CURRICULUM VITAE MICHAEL C. CONSTANTINOU

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CURRENT AFFILIATION:

Samuel P. Capen Professor and SUNY Distinguished Professor, Department of Civil, Structural and Environmental Engineering, University at Buffalo, State University of New York

EDUCATION:

Diploma in Civil Engineering (5 year course), University of Patras, 1980

M.S., Rensselaer Polytechnic Institute, Troy, N.Y., 1981

Ph.D. in Civil Engineering, Rensselaer Polytechnic Institute, Troy, N.Y., 1984

ACADEMIC POSITIONS

Assistant Professor, Dept. of Civil Engineering, Drexel University, Philadelphia, PA, 1984 to 1987.

Assistant Professor, Department of Civil Engineering, University at Buffalo, State University of New York, 1987 to 1989.

Associate Professor, Department of Civil Engineering, University at Buffalo, State University of New York, 1989 to 1994.

Director of Graduate Studies, Department of Civil Engineering, University at Buffalo, State University of New York, 1990 to 1992.

Professor, Department of Civil, Structural and Environmental Engineering, University at Buffalo, State University of New York, 1994 to present.

SUNY Distinguished Professor, Department of Civil, Structural and Environmental Engineering, University at Buffalo, State University of New York, 2014 to present.

Samuel P. Capen Professor, 2016-present.

Director or Deputy Director, Structural Engineering and Earthquake Simulation Laboratory, University at Buffalo, State University of New York, 1997 to 2004 and 2010 to 2014.

Chair, Department of Civil, Structural and Environmental Engineering, University at Buffalo, State University of New York, 1999 to 2005.

PROFESSIONAL POSITIONS AND CONSULTING:

Engineer, B. Schwartz and Associates, Plymouth Meeting, PA, 1984.

Consultant on analysis and design of structures with emphasis on seismic protective systems design, analysis, inspection, testing and peer review, 1984-today.

Consulted on the following projects: Mesologgi Hospital, Greece; Corinth Canal Bridges, Greece; LNG Tanks, Greece; U.S. Court of Appeals building, San Francisco; San Bernardino County Medical Center Replacement Project; Queensboro Bridge, NY; ISP Chemicals Tanks, Kentucky; University Bridge, Seattle; San Francisco Airport International Terminal; Corinth Canal Railway Bridge, Greece; Rion-Antirion Cable-Stayed Bridges, Greece; Caltrans SRMD Test Facility; JFK Roadways, NY; Beijing Railway Station, China; Hearst Mining Building, Berkeley; Rion-Antirion Approach Viaduct, Greece; Santa Clara Police Facility, CA; Yerba Buena Tower, San Francisco; 196th Street Bridge, Seattle; Woodrow-Wilson Bridge, Washington, D.C; Ataturk International Airport Terminal, Istanbul, Turkey; Pasadena City Hall, CA; Ingram Micro Building, Santa Ana, CA; AboveNet Building, San Francisco, CA; Univ. Avenue Building, Palo Alto, CA; Bolu Viaduct, Turkey; Museum of the Acropolis, Greece; SouthBay Tower, San Jose, CA; Onassis Center, Greece; CYTA Central Building, Cyprus; Shemya Radar Facility, Alaska; Ashley Phosphate and US 52 Bridges, Charleston, SC; Kourion Structures, Cyprus; Centre Administratif Pictet-Acacias, Switzerland; Orlan Oil and Gas Platform (ExxonMobil), Russia; Piltun Oil and Gas Platform (Shell), Russia; Lunskoye Oil and Gas Platform (Shell), Russia; Willamette River Bridge, Oregon; New de Young Museum, San Francisco, CA; Oakland Cathedral, Oakland, CA, Baha'i Temple, Chile; Tarabya Hotel, Turkey; Nordstrom South Coast Plaza, Costa Mesa, CA; LNG Tanks, Long Beach, CA; CYTA Building Retrofit Program, Cyprus; George Washington Bridge, WA; Mills Peninsula Hospital, Burlingame, CA; Statue of Hermes, Greece; CPMC Hospital, San Francisco, CA; Washington Hospital, Fremont, CA; Olympic Committee Building, Cyprus; Dafni Railway Bridge, Greece; Erzurum Hospital, Turkey; 11th Avenue Bridge, NYC; Limassol Public Library, Cyprus; Riviere des Prairies Bridge, Montreal, Canada; Jin Nam 3rd Bridge, Korea; New Yang Soo Grand Bridge, Korea; Gangdong Grand Bridge, Korea; University Building, Cyprus; Heyder Aliyev Cultural Center, Baku, Azerbaijan; San Francisco General Hospital, San Francisco, CA; Throgs Neck Bridge, NY; Kimpo Airport, Korea; Kyung Ho River 1st, 2nd and 6th Bridges, Korea; Hang Jyung Bridge, Korea; Ansungchun Bridge, Korea; Namgang Bridge, Korea; Watan Bridge, Korea; Sojung Grand Bridge, Korea; Hongsunwasan Bridge, Korea; Arkuntun-Dagi Oil and Gas Platform (ExxonMobil), Russia; Monroe County Crime Lab, Rochester, NY; Stanford University Hospital, CA; San Bernardino Courthouse, CA; Electricity Authority Building, Pafos, Cyprus; New Janhowon Bridge, Korea; Daesung Bridge, Korea; Galchun 2nd Bridge, Korea; Semi Bridge, Korea; Moonam Bridge, Korea; Namganng Ditch 3rd Bridge, Korea; Sabiha Gokcen Airport Terminal, Istanbul, Turkey; Nordstrom Westside Pavilion, Los Angeles; China Trust Bank, Taiwan; 8 Washington Building, San Francisco, CA; San Diego Courthouse, CA; Yihua Dazhi, Taiwan; Newton Reservoir, Vancouver, Canada; Port Mann Bridge, Vancouver, Canada; Apple Campus, Cupertino, CA; New Nonsan Grand Bridge, Korea; Cekmekoy Alemdar Hospital, Turkey; Yeongi Bridge, Korea; RFK Bridge, New York; Tappan Zee Bridge, New York; 6th Street Bridge, Los Angeles, CA; St. Bernardine Medical Center, San Bernardino, CA; Loma Linda University Medical Center, Loma Linda, CA; Goethals Bridge, NY-NJ; Hotel via Vallejo, Mexico City, Mexico; Naval Medical Center, San Diego, CA; CEC B7 Xinyi Building, Taiwan; A20/A73 Interchange Bridge, Quebec, Canada; ESPE Research Building, Quito, Ecuador; Giant Magellan Telescope, Chile; Los Angeles County Museum of Art.

Consultant on analysis and design of industrial systems, identification of machine vibration problems and design of motion control systems for machines and equipment, 1984- today.

Examples of projects: nonlinear, large displacement analysis of shelving systems; identification of vibration problems of paper processing machines; design of tuned mass dampers for machines; investigation of methods for enhancing damping in order to reduce vibration in machines; design of bridge expansion joints; testing of vibration isolation systems; design of seismic isolation system for telecommunication equipment; testing of bearings, testing of energy dissipation devices; design of vibration/seismic isolation system for 5,000 ton transfer press; analysis of floor vibration due to human walking.

AWARDS AND HONORS:

Thomas A. Bedford Prize, Rensselaer Polytechnic Institute, Troy, N.Y., 1982. (in recognition of outstanding academic achievement).

Horton Fellowship, Rensselaer Polytechnic Institute, Troy, N.Y., 1983.

Presidential Young Investigator Award, 1988. Awarded by President Ronald Reagan to young scientists in recognition of ability and potential in contributing to the future vitality of the scientific and engineering effort of the United States.

Best Paper Award, 3rd World Congress on Joints and Bearings, American Concrete Institute, 1991.

General Services Administration Design Award, General Services Administration, Public Building Service. With Navin Amin, Anoop S. Mokha and Victor Zayas for the design of the U.S. Court of Appeals building, San Francisco, 1994. Award given biennially in the category of Engineering, Technology and Innovation.

Finalist, Charles Pankow Award for Innovation (for the Friction Pendulum Seismic Isolation Bearing), CERF, Washington, DC, 1998.

Diamond Award, New York Association of Consulting Engineering Companies. With Thornton-Tomasetti Engineers and Andrew S. Whittaker for excellence in the engineering design of the Ataturk International Airport, 2002.

Grand Award, American Council of Engineering Companies. With Thornton-Tomasetti Engineers and Andrew S. Whittaker for excellence in the engineering design of the Ataturk International Airport, 2002.

Finalist, Charles Pankow Award for Innovation (for the design of the Torre Mayor Building, Mexico), CERF, Washington, DC, 2003.

SUNY Chancellor's Award for Excellence in Scholarship and Creative Activity, 2004.

Charles Pankow Award for Innovation (for the design of the Torre Mayor Building, Mexico), CERF, Washington, DC, 2005.

SUNY Distinguished Professor, 2014.

Moisseiff Award, American Society of Civil Engineers, for paper "Simulated Bilinear-Elastic Behavior in a SDOF Elastic Structure Using Negative Stiffness Device: Experimental and Analytical Study", 2015.

Nathan M. Newmark Medal, American Society of Civil Engineers, for "significant contributions to the innovation, theoretical development, experimental verification, creation of design standards, assisting practicing professionals in real life implementations and educating new generations of professionals in further developments of protective systems for infrastructure against catastrophic shocks and vibrations," 2015.

PROFESSIONAL ACTIVITIES:

A. <u>Instructor of Professional Courses</u>

Drexel University
Finite Elements with Computer Graphics

B. Reviewer of Technical Papers

American Society of Civil Engineers, Journal of Structural Engineering American Society of Civil Engineers, Journal of Bridge Engineering American Society of Civil Engineers, Journal of Engineering Mechanics American Society of Civil Engineers, Journal of Geotechnical Engineering Earthquake Engineering and Structural Dynamics Probabilistic Engineering Mechanics Journal of Applied Mechanics **Engineering Structures** Earthquake Spectra International Journal of Solids and Structures Mechanics of Structures and Machines Structural Engineering and Mechanics Advances in Structural Engineering Shock and Vibration Bulletin of Earthquake Engineering Journal of Earthquake Engineering Structures and Earthquakes

C. Committees

Chair, Subcommittee 12 and member of Provisions Update Committee, , Development of 2003 NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings, Building Seismic Safety Council, National Earthquake Hazard Reduction Program, 2001-2003.

Member, Subcommittee 12 and Provisions Update Committee, Development of 1994, 1997 and 2000 NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings, Building Seismic Safety Council, National Earthquake Hazard Reduction Program, 1993-2000.

Member, New Technologies Team, Project ATC-33 for Preparation of National Guidelines for Seismic Rehabilitation of Buildings, Applied Technology Council, 1993-1997. Development of FEMA Guidelines for the Seismic Rehabilitation of Buildings.

Member, Seismic Isolation Committee, American Society of Civil Engineers, 1995-present.

Member, T-3 Seismic Design Task Group, AASHTO Subcommittee on Bridges and Structures, Development of the 1999 AASHTO Guide Specifications for Seismic Isolation Design, 1995-1997.

Member, ASCE 7- Earthquake Loads Task Committee, Development of ASCE Load Standard ASCE 7-02 for year 2002, ASCE 7-05 for year 2005, ASCE7-2010 for year 2010, and ASCE7-2016 for year 2016, 2000-present.

Member, Project Management Committee, FEMA Project ATC-63, 2005-2013.

Member, Subcommittee 2, Development of NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings, Building Seismic Safety Council, National Earthquake Hazard Reduction Program, 2006-today.

Member (by appointment) of bi-national, 36-member jury for selection of new Peace Bridge design, Buffalo, NY, August to December 2005.

D. Conference Organization

Co-Chairman (with J. Roberts and J.M. Kelly), 4th World Congress on Joints and Bearings for Concrete Structures, ACI, Sacramento, CA, 1996.

Chairman, Steering Committee, U.S.-Italy Workshop on Seismic Protective Systems for Bridges, New York City, 1998.

Member, Steering Committee, ATC-17-2 Seminar on Response Modification Technologies, Applied Technology Council, Los Angeles, 2002.

Member, Scientific Committee, FIB Symposium on Concrete Structures in Seismic Regions, Athens, Greece, 2003.

E. Editorial Positions

Earthquake Engineering and Structural Dynamics, Editorial Board Advances in Civil Engineering, Editorial Board Earthquakes and Structures, Editorial Board Bulletin of Earthquake Engineering, Associate Editor

COURSES TAUGHT:

A. <u>Undergraduate</u>

Theory of Structures I, II and III

(Drexel University)

Behavior of Structural Members (Drexel University) Senior Design (Drexel University) Senior Seminar (Drexel University) Introduction to Civil Engineering (Drexel University) Structural Engineering I and II (University at Buffalo) Structural Engineering Laboratory (University at Buffalo) Civil Engineering Creations (University at Buffalo) (University at Buffalo) Capstone Design

B. Graduate

Advanced Structural Analysis I, II and III (Drexel University)
Structural Dynamics and Earthquake Engineering I (University at Buffalo)
Aseismic Base Isolation (University at Buffalo)

RESEARCH ACTIVITIES:

- A. Research Supervision of Undergraduate Students
- 1. John Caccese, Donald Bamford, Fred Furst. Senior Design Project at Drexel University: Shake Table Testing of Sliding Rigid Structures, 1986.
- 2. Alan Sharf, Javier Torrijos, Chang Sohn. Senior Design Project at Drexel University: Nonlinear, Large Displacement Analysis of Steel Shelving Systems, 1987.
- 3. Craig Winters and Michael Symans. Senior scholars program. Development and Testing of High Damping Urethane Rubber Bearings, University at Buffalo, 1989.
- 4. Martin Augustyniak, Michael McManus and Paul Shriver. Involved in Bridge Seismic Isolation Project and Computer Floor Isolation Project at University at Buffalo, University at Buffalo, 1992-1993.
- 5. Wing-Tsung Choi, Asiyah Grant and Carlos Amaya, R.E. McNair Research Internship Program for Minorities. Involved in Seismic Isolation and Energy Dissipation Projects at University at Buffalo, University at Buffalo, 1993-1996.
- 6. Dan Fenz, Senior scholars program. Further development of Axon Seismic Isolation System, University at Buffalo, 2002.
- B. Research Supervision of Graduate Students (as supervising professor)
- 1. Robin Sue Greenleaf, "Stress Systems in Orthotropic Quarter Plane", M.S., June 1986, Drexel University.
- 2. Allaoua Kartoum, "A Contribution to the Analysis of Elastomeric Bearings", M.S., June 1987, Drexel University.
- 3. Madjid Adnane, "Evaluation of Two Models for Yielding Systems", M.S., August 1987, Drexel University.

- 4. Bouzid Choubane, "Stresses in Infinite Slopes of Orthotropic Media", M.S., August 1987, University of Pennsylvania.
- 5. Mahmoud C. Kneifati, "Dynamics of Soil-Base-Isolated-Structure Systems", Ph.D., June 1988, Drexel University.
- 6. Nicos Makris, "Analysis of Motion of Harmonically Excited Sliding Isolation Systems", M.S., Dec. 1989, University at Buffalo, SUNY.
- 7. Anoop Mokha, "Experimental and Analytical Study of Sliding Isolation Systems", Ph.D., May 1990, University at Buffalo, SUNY.
- 8. Dimitris Theodossiou, "Evaluation of SEAOC Design Requirements for Sliding Isolated Structures," M.S., December 1990, University at Buffalo, SUNY.
- 9. Panayiotis Tsopelas, "Nonlinear Dynamic Analysis of Multiple Building Isolated Structures", M.S., April 1991, University at Buffalo, SUNY.
- 10. Allaoua Kartoum, "Experimental and Analytical Study of a Sliding Isolation System for Bridges," Ph.D., November 1991, University at Buffalo, SUNY.
- 11. Nicos Makris, "Theoretical and Experimental Investigation of Viscous Dampers in Applications of Seismic and Vibration Isolation", Ph.D., December 1991, University at Buffalo, SUNY.
- 12. George Demetriades, "Study of Wire Rope Systems for Seismic Protection of Equipment in Buildings", M.S., April 1992, University at Buffalo, SUNY.
- 13. Michael Symans, "Experimental and Analytical Investigation of Seismic Response of Buildings with Supplemental Fluid Viscous Dampers," M.S., October 1992, University at Buffalo, SUNY.
- 14. Craig Winters, "Evaluation of Static and Response Spectrum Analysis Procedures of SEAOC/UBC for "Seismic Isolated Structures," M.S., March 1993, University at Buffalo, SUNY.
- 15. Young-Suk Kim, "Experimental Study of Friction Pendulum System in Bridge Seismic Isolation," M.S., May 1993, University at Buffalo, SUNY.
- 16. Panayiotis Tsopelas, "Testing and Modeling of a Class of Bridge Seismic Isolation Systems," Ph.D., August 1994, University at Buffalo, SUNY.
- 17. Varnavas Lambrou, "Study of Seismic Isolation Systems for Computer Floors", M.S., June 1994, University at Buffalo, SUNY.
- 18. Michael Symans, "Development and Experimental Study of Semi-Active Fluid Damping Devices for Seismic Protection of Structures," Ph.D., July 1995, University at Buffalo, SUNY.
- 19. Amarnath Kasalanati, "Experimental Study of Elastomeric and Other Bridge Isolation and Energy Dissipation Systems with Emphasis on Uplift Prevention and High Velocity Pulse Excitation", Ph.D., March 1998, University at Buffalo, SUNY.

- 20. Wilhelm Hammel, "Testing and Modeling of an Improved Damper Configuration for Stiff Structural Systems," M.S., September 1997, University at Buffalo, SUNY.
- 21. Joseph Quarshie, "Response Modification Factors for Seismic-Isolated Bridges," Ph.D., July 1998, University at Buffalo, SUNY.
- 22. Joern Scheller, "Response History Analysis of Structures with Seismic Isolation and Energy Dissipation Systems: Verification Examples for Program SAP 2000," M.S., October 1998, University at Buffalo, SUNY.
- 23. Eric D. Wolff, "Frictional Heating in Sliding Bearings and an Experimental Study of High Friction Materials," M.S., May 1999, University at Buffalo, SUNY.
- 24. Marc Zimmer, "Characterization of Viscoelastic Materials for Use in Seismic Energy Dissipation Systems," M.S., October 1999, University at Buffalo, SUNY.
- 25. Oscar Ramirez, "Development and Evaluation of Simplified Methods of Analysis and Design for Structures with Passive Energy Dissipation Systems", Ph.D., November 2000, University at Buffalo, SUNY.
- 26. David Juan Gomez, "Evaluation of Simplified Methods of Analysis of Yielding Structures with Energy Dissipation Systems," M.S., September 2000, University at Buffalo, SUNY.
- 27. Ani Natali Sigaher, "Scissor-Jack-Damper Energy Dissipation System," Ph.D., June 2004, University at Buffalo, SUNY.
- 28. Thomas Boyle, "Development and Testing of Highly Compact Seismic Isolation/Energy Dissipation System for Equipment", M.S., May 2003, University at Buffalo, SUNY.
- 29. Eric D. Wolff, "Experimental Study of Seismic Isolation Systems with Emphasis on Secondary System Response and Verification of Accuracy of Dynamic Response History Analysis Methods", Ph.D., August 2003, University at Buffalo, SUNY.
- 30. Eleni Pavlou, "Methods of Analysis and Design of Buildings with Damping Systems", Ph.D., May 2005, University at Buffalo, SUNY.
- 31. Panagiotis Roussis, "Experimental and Analytical Investigation of Seismic Isolation Systems with Uplift Restraint", Ph.D., August 2004, University at Buffalo, SUNY.
- 32. Daniel Fenz, "Further Development of the Axon Seismic Isolation System", M.S., May 2005, University at Buffalo, SUNY.
- 33. Daniel Fenz, "Development, Implementation and Verification of Dynamic Analysis Models for Multi-Spherical Sliding Bearings", Ph.D., May 2008, University at Buffalo, SUNY.
- 34. Yiannis Kalpakidis, "Effects of Heating and History of Loading on the Behavior of Lead-Rubber Bearings," Ph.D., August 2008, University at Buffalo, SUNY.

- 35. Ricardo Ecker Lay, "Development and Verification of Simplified Expressions for Shear Strain in Rubber Layers for Use in design of Elastomeric Bearings", M.S., December 2009, University at Buffalo, SUNY.
- 36. Dhiman Basu, "Characterization of Rotational Components of Earthquake Ground Motion", Ph.D., May 2012, University at Buffalo, SUNY. Co-advisor Professor A.S. Whittaker.
- 37. Apostolos Sarlis, "Negative Stiffness Device for Seismic Protection of Structures", Ph.D., May 2013, University at Buffalo, SUNY. Co-advisor Professor A.M. Reinhorn.
- 38. William J. McVitty, "Property Modification Factors for Seismic Isolators: Design Guidance for Buildings", M.S., December 2014, University at Buffalo, SUNY.
- 39. Manish Kumar (1), "Models of Elastomeric Seismic Isolation Bearings for Analysis under Extreme Loadings", Ph.D., May 2015, University at Buffalo, SUNY. Co-advisor Professor A.S. Whittaker.
- 40. Manish Kumar (2), "Seismic Isolation of Nuclear Power Plants using Sliding Isolation Bearings", Ph.D., May 2015, University at Buffalo, SUNY. Co-advisor Professor A.S. Whittaker.
- 41. Konstantinos Oikonomou, "Seismic Isolation of Electrical Transformers", Ph.D., June 2015, University at Buffalo, SUNY. Co-advisor Professor A.M. Reinhorn.
- 42. Shoma Kitayama, "Development and Evaluation of Procedures for Analysis and Design of Buildings with Fluidic Self-Centering Systems", Ph.D. expected in 2017, University at Buffalo, SUNY.
- 43. Erkan Polat, "Open Space Damping System Theory and Experimental Validation", Ph.D. expected in 2017, University at Buffalo, SUNY.
- 44. Donghun Lee, "Development of Multi-directional Seismic Isolation System for Electrical Transformers", Ph.D. expected in 2017, University at Buffalo, SUNY.
- C. Postdoctoral Fellows, Research Engineers and Visiting Scholars
- 1. Professor Faruq M.A. Siddiqui, Swarthmore College, PA, Postdoctoral Research Associate, Drexel University, June to August 1986.
- 2. Dr. Shunji Fujii, Taisei Corp., Japan, Visiting Research Engineer, May to November 1991.
- 3. Mr. Susumu Okamoto, Taisei Corp., Japan, Visiting Research Engineer, May 1991 to June 1992.
- 4. Dr. Daisuku Ozaki, Taisei Corp., Japan, Visiting Research Engineer, May 1992-May 1993.
- 5. Dr. Panayiotis Tsopelas, Research Scientist, August 1994-1998.
- 6. Dr. Ayman Seleemah, Visiting Scholar, Ministry of Higher Education, Egypt, 1995-1997.
- 7. Professor Masato Abe, University of Tokyo, August to September 1997.

- 8. Professor Ricardo Uliarte, National University of San Juan, Argentina, September to October, 1999.
- 9. Dr. Genciz Ipek, Istanbul Technical University, Turkey, April to September 2000.
- 10. Dr. Chrystis Chrysostomou, Higher Technical Institute, Cyprus, September to December 2001.
- 11. Dr. Nader Heyat, Istanbul Kultur University, Turkey, August 2004 to August 2005.
- 12. Dr. Balkrishna B. Soneji, IIT Bombay, India, January 2007 to June 2007.
- 13. Ms. Guiseppina Patalano, University of Florence, Italy, August 2007 to April 2008.
- 14. Mr. Fabio Fadi, University of Udine, Italy, January 2008 to August 2008.
- 15. Professor Sevket Ates, Karadeniz Technical University, Trabzon, Turkey, August 2008 to January 2009.
- 16. Professor Gökhan Özdemir, Anadolu University, Eskisehir, Turkey, February 2009 to November 2009.
- 17. Dr. H. Cem Yenidogan, Bogazici University, Istanbul, Turkey, January 2011 to June 2011.
- 18. Dr. Deepak Pant, Tokyo Institute of Technology, Japan, October 2012 to December 2012.
- 19. Dr. Leandro M. Morillas Romero, University of Granada, Spain, January 2013 to April 2013.
- 20. Professor Mucip Tapan, University of Van, Van, Turkey, March 1, 2013 to October 31, 2013.
- 21. Professor Lihua Zhu, Xi'an University of Architecture and Technology, Xi'an, China, January 1 to December 31, 2014.
- 22. Dr. Ling-kun Chen, Lecturer, College of Civil Science and Engineering, Yangzhou University, China, January 1 to December 31, 2015.
- 23. Dr. Anastasia Athanasiou, Civil Engineering and Architecture, University of Catania, Italy, January 20 to May 15, 2015.
- 24. Dr. Yuzhi Zhang, Department of Bridge Engineering, School of Civil Engineering, Southwest Jiaotong University, China, September 1, 2016 to August 31, 2017.

25. GRANT SUPPORT (as Principal Investigator or as noted)

	TITLE	SPONSOR	AMOUNT	AWARD PERIOD
1.	Response of Base-Isolated Structures to Nonvertically Incident Seismic Waves	Drexel University	\$2,500	11/1/84 - 6/30/85
2.	Linear and Nonlinear Seismic Response of Base-Isolated Structures on Flexible Foundation (Research Initiation Grant ECE-85064604)	NSF	\$60,000	10/1/85 - 9/30/87
3.	Supplemental Grant to Research Initiation Grant (ECE-85064604)	NSF-ROA	\$10,010	10/1/85 - 9/30/87
4.	Passive Control of Building Structures (Frictional Characteristics of Teflon-Steel Interfaces) (Contract No. 87-2002)	NCEER	\$55,000	9/1/87 - 8/31/88
5.	Displacement Control Devices for Reduction of Bridge Damages During Earthquakes (with A.M. Reinhorn)	Watson- Bowman Acme Corp.	\$75,000	1/1/88 - 8/31/90
6.	Presidential Young Investigator Award (CES-8857080)	NSF	\$312,500	9/15/88 - 2/28/93
7.	Industrial Contribution to PYI Award	*	\$142,120	9/1/88 - 2/28/93
8.	Industrial Contribution to PYI Award (Equipment)	MTS Systems	\$50,460	9/1/88 - 8/31/89
9.	Passive Control of Building Structures (Experimental Verification of Sliding Isolation Systems) (Contract No. 88-2002A)	NCEER	\$42,000	9/1/88 - 8/31/89
10	Passive Control of Building Structures (Continuation of Project No. 9) (Contract No. 89-2101)	NCEER	\$62,500	9/1/89- 8/31/90
11	. Performance of Sliding Isolated Structures (Contract No. 902101)	NCEER	\$60,000	9/1/90- 8/31/91

	TITLE	SPONSOR	AMOUNT	AWARD PERIOD
	TAISEI/U.B. Research Project on Seismic Isolation of Bridges	TAISEI Corp.	\$555,500 (part of \$1.14 M project)	6/1/91-8/31/93
13.	Application of Sliding Isolation Systems to Bridges (Contract No. 915411B)	NCEER	\$75,000	9/1/91-8/31/92
14.	Innovative Support Design for Nonstructural Components (Contract No. 915211B)	NCEER	\$25,000	9/1/91-8/31/92
15.	Evaluation and Retrofit of Bridge Bearings and Bridge Substructures (J.B. Mander, I.Buckle, M.C. Constantinou)	NCEER	\$75,000	9/1/91-8/3/92
16.	Integrated Modular Software for Damage Analysis of Bridges - IDARC4 (A. Reinhorn, G. Gazetas, M.C. Constantinou)	NCEER	\$50,000	9/1/91-8/31/92
17. 8/31	Development of Multistage /93 Fluid Dampers	NCEER	\$40,000	9/1/92-
18.	Floor Seismic Isolation Systems	NCEER	\$30,000	9/1/92-8/31/93
20.	Longevity and Reliability of Sliding Isolation Systems (Property Modification Factors)	FHWA- NCEER	\$96,400	10/1/92- 10/30/97
21.	Semi-active Damping and Restoring Force Devices	NCEER	\$72,000	9/1/93-8/31/94
22.	Active Damping and Restoring Force/Damping Devices	NCEER	\$66,500	9/1/94-3/31/96
23.	Shake Table Testing of Structures with Active Damping Devices and Development of Monograph on Passive/Semi-active Control	NCEER	\$85,000	9/1/95-8/31/96

TITLE		SPONSOR	AMOUNT	AWARD PERIOD
24.	Testing and Modeling of Improved Damper 8/31/97	GRIT,	\$100,000	9/1/96-
	Configurations for Energy Dissipation Systems in Moment and Braced Frames	Taylor Devi	ces	
25.	R-Factors for Isolated Bridges	FHWA- NCEER	\$68,600	11/1/96- 9/30/98
26. 10/3	Rehabilitation Strategies for Buildings 31/98	NCEER	\$88,000	7/1/97-
27.	Rehabilitation Strategies for Buildings	MCEER	\$95,000	10/1/98-9/31/99
28.	Rehabilitation Strategies for Buildings	MCEER	\$93,000	9/1/99-8/31/00
29.	Development of Manual for the Design and Retrofit of Bridges with Earthquake Protective Systems (with I.G. Buckle)	MCEER/ FHWA	\$62,500	6/1/99-12/31/01
30.	Rehabilitation Strategies for Buildings	MCEER	\$90,000	7/1/00-9/30/01
31.	Versatile High Performance Shake Table Facility(with M. Bruneau-PI, A.M. Reinhorn, S. Thevanayagam and A.S. Whittaker)	NSF	\$6,857,715	10/1/00-9/31/04
1.	Versatile High Performance Testing Facility(with M. Bruneau-PI, A.M. Reinhorn, S. Thevanayagam and A.S. Whittaker)	NSF	\$4,262,388	10/1/00-9/31/04
33.	Rehabilitation Strategies for Buildings	MCEER	\$89,000	7/1/01-9/30/02
34.	Secondary System Response in Seismically Isolated Structures	MCEER	\$89,332	10/1/02-9/30/03
35.	Secondary System Response in Buildings with Seismic Protective Systems	MCEER	\$91,000	10/1/03-9/30/04
36.	Performance of Isolators and Dampers under Service and Seismic Loading (with A.S. Whittaker)	Caltrans	\$155,000	9/7/04-9/6/06
37.	Secondary System Response in Buildings with Seismic Protective Systems	MCEER	\$83,000	10/1/04-9/30/05
38.	NEES at UB Equipment	NSF	\$7,373,625	10/1/04-9/30/09

Equipment grants (with M. Bruneau, A.M. Reinhorn, S. Thevanayagam, A. Filiatrault and A.S. Whittaker)

39. Secondary System Response in Buildings with Seismic Protective Systems	MCEER	\$80,000	10/1/05-9/30/06
40. Secondary System Response in Buildings with Adaptive Seismic Protective Systems	MCEER	\$65,000	10/1/06-9/30/07
41. Design Guidelines for Future Edition of AASHTO Seismic Isolation Guide Specifications (TEA-21 EXT-3A)	FHWA/MCEER	\$99,635	9/1/04-9/30/06
42. Performance of Isolators and Damping Devices under Service and Seismic Loading Conditions (TEA-21 EXT-3C)	FHWA/MCEER	\$87,795	9/1/05-9/30-07
43. Lifetime Performance of Seismic and Multi-hazard Protective Systems (SAFETEA-LU, task 3.2)	FHWA/MCEEF	R \$68,178	6/1/07-5/31/08
44. NEESR-SG: Development of Next Generation Adaptive Seismic Protection Systems (co-PI, several investigators)	NSF	\$1,600,000	8/1/08-7/31/12
45. Seismic Protective Systems for Electrical Equipment (co-PI with Andrei Reinhorn)	BPA	\$450,000	1/1/09-8/31/12
46. NEES Operations at UB	NSF	\$1,600,000	10/1/10-9/30/11
47. NEES Operations at UB	NSF	\$1,600,000	10/1/11-9/30/12
48. NEES Operations at UB	NSF	\$1,600,000	10/1/12-9/30/13
49. NEES Operations at UB	NSF	\$1,600,000	10/1/13-9/30/14
50. Combined Horizontal-Vertical Seismic Isolation System for High-Voltage Power Transformers	BPA	\$712,840	10/1/14-9/30/17

NEES: Network for Earthquake Engineering Simulation

NSF: National Science Foundation

NCEER: National Center for Earthquake Engineering Research

FHWA: Federal Highways Administration

GRIT: Great Regional Industrial Technology Program

MCEER: Multi-Disciplinary Center for Earthquake Engineering Research

Caltrans: California Department of Transportation

BPA: Bonneville Power Authority

PATENTS:

- 1. HIGHLY EFFECTIVE ENERGY DISSIPATION APPARATUS, inventor: Michael C. Constantinou, United States Patent 6,438,905, issued August 28, 2002.
- 2. NEGATIVE STIFFNESS DEVICE AND METHOD, inventors: M.C. Constantinou, A. Sarlis, A.M. Reinhorn, S. Nagarajaiah, D. Pasala, D. Lee, D. P. Taylor, United States Patent 8,857,110 B2, issued October 14, 2014.
- 3. NEGATIVE STIFFNESS BRACING SYSTEM, inventors: A. Sarlis, M.C. Constantinou, D. Lee, A.M. Reinhorn, D. P. Taylor, United States Patent 9,206,616 B2, issued December 12, 2015.
- 4. MOTION DAMPING SYSTEM DESIGNED FOR REDUCING OBSTRUCTION WITHIN OPEN SPACES, inventors: D. P. Taylor, M.C. Constantinou, J. C. Metzger, United States Patent pending.

BOOKS AND BOOK CHAPTERS:

- 1. Soong, T.T. and Constantinou, M.C., PASSIVE AND ACTIVE STRUCTURAL VIBRATION CONTROL IN CIVIL ENGINEERING, Springer-Verlag, Wien, 1994.
- 2. Constantinou, M.C. and Reinhorn, A.M., SEISMIC ISOLATION AND CONTROL, in COMPUTER ANALYSIS AND DESIGN OF EARTHQUAKE RESISTANT STRUCTURES, Elsevier Applied Science, London, 1995.
- 3. Constantinou, M.C. and Reinhorn, A.M., TECHNIQUES IN THE NONLINEAR DYNAMIC ANALYSIS OF SEISMIC ISOLATED STRUCTURES, in STRUCTURAL DYNAMIC SYSTEMS, COMPUTATIONAL TECHNIQUES AND OPTIMIZATION, Gordon and Breach International, 1996.
- 4. Constantinou, M.C., Soong, T.T. and Dargush, G.F., PASSIVE ENERGY DISSIPATION SYSTEMS FOR STRUCTURAL DESIGN AND RETROFIT, Monograph, Multidisciplinary Center for Earthquake Engineering Research, Buffalo, NY, 1998.
- 5. Whittaker, A. S. and Constantinou, M.C., Chapter 12, SEISMIC ENERGY DISSIPATION SYSTEMS FOR BUILDINGS, IN EARTHQUAKE ENGINEERING, Borzognia and Bertero (eds), CRC Press, Boca Raton, FL, March 2004.
- 6. Buckle, I., Constantinou, M., Dicleli, M. And Ghasemi, H., SEISMIC ISOLATION OF HIGHWAY BRIDGES, Special Report MCEER-06-SP07, Multidisciplinary Center for Earthquake Engineering Research, Buffalo, NY, 2006.

LECTURES:

1. PASSIVE AND ACTIVE VIBRATION CONTROL IN CIVIL ENGINEERING, Course No. 86, International Centre for Mechanical Sciences (CISM), Udine, Italy. Nine lectures on Seismic Isolation and Passive Energy Dissipation, June 14-18, 1993.

- 2. ENERGY DISSIPATION SYSTEMS FOR EARTHQUAKE HAZARD MITIGATION, Annual ASCE Seminar on Construction for Earthquake Hazard Mitigation, Metropolitan Section, New York, NY, February, 1995.
- 3. PASSIVE ENERGY DISSIPATION FOR SEISMIC/WIND DESIGN AND RETROFIT, NCEER/EERC Short Course, Seattle, WA, Irvine, CA, 1996 and 1997.
- 4. EXPERIMENTAL STUDY OF BRIDGE SEISMIC ISOLATION SYSTEMS, Earthquake Engineering Research Center, University of California at Berkeley, Richmond, CA, June, 1997.
- 5. INTRODUCTION TO PASSIVE ENERGY DISSIPATION, SEAONC Spring Seminar, Oakland, CA, March, 1998.
- 6. SOME NOTES ON THE DESIGN OF THREE BRIDGES, California Department of Transportation, Sacramento, CA, March, 1998.
- 7. DESIGN OF SEISMIC ISOLATION/ENERGY DISSIPATION SYSTEM OF APPROACH VIADUCT FOR RION-ANTIRION CABLE-STAYED BRIDGES, California Department of Transportation, Sacramento, CA, April, 1999.
- 8. AN INTRODUCTION TO SEISMIC ISOLATION AND SEISMIC ENERGY DISSIPATION, Seminar on Infrastructure for Earthquakes, Metropolitan Section, ASCE, Brooklyn, NY, March, 2001.
- 9. DAMPING SYSTEMS FOR NEW AND RETROFIT CONSTRUCTION, Keynote Lecture, FIB Symposium "Concrete Structures in Seismic Regions", Athens, Greece, May 2003.
- 10. SEISMIC ISOLATION SYSTEMS, 2-day Seminar at Istanbul Kultur University, Istanbul, Turkey, May 16-17, 2003(with A. S. Whittaker).
- 11. SEISMIC PROTECTIVE SYSTEMS, SEONC Lecture, U.C. Berkeley, November 4, 2003.
- 12. EARTHQUAKE RESISTANT DESIGN WITH EMPHASIS IN NEW TECHNOLOGIES, Seminar organized by CYTA at Mediterranean Beach Hotel, Cyprus, December 13, 2003 (with A. S. Whittaker).
- 13. SEISMIC ISOLATION SYSTEMS, Seminar on Infrastructure for Earthquakes, Metropolitan Section, ASCE, Brooklyn, NY, March, 2004.
- 14. PERFORMANCE BASED ENGINEERING, 1-day Seminar at Istanbul Kultur University, Istanbul, Turkey, May 24, 2004 (with A. S. Whittaker).
- 15. SEISMIC PROTECTIVE SYSTEMS, Lecture at Egnatia Odos, Thessaloniki, Greece, June 4, 2004.
- 16. SEISMIC PROTECTIVE SYSTEMS, Keynote Lecture at Alumni Conference, University of Patras, Greece, June 6, 2004.

- 17. SEISMIC PROTECTIVE SYSTEMS, 1-day Seminar at Middle East Technical University, Ankara, Turkey, November 9, 2004 (with A. S. Whittaker).
- 18. DEVELOPMENTS IN SEISMIC PROTECTIVE SYSTEMS, Lecture at National Technical University, Athens, Greece, February 2, 2006.
- 19. DEVELOPMENTS IN SEISMIC PROTECTIVE SYSTEMS, Lecture at University of Cyprus, February 6, 2006.
- 20. SEISMIC PROTECTIVE SYSTEMS, Lecture at City University of New York, February 16, 2006.
- 21. SEISMIC PROTECTIVE SYSTEMS, Lecture at Beijing University of Technology, Beijing, China, April 1, 2006.
- 22. SEISMIC PROTECTIVE SYSTEMS, Lecture at Harbin Institute of Technology, Harbin, China, April 2, 2006.
- 23. DAMPING SYSTEMS FOR NEW AND RETROFIT CONSTRUCTION, Lecture at Harbin Institute of Technology, Harbin, China, April 3, 2006.
- 24. SEISMIC UPGRADE OF ATATURK INTERNATIONAL AIRPORT, Lecture at Harbin Institute of Technology, Harbin, China, April 3, 2006.
- 25. SEISMIC PROTECTIVE SYSTEMS, Lecture at Nanjing University of Technology, Nanjing, China, April 4, 2006.
- 26. SEISMIC PROTECTIVE SYSTEMS, Lecture at Guangzhou University, Guangzhou, China, April 5, 2006.
- 27. SEISMIC PROTECTIVE SYSTEMS, Lecture at Research Institute for Highways of Ministry of Communications, Beijing, China, April 6, 2006.
- 28. OVERVIEW OF SEISMIC PROTECTIVE SYSTEMS, 17th Mueser Rutledge Lecture, ASCE-Metropolitan Section, New York, November 15, 2007.
- 29. SEISMIC PROTECTIVE SYSTEMS, Keynote Lecture, Scientific Conference on Large Scale Engineering Structures for the New High Speed Railway Line in Greece, Greece, May 8, 2008.
- 30. SEISMIC PROTECTIVE SYSTEMS-STATE OF THE ART AND STATE OF PRACTICE, Invited Lecture, 3rd Greek Conference on Earthquake Engineering, Greece, November, 2008.
- 31. DEVELOPMENTS IN SEISMIC PROTECTIVE SYSTEMS, Lecture at University of Cyprus, January 27, 2009.
- 32. SEISMIC PROTECTIVE SYSTEMS-STATE OF THE ART AND STATE OF PRACTICE, Keynote Lecture, 16th Greek Concrete Conference, Cyprus, October 2009.

- 33. AN OVERVIEW OF SEISMIC ISOLATION WITH EMPHASIS ON BRIDGES, Keynote Lecture, Seventh National Conference on Earthquake Engineering, May-June 2011, Istanbul, Turkey.
- 34. BEHAVIOR AND MODELING OF TRIPLE FRICTION PENDULUM ISOLATORS, Invited Lecture, Los Angeles Tall Buildings Structural Design Council, Conference on ADVANCES IN STRUCTURAL DESIGN FOR SEISMIC REGIONS, May 6, 2011.
- 35. SEISMIC PROTECTIVE SYSTEMS-AN OVERVIEW OF THE STATE OF THE ART AND STATE OF PRACTICE, Invited Lecture, American Council of Engineering Companies, New York, June 15, 2011.
- 36. UNIFIED LRFD-BASED PROCEDURES FOR ANALYSIS AND DESIGN OF BRIDGE BEARINGS AND SEISMIC ISOLATORS, Invited Lecture, IBSBI 2011 International Conference on Bridges, October 2011, Athens, Greece.
- 37. SEISMIC PROTECTIVE SYSTEMS-AN OVERVIEW OF THE STATE OF PRACTICE, Invited Lecture, Municipality of Istanbul and Ministry of Health, Turkey, March 2012.
- 38. SEISMIC PROTECTIVE SYSTEMS-AN OVERVIEW OF THE STATE OF PRACTICE, Invited Lecture, ASCE Metropolitan Section, Seminar on New Trends in Seismic Evaluation and Retrofit, New York, April 2012.
- 39. LRFD-BASED PROCEDURES FOR ANALYSIS AND DESIGN OF BRIDGE BEARINGS AND SEISMIC ISOLATORS, Invited Lecture, CSRN–NEES Workshop on the Seismic Isolation and Damping of Bridge Structures, Vancouver, April 2012.
- 40. SEISMIC PROTECTIVE SYSTEMS, Invited Lecture, Mus Alparslan University, Mus, Turkey, May 2012.
- 41. SEISMIC PROTECTIVE SYSTEMS, Invited Lecture at the invitation of the Governor of Van, Van, Turkey, May 2012.
- 42. SEISMIC PROTECTIVE SYSTEMS-AN OVERVIEW OF THE STATE OF ART AND PRACTICE, Invited Lecture at the inauguration of Professor Oscar Ramirez as President of the Technological University of Panama, Panama, February 2013.
- 43. SEISMIC PROTECTIVE SYSTEMS-AN OVERVIEW, Invited Lecture at ESPE University, Quito, Ecuador, June 2013.
- 44. HISTORY OF SEISMIC ISOLATION, Invited Lecture at ESPE University, Quito, Ecuador, June 2013.
- 45. BEHAVIOR AND MODELING OF TRIPLE FRICTION PENDULUM ISOLATORS, Invited Lecture at ESPE University, Quito, Ecuador, June 2013.
- 46. SOME NOTES ON THE DESIGN OF SEISMICALLY ISOLATED BRIDGES, Invited Lecture at ESPE University, Quito, Ecuador, June 2013.
- 47. PERFORMANCE OF BOLU VIDAUCT IN THE DUCZE EARTHQUAKE, Invited Lecture at

- ESPE University, Quito, Ecuador, June 2013.
- 48. SEISMIC PROTECTIVE SYSTEMS-AN OVERVIEW, Invited Lecture at University of San Francisco, Quito, Ecuador, June 2013.
- 49. HISTORY OF SEISMIC PROTECTIVE SYSTEMS, Invited Lecture at Kocaeli Chamber of Commerce, Kocaeli, Turkey, December 2013.
- 50. TESTING OF SEISMIC PROTECTIVE SYSTEM HARDWARE: SIGNIFICANCE, SCALING AND SIMILARITY, Invited Lecture at ITU Workshop On Base Isolation Systems, Istanbul, Turkey, December 2013.
- 51. HISTORY OF SEISMIC PROTECTIVE SYSTEMS, University of Catania and Catania Engineering Association, Catania, Italy, March 2016.

PUBLICATIONS:

A. Refereed Journals

- 1. Constantinou, M. C. and Tadjbakhsh, I., "PROBABILISTIC OPTIMUM BASE ISOLATION OF STRUCTURES", <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 109, No.3, March 1983, pp. 676-689.
- 2. Constantinou, M.C. and Tadjbakhsh, I., "OPTIMUM DESIGN OF A FIRST STORY DAMPING SYSTEM", Computers and Structures, Vol. 17, No. 2, 1983, pp. 305-310.
- 3. Constantinou, M.C. and Tadjbakhsh, I., "RESPONSE OF A SLIDING STRUCTURE TO FILTERED RANDOM EXCITATION", <u>Journal of Structural Mechanics</u>, Vol. 12, No. 3, 1984, pp. 401-418
- 4. Constantinou, M.C. and Tadjbakhsh, I., "OPTIMUM DESIGN OF A BASE ISOLATION SYSTEM WITH FRICTIONAL ELEMENTS," <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 12, 1984, pp. 203-214.
- 5. Constantinou, M.C., Gazetas, G., and Tadjbakhsh, I., "STOCHASTIC SEISMIC SLIDING OF RIGID MASS SUPPORTED THROUGH NON-SYMMETRIC FRICTION', <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 12, 1984, pp. 777-793.
- 6. Constantinou, M.C. and Gazetas, G., "TORSIONAL VIBRATION ON ANISOTROPIC HALFSPACE", <u>Journal of Geotechnical Engineering</u>, <u>ASCE</u>, Vol. 110, No.11, 1984, pp. 1549-1558. Nominated for the Norman and J.R. Croes Medals of ASCE.
- 7. Constantinou, M.C. and Tadjbakhsh, I., "OPTIMUM CHARACTERISTICS OF ISOLATED STRUCTURES", Journal of Structural Engineering, ASCE, Vol. 111, No. 12, 1985, pp. 2733-2750.
- 8. Constantinou, M.C., "VIBRATION STATISTICS OF THE DUFFING OSCILLATOR", <u>Journal of Soil Dynamics and Earthquake Engineering</u>, Vol. 4, 1985, pp. 221-223.

- 9. Constantinou, M.C. and Tadjbakhsh, I., "HYSTERETIC DAMPERS IN BASE ISOLATION: RANDOM APPROACH", <u>Journal of Structural Engineering</u>, ASCE, Vol.111, No. 4, 1985, pp. 705-721.
- 10. Constantinou, M.C. and Gazetas, G., "LOADING OF ANISOTROPIC QUARTER PLANE", Journal of Engineering Mechanics, ASCE, Vol. 112, No. 10, 1986, pp. 1021-1040.
- 11. Constantinou, M.C. and Greenleaf, R.S., "STRESS SYSTEMS IN ORTHOTROPIC QUARTER PLANE", <u>Journal of Engineering Mechanics</u>, <u>ASCE</u>, Vol. 113, No. 11, November 1987, pp. 1720-1738.
- 12. Constantinou, M.C., Caccese, J. and Harris, H.G., "FRICTIONAL CHARACTERISTICS OF TEFLON-STEEL INTERFACES UNDER DYNAMIC CONDITIONS" <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 15, 1987, pp. 751-759.
- 13. Constantinou, M.C., A SIMPLIFIED ANALYSIS PROCEDURE FOR BASE-ISOLATED STRUCTURES ON FLEXIBLE FOUNDATION," <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 15, 1987, pp. 963-983.
- 14. Constantinou M.C., and Kneifati, M.C., "DYNAMICS OF SOIL-BASE-ISOLATED-STRUCTURE SYSTEMS," Journal of Structural Engineering, ASCE, Vol. 114, No.1, 1988, pp.211-221.
- 15. Siddiqui, F.M.A. and Constantinou, M.C., "SIMPLIFIED ANALYSIS METHOD FOR MULTISTORY BASE-ISOLATED STRUCTURES ON VISCOELASTIC HALFSPACE," Earthquake Engineering and Structural Dynamics, Vol. 18, No. 1, 1989, pp. 64-78.
- 16. Mokha, A., Constantinou, M.C. and Reinhorn, A.M. "TEFLON BEARINGS IN BASE ISOLATION. PART 1: TESTING," <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 116, No. 2, 1990, pp. 438-454.
- 17. Constantinou, M.C., Mokha, A.M. and Reinhorn, A.M., "TEFLON BEARINGS IN BASE ISOLATION. PART 2: MODELING," <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 116,No. 2, 1990, pp. 455-474.
- 18. Papageorgiou, A. and Constantinou, M.C., "RESPONSE OF SLIDING STRUCTURES WITH RESTORING FORCE TO STOCHASTIC EXCITATION," <u>Probabilistic Engineering Mechanics</u>, Vol. 5, No. 1, 1990, pp. 19-26.
- 19. Constantinou, M.C. and Papageorgiou, A., "STOCHASTIC RESPONSE OF PRACTICAL SLIDING ISOLATION SYSTEMS," <u>Probabilistic Engineering Mechanics</u>, Vol. 5, No. 1, 1990, pp. 27-34.
- 20. Chen, Y.Q. and Constantinou, M.C., "USE OF TEFLON SLIDERS IN A MODIFICATION OF THE CONCEPT OF SOFT FIRST STORY," <u>Engineering Structures</u>, Vol. 12, No. 4, 1990, pp. 243-253.
- 21. Mokha, A., Constantinou, M.C. and Reinhorn, A.M., "FURTHER RESULTS ON THE FRICTIONAL PROPERTIES OF TEFLON BEARINGS," <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 117, No. 2, 1991, pp. 622-626.

- 22. Makris, N., and Constantinou, M.C., "ANALYSIS OF MOTION RESISTED BY FRICTION I: CONSTANT COULOMB AND LINEAR/COULOMB FRICTION", Mechanics of Structures and Machines, Vol. 19, No. 4, 1991, pp. 487-510.
- 23. Makris, N. and Constantinou, M.C., "ANALYSIS OF MOTION RESISTED BY FRICTION II: VELOCITY DEPENDENT FRICTION", <u>Mechanics of Structures and Machines</u>, Vol. 19, No.4, 1991, pp. 511-536.
- 24. Mokha, A., Constantinou M.C., Reinhorn, A.M. and Zayas, V., "EXPERIMENTAL STUDY OF FRICTION PENDULUM ISOLATION SYSTEM", <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 117, No. 4, 1991, pp. 1203-1219.
- 25. Constantinou, M.C., Mokha, A. and Reinhorn, A.M., "STUDY OF A SLIDING BEARING AND HELICAL STEEL SPRING ISOLATION SYSTEM," <u>Journal of Structural Engineering</u>, ASCE, Vol. 117, No. 4, 1991, pp. 1259-1277.
- 26. Constantinou, M.C., Reinhorn, A.M., Mokha, A.S. and Watson, R., "DISPLACEMENT CONTROL DEVICE FOR BASE-ISOLATED BRIDGES," <u>Earthquake Spectra</u> Vol. 7, No. 2, May 1991, pp. 179-200.
- 27. Nagarajaiah, S., Reinhorn, A.M. and Constantinou, M.C., "NONLINEAR DYNAMIC ANALYSIS OF THREE DIMENSIONAL BASE ISOLATED STRUCTURES", <u>Journal of Structural Engineering</u>, ASCE, Vol. 117, No. 7, 1991, pp. 2035-2054.
- 28. Makris, N. and Constantinou, M.C., "FRACTIONAL DERIVATIVE MAXWELL MODEL FOR VISCOUS DAMPERS," <u>Journal of Structural Engineering, ASCE</u>, Vol. 117, No. 9, 1991, pp. 2708-2724.
- 29. Constantinou, M.C., Kartoum, A. and Kelly, J.M., "ANALYSIS OF COMPRESSION OF HOLLOW CIRCULAR ELASTOMERIC BEARINGS," <u>Engineering Structures</u>, Vol. 14, No. 2, 1992, pp. 103-111.
- 30. Juhn, G., Manolis, G., Constantinou, M.C. and Reinhorn, A.M., "EXPERIMENTAL INVESTIGATION OF SECONDARY SYSTEMS IN A BASE-ISOLATED STRUCTURE," Journal of Structural Engineering, ASCE, Vol. 118, No. 8, 1992.
- 31. Juhn, G., Manolis, G.D. and Constantinou, M.C., "STOCHASTIC RESPONSE OF SECONDARY SYSTEMS IN BASE-ISOLATED STRUCTURES," <u>Probabilistic Engineering Mechanics</u>, Vol. 7, No. 2, 1992, pp. 91-102.
- 32. Nagarajaiah, S., Reinhorn, A.M. and Constantinou, M.C. "EXPERIMENTAL STUDY OF SLIDING BASE ISOLATED STRUCTURES WITH UPLIFT RESTRAINT," <u>Journal of Structural Engineering</u>, ASCE, Vol. 118 (6), 1992, pp. 1512-1529.
- 33. Makris, N. and Constantinou, M.C., "SPRING-VISCOUS DAMPER SYSTEMS FOR COMBINED SEISMIC AND VIBRATION ISOLATION," <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 21, (8), 1992, pp. 649-664.

- 34. Constantinou, M.C., Kartoum, A., Reinhorn, A.M. and Bradford, P., "SLIDING ISOLATION SYSTEM FOR BRIDGES: EXPERIMENTAL STUDY," <u>Earthquake Spectra</u>, Vol. 8 (3), 1992, pp. 321-344.
- 35. Kartoum, A., Constantinou, M.C. and Reinhorn, A.M., "SLIDING ISOLATION SYSTEM FOR BRIDGES: ANALYTICAL STUDY," Earthquake Spectra, Vol. 8 (3), 1992, pp. 345-372.
- 36. Mokha, A., Constantinou, M.C. and Reinhorn, A.M., "VERIFICATION OF FRICTION MODEL OF TEFLON BEARINGS UNDER TRIAXIAL LOAD," <u>Journal of Structural Engineering, ASCE</u>, Vol. 119, No. 1, 1993, pp. 240-261.
- 37. Nagarajaiah, S., Reinhorn, A.M. and Constantinou, M.C., "TORSIONAL COUPLING IN BASE ISOLATED STRUCTURES: SLIDING ISOLATION SYSTEMS," <u>Journal of Structural Engineering</u>, ASCE, Vol. 119, No. 1, 1993, pp. 130-149.
- 38. Demetriades, G.F., Constantinou, M.C. and Reinhorn, A.M., "STUDY OF WIRE ROPE SYSTEMS FOR SEISMIC PROTECTION OF EQUIPMENT IN BUILDINGS," <u>Engineering Structures</u>, Vol. 15, No. 5, 1993, pp. 321-334.
- 39. Makris, N. and Constantinou, M.C., "MODELS OF VISCOELASTICITY WITH COMPLEX ORDER DERIVATIVES," J. Engng. Mechanics, ASCE, Vol. 119, No. 7, 1993, pp. 1453-1464.
- 40. Makris, N., Dargush, G.F. and Constantinou, M.C., "DYNAMIC ANALYSIS OF GENERALIZED VISCOELASTIC FLUIDS," J. Engng. Mechanics, ASCE, Vol.119, No.8, 1993, pp.1663-1679.
- 41. Nagarajaiah, S., Reinhorn, A.M. and Constantinou, M.C. "TORSION IN BASE ISOLATED STRUCTURES WITH ELASTOMERIC BEARINGS," <u>J. Struct. Engng., ASCE</u>, Vol. 119, No. 10, 1993, pp. 2932-2951.
- 42. Tsopelas, P., Nagarajaiah, S., Constantinou, M.C. and Reinhorn, A.M., "NONLINEAR DYNAMIC ANALYSIS OF MULTIPLE BUILDING BASE ISOLATED STRUCTURES," J. Computers and Structures, Vol. 50, No. 1, 1994, pp. 47-57.
- 43. Makris, N., Constantinou, M.C. and Dargush, G., "ANALYTICAL MODEL OF VISCOELASTIC FLUID DAMPERS," J. Struct. Engng., ASCE, Vol. 119, No. 11, 1993, pp. 3310-3325.
- 44. Constantinou, M.C. and Symans, M.D., "SEISMIC RESPONSE OF STRUCTURES WITH SUPPLEMENTAL DAMPING," <u>Structural Design of Tall Buildings</u>, Vol. 2, No. 2, 1993, pp. 77-92.
- 45. Constantinou, M.C. and Symans, M.D., "EXPERIMENTAL STUDY OF SEISMIC RESPONSE OF BUILDINGS WITH SUPPLEMENTAL FLUID DAMPERS," <u>Structural Design of Tall Buildings</u>, Vol. 2, No. 2, 1993, pp. 93-132.
- 46. Taylor, D.P. and Constantinou, M.C., "TESTING PROCEDURES FOR HIGH OUTPUT FLUID VISCOUS DAMPERS USED IN BUILDING AND BRIDGE STRUCTURES TO DISSIPATE SEISMIC ENERGY," Shock and Vibration, Vol. 2. No. 5, 1995, pp. 373-381.

- 47. Makris, N., Dargush, G.F. and Constantinou, M.C., "DYNAMIC ANALYSIS OF VISCOELASTIC FLUID DAMPERS," <u>Journal of Engineering Mechanics</u>, <u>ASCE</u>, Vol. 121, No. 10, 1995, pp. 1114-1121.
- 48. Mokha, A.S., Amin, N., Constantinou, M.C. and Zayas, V., "SEISMIC ISOLATION RETROFIT OF A LARGE HISTORIC BUILDING IN THE UNITED STATES," <u>Journal of Structural Engineering</u>, ASCE, Vol. 122, No. 3, 1996, pp. 298-308.
- 49. Tsopelas, P., Constantinou, M.C., Kim, Y-S. and Okamoto, S., "EXPERIMENTAL STUDY OF FPS SYSTEM IN BRIDGE SEISMIC ISOLATION," <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 25, No. 1, 1996, pp. 65-78.
- 50. Tsopelas, P., Constantinou, M.C., Okamoto, S., Fujii, S. and Ozaki, D., "EXPERIMENTAL STUDY OF BRIDGE SEISMIC SLIDING ISOLATION SYSTEMS," <u>Engineering Structures</u>, Vol.18, No. 4, 1996, pp. 301-310.
- 51. Tsopelas, P. and Constantinou, M.C., "STUDY OF ELASTOPLASTIC BRIDGE SEISMIC ISOLATION SYSTEM", <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 123, No. 4, 1997, pp. 489-498.
- 52. Symans, M.D. and Constantinou, M.C., "SEISMIC TESTING OF A BUILDING STRUCTURE WITH A SEMI-ACTIVE FLUID DAMPER CONTROL SYSTEM," <u>Earthquake Engineering and Structural Dynamics</u>, Vol. 26, 1997, pp. 759-777.
- 53. Whittaker, A.S., Constantinou, M.C. and Tsopelas, P., "DISPLACEMENT ESTIMATES FOR PERFORMANCE-BASED SEISMIC DESIGN", <u>Journal of Structural Engineering</u>, <u>ASCE</u>, Vol. 124, No. 8, 1998, pp. 905-912.
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- 55. Symans, M.D. and Constantinou, M.C., "EXPERIMENTAL TESTING AND ANALYTICAL MODELING OF SEMI-ACTIVE FLUID DAMