Stockholm, Sweden, 1997.
33. Natsiavas, S., "Elimination of Combination Resonances in Mechanical Systems with Nonlinear Stiffness," *EUROMECH Colloquium on Methods for Nonlinear Stochastic Structural Dynamics*, Innsbruck/Ingl, Austria, 1995.
34. Natsiavas, S. and Tratskas, P., "Vibration Isolation of Mechanical Systems Resting on Foundations with Nonlinear Characteristics," *European Mechanics Colloquium on Bifurcation and Chaos in Solid and Structural Dynamics*, L'Aquila, Italy, 1994.
35. Natsiavas, S., "Global Dynamics and Stability of Nonlinear Rings Rotating with Variable Spin Speed," *12th US National Congress of Applied Mechanics*, Seattle, Washington, 1994.
36. Natsiavas, S., "Dynamics and Stability of Nonlinear Free Vibration of Rotating Rings," *1st European Nonlinear Oscillations Conference*, Hamburg, Germany, 1993.
37. Natsiavas, S., "Vibration Absorbers for a Class of Self-Excited Mechanical Systems," *1st Joint ASME-ASCE-SES Meeting*, Charlottesville, Virginia, 1993.
38. Natsiavas, S., "Local Bifurcations and Modal Interactions in a Mechanical Model of Metal Cutting," *Dynamics Days*, Tempe, Arizona, 1993.

39. Begley, C.J. and Natsiavas, S., "Nonlinear Response Spectra of Unanchored Liquid Storage Tanks," *Dynamics Days*, Tempe, Arizona, 1993.
40. Natsiavas, S., "Free Vibration of a Class of Coupled Nonlinear Oscillators," *Fourth Conference on Nonlinear Vibrations, Stability and Dynamics of Structures and Mechanisms*, Blacksburg, Virginia, 1992.
41. Natsiavas, S., "Free Vibration of two Coupled Nonlinear Oscillators," *Fourth Conference on Nonlinear Vibrations of Structures and Mechanisms*, Blacksburg, Virginia, 1992.
42. Natsiavas, S., "Forced Response of a van der Pol Oscillator Coupled with a Duffing Oscillator," *ASME Summer Annual Meeting*, Scottsdale, Arizona, 1992.
43. Natsiavas, S. and Gonzalez, H., "Vibration of Harmonically Excited Oscillators with Asymmetric Constraints," *ASME Winter Annual Meeting*, Atlanta, Georgia, 1991.
44. Natsiavas, S., "Periodic and Chaotic Response of Harmonically Excited Piecewise Linear Oscillators," *International Conference on Mechanics, Physics and Structures*, Thessaloniki, Greece, 1991.
45. Natsiavas, S. and Hagler, L.B., "Modal Interaction and Bifurcations in two Degree of Freedom Duffing Oscillators," *Third Conference on Nonlinear Vibrations of Structures and Mechanisms*, Blacksburg, Virginia, 1990.
46. Natsiavas, S., "Dynamics of Harmonically Excited Piecewise Linear Oscillators," *11th U.S. National Congress of Applied Mechanics*, Tucson, Arizona, 1990.
47. Natsiavas, S., "Periodic Response and Stability of Piecewise Linear Oscillators," *3rd Joint ASME/ASCE Mechanics Conference*, San Diego, California, 1989.
48. Natsiavas, S., "An Analytical Model for Unanchored Fluid-Filled Tanks under Base Excitation," *ASME Winter Annual Meeting*, Chicago, Illinois, 1988.
49. Natsiavas, S. and Babcock, C.D., "Behavior of Unanchored Fluid-Filled Tanks Subjected to Ground Excitation," *ASME Winter Annual Meeting*, Chicago, Illinois, 1988.
50. Natsiavas, S. and Babcock, C.D., "Top Buckling of Fluid-Filled Tanks During Ground Excitation," *10th U.S. National Congress of Applied Mechanics*, Austin, Texas, 1986.

#### **Other Technical Reports**

1. Natsiavas, S., "Seismic Response of Unanchored Liquid Containers," Technical Report to NSF, Aristotle University, Thessaloniki, Greece, 1994.
2. Fan, G.W. and Natsiavas, S., "Prediction of Steady State Response of Gear Systems Involving Torsional Resonances," Technical Report to Allied Signal Company, Arizona State University, Tempe, Arizona, 1992.

3. Natsiavas, S., "Response and Failure of Fluid-Filled Tanks under Base Excitation," *Ph.D. Thesis*, GALCIT SM Report 86-26, Caltech, Pasadena, California, 1987.
4. Butler, T.A., Bennett, J.G., Babcock, C.D. and Natsiavas, S., "Response of Seismic Category I Tanks to Earthquake Excitation," U.S. Nuclear Regulatory Commission, NRC FIN A7287, 1986.
5. Knauss, W.G., Natsiavas, S. and Rosakis, A.J., "Failure of Discrete Wire Reinforced Composites," GALCIT SM Report 83-8, Caltech, Pasadena, California, 1983.

**Selected Funded Research Projects:**

1. "Application of artificial intelligence and machine learning in Multibody dynamics," Altair Engineering Inc., USA (2022 – 2024).
2. "Dynamics of mechanical models with journal bearings and planetary gears," Altair Engineering Inc., USA (2021 – 2022).
3. "Development of an interface between AirSim and HyperWorks for autonomous vehicles," Altair Engineering Inc., USA (2020 – 2021).
4. "Tire-soil interaction models for off-road wheeled vehicles with pneumatic or rigid tires," Altair Engineering Inc., USA (2019 – 2020).
5. "Cosimulation of codes based on discrete element methods and flexible multibody dynamics," Altair Engineering Inc., USA (2017 – 2019).
6. "Higher level modeling elements for the general machinery industry," Altair Engineering Inc., USA (2015 – 2017).
7. "Development of a robust and accurate library of 2D and 3D analytical contact models," Altair Engineering Inc., USA (2013 – 2015).
8. "Numerical Evaluation and Measurement of Stresses in City Bus ELVO B9L," EABO AEBE (2012 – 2013).
9. "Dynamic Response and Stress Evaluation of a Large Military Towed Vehicle," METKA S.A. (2010 – 2011).
10. "Dynamics of a Finite Element Gear-Pair Model," AISIN AW (2010 – 2011), Japan.
11. "Erasmus Mundus Master Course – Turbomachinery Aeromechanics University Training (THRUST), Education, Audiovisual and Culture Executive Agency - European Commission (2009-2014).
12. "Numerical and Experimental Investigation on the Vibrational Response of the Anti-pollution System of a Ground Vehicle," Greek Ministry of Education (2011 – 2012).

13. "Calculation and Measurement of Stresses in a New Military Vehicle of the Hellenic Vehicle Industry," ELBO AEBE (2009 – 2010).
14. "Measurement of Stresses in an Aluminum Frame of a Truck," DOUNAS ABEE – STATHIS (2008 – 2009).
15. "Stress and Buckling Analysis of a Hydraulic Home Elevator with Multiple Stops," DOPPLER AEBE (2008 – 2009).
16. "Numerical Evaluation and Measurement of Stresses in the Frame Structure of a Military Vehicle of the Hellenic Vehicle Industry," ELBO AEBE (2007 – 2008).
17. "Dynamic Response and Optimum Design of the Structural Frame of a City Bus," Greek Ministry of Development, PENED 2003 (2005 - 2008).
18. "Development and Application of Multi-Objective Optimization Methodologies in Vehicle Dynamics," Greek Ministry of Education, Research Program Pythagoras (2004 - 2006).
19. "Transient and Steady State Vibration of Flexible Multibody Systems," Greek Ministry of Education, Heraclitus: Program on Fundamental Research (2002 - 2005).
20. "Vibration Identification and Fault Detection in Geared Systems Supported on Bearings with Rolling Elements," Greek Ministry of Development, PENED 2001 (2003 - 2005).
21. "Measurement of Stresses and Strains in the Frame Structure of a Commercial City Bus," Sarakakis AEBE (2002 - 2003).
22. "Design and Construction of a new Jeep for the Hellenic Vehicle Company," Euroconsultants (2000 - 2002).
23. "Parametric Modal Identification and Fault Detection in Critical Safety Structures," Greek Ministry of Development, PENED 99 (1999 - 2001).
24. "Component Mode Synthesis of Analytical and Experimental Data in Vehicle Dynamics," BETA CAE Systems USA, Inc. (1999 - 2001).
25. "Prediction and Reduction of Vibration Levels in Ground-Supported Structures Subjected to Earthquake Excitation," Greek Ministry of Development, Joint Greek-Italian Research and Technology Program (1999 - 2001).
26. "NVH Simulation of a four Cylinder in-line Vehicle Engine," AVL List GmbH, Austria (2000 - 2001).
27. "Fault Detection in a Gear-Box of a Large Ship," Mayflower Shipmanagement Corporation (2000).
28. "Vibration and Acoustic Behavior of a 6-cylinder V-type Engine," LASSO Ingenieur Gesellschaft mbH, Germany (1998 - 1999).



29. "Effects of Suspension Nonlinearities on the Dynamic Behavior of Ground Vehicles," Greek Ministry of Development, Joint Greek-Hungarian Research and Technology Program (1997 - 1999).
30. "Seismic Response of Liquid Storage Tanks," National Science Foundation, USA (1992 - 1994).
31. "Prediction of Steady-State Response of Epicyclic Gear Systems Involving Torsional Resonances," Allied-Signal Company, Garrett Engine Division, USA (1991 - 1992).
32. "Effect of a Damper Ring on Gear Dynamics," Allied-Signal Company, Garrett Engine Division, USA (1990 - 1991).
33. "Wave Propagation Resulting from Vehicular Traffic," Superconducting Super Collider for Arizona, USA (1988).
34. "Finite Element Modeling of Unanchored Liquid Containers," Faculty Grant-In-Aid Award, ASU, USA (1988 - 1990).

## **TEACHING EXPERIENCE**

### **Undergraduate Courses:**

1. Mechanical Vibrations (Course and Laboratory, ASU).
2. Engineering Mechanics: Dynamics (ASU).
3. Machine Dynamics and Vibrations (Course and Laboratory, AUTH).
4. Engineering Mechanics: Dynamics (AUTH).
5. Statics and Strength of Materials (University of Thessaly).
6. Engineering Mechanics I: Statics (University of Thessaly).
7. Structural Dynamics (AUTH).
8. Numerical Methods in Dynamics and Vibrations (AUTH).
9. Experimental Methods in Vibration (AUTH).
10. Flexible Multibody Dynamics (AUTH).

### **Graduate Courses:**

1. Mechanics of Structures and Solids (Caltech)
2. Theory of Elasticity (ASU).
3. Dynamics of Discrete Systems (ASU).
4. Solid Mechanics (ASU).
5. Dynamics and Vibrations (ASU).
6. Structural Dynamics (ASU).

7. Nonlinear Oscillations (ASU).

**Graduate Students Supervised:**

1. Klenke, Scott, "Vibration Isolation of Mechanical Systems with Nonlinear Stiffness or Damping," *M.S. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, July 1989.
2. Yi, Wei, "Finite Element Modeling of Unanchored Liquid Containers," *M.S. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, September 1989.
3. Gonzalez, Hector, "Dynamic Behavior of Piecewise Linear Asymmetric Oscillators," *M.S. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, December 1989.
4. Hagler, Lisle, "Modal Interaction in Nonlinear two Degree of Freedom Oscillators," *M.S. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, May 1990.
5. Begley, Christopher, "Base Isolation of Uplifting Liquid Containers," *M.S. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, July 1993.
6. Waltho, Jim, "Metal Cutting Chatter," *MSE Thesis*, Department of Mechanical and Aerospace Engineering, ASU, May 1994.
7. Chen, Chin-Shong, "Coupled Lateral Torsional Vibration of Geared Rotor-Bearing Systems," *Ph.D. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, July 1993.
8. Peterson, Peter, "Analysis of the Response of Unanchored Fluid-Filled Tanks using a Finite Element Software Package," *M.S. Thesis*, Department of Mechanical and Aerospace Engineering, ASU, December 1994.
9. Theodossiades, S., "Nonlinear Dynamics of Geared Rotordynamic Systems," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, April 2000.
10. Verros, G., "Dynamics, Optimum Selection of Suspension Parameters and Control of Ground Vehicles with Nonlinear Characteristics," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2003.
11. Metallidis, P., "Direct Determination of Steady State Vibration, Identification and Fault Detection in Nonlinear Vehicle Models," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2004.
12. Goudas, I., "Automatic Generation and Numerical Integration of Equations of Motion of Flexible Multibody Systems," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2004.

13. Papalukopoulos, C., "Dynamics of Large Scale Vehicle Systems Coupled with Biodynamic Models," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2006.
14. Giagopoulos, D., "Parametric Modal Identification and Fault Detection in Critical Safety Structures using Experimental Data," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2006.
15. Stavrakis, I., "Numerical Determination of Transient and Steady State Response of Flexible Multibody Systems," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2007.
16. Theodosiou, C., "Direct Determination of Periodic Response of Large Scale Dynamical Systems with Continuous and Discontinuous Nonlinear Characteristics," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2008.
17. Sikelis, K., "Application of Parallel Processing Procedures to Vibration of Large Order Structural Systems," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2009.
18. Georgiou, G., "Dynamics and Multi-objective Optimization of Multi-body Systems," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2010.
19. Valsamos, G., "Dynamic and Fatigue Analysis of a Large Scale Finite Element Model of an Urban Bus," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2010.
20. Iakovidis, A., "Numerical Determination of Response of Large Scale Dynamical Systems Involving Contacts and Friction," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2012.
21. Pournaras, A., "Numerical Determination of Contact Force and Dynamic Response of Mechanical Systems with Contact and Friction," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2016.
22. Potosakis, N., "A Consistent Numerical Evaluation of the Dynamic Response of Mechanical Systems with Multiple Members," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2017.
23. Passas, P., "A Geometric Solution of the Dynamics of Multibody Mechanical Systems with Bilateral and Unilateral Motion Constraints," *Ph.D. Thesis*, Department of Mechanical Engineering, Aristotle University, 2022.
24. Ntinopoulos, I., "On Dynamics of Large Scale Flexible Multibody Systems," Ph.D. Candidate.

25. Koutras, E., "Cosimulation and Solver Coupling in Dynamics of Complex Mechanical Systems," Ph.D. Candidate.

## **PROFESSIONAL AND SCIENTIFIC SERVICE**

**Topical Associate Editor** (machine dynamics and multibody dynamic systems) of *Nonlinear Dynamics* (2022-).

**Associate Editor** of the *ASME Journal of Computational and Nonlinear Dynamics* (2014-2017).

**Associate Editor** of the *Journal of Vibration and Control* (2014-2017).

**Associate Editor** of the *ASME Journal of Vibration and Acoustics* (2004-2011).

**Member of the Editorial Board** of the *International Journal of Solids and Structures* (since 2007).

**Member of the Editorial Board** of the *International Journal of Non-linear Mechanics* (since 2003).

**Member of the Editorial Board** of the *Journal of Multi-Body Dynamics* (since 2002).

**Member of the Editorial Board** of the *Journal of Vibration and Control* (since 1999).

**Member of the** *EUROMECH Nonlinear Oscillations Conference Committee* (2005-2011).

**Member of the** *ASME Technical Committee on Vibration and Sound*.

**Reviewer** of the Italian Evaluation of Research Quality Framework (VQR 2004-2010).

**National Representative** in the Management Committee of COST P4 Action "Nonlinear Dynamics in Mechanical Processing," Directorate General XII, European Commission.

**International Representative** in the *18th Biennial ASME Conference on Mechanical Vibration and Noise*, Pittsburgh, Pennsylvania, 2001.

**International Representative** in the *17th Biennial ASME Conference on Mechanical Vibration and Noise*, Las Vegas, Nevada, 1999.

**Organizer** of the Symposium on "Nonlinear Phenomena in Mechanical and Structural Systems," *10th European Nonlinear Dynamics Conference (ENOC)*, Lyon, France, 2020.

**Organizer** of the Symposium on "Advances in Computational Dynamics of Structures," *XI International Conference on Structural Dynamics (EURODYN 2020)*, Athens, Greece, 2020.

**Organizer** of the Symposium on "Advances in Theoretical and Computational Multibody Dynamics," *12th HSTAM International Congress on Mechanics*, Thessaloniki, Greece, 2019.

**Organizer** of the Symposium on "Advances in Computational Dynamics of Structures," *X International Conference on Structural Dynamics (EURODYN 2017)*, Rome, Italy, 2017.

**Organizer** of the Symposium on “Nonlinear Phenomena in Mechanical and Structural Systems,” *9th European Nonlinear Dynamics Conference (ENOC)*, Budapest, Hungary, 2017.

**Organizer** of the Symposium on “Modelling and Inverse Methods in Nonlinear Dynamical Systems,” *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS Congress)*, Crete Island, Greece, 2016.

**Organizer** of the Symposium on “Nonlinear Phenomena in Mechanical and Structural Systems,” *8th European Nonlinear Dynamics Conference (ENOC)*, Vienna, Austria, 2014.

**Organizer** of the Symposium on “Nonlinear Phenomena in Mechanical and Structural Systems,” *7th EUROMECH Nonlinear Dynamics Conference*, Rome, Italy, 2011.

**Organizer** of the Symposium on “Nonlinear Dynamics of Mechanical Systems with Impacts and Friction,” *21th Biennial ASME Conference on Mechanical Vibration and Noise*, San Diego, California, 2009.

**Organizer** of the Symposium on “Nonlinear Dynamics and Characterization of Distributed Parameter Systems,” *6th EUROMECH Nonlinear Dynamics Conference*, Saint Petersburg, Russia, 2008.

**Organizer** of the Symposium on “Nonlinear Dynamics, Optimization and Reliability of Mechanical Systems,” *20th Biennial ASME Conference on Mechanical Vibration and Noise*, Las Vegas, Nevada, 2007.

**Organizer** of the Symposium on “Structural and Vehicle Dynamics,” *6th EUROMECH Solid Mechanics Conference*, Budapest, 2006.

**Organizer** of the Symposium on “Nonlinear Dynamics, Optimization and Reliability of Mechanical Systems,” *20th Biennial ASME Conference on Mechanical Vibration and Noise*, Long Beach, California, 2005.

**Organizer** of the Symposium on “Nonlinear Dynamics of Distributed-Parameter Systems,” *5th EUROMECH Nonlinear Dynamics Conference*, Eindhoven, Netherlands, 2005.

**Organizer** of the Symposium on “Dynamics and Stability of Systems with Discontinuous Characteristics,” *19th Biennial ASME Conference on Mechanical Vibration and Noise*, Chicago, Illinois, 2003.

**Organizer** of the Symposium on “Vibration, Identification and Control of Dynamical Systems,” *5th EUROMECH Solid Mechanics Conference*, Thessaloniki, 2003.

**Organizer** of the Symposium on “Dynamics and Stability of Systems with Discontinuous Characteristics,” *18th Biennial ASME Conference on Mechanical Vibration and Noise*, Pittsburgh, Pennsylvania, 2001.

**Organizer and Chairman** of the Symposium on “Nonlinear Structural Dynamics,” *ASME Summer Annual Meeting*, Scottsdale, Arizona, 1992.

**Member of the Scientific Committee** in several Engineering Conferences and Workshops.

**Speaker** of Plenary Lectures and **Chairman** of technical sessions in numerous Engineering Conferences.

Served repeatedly as **Technical Reviewer** in several Journals, as well as for many Conference papers.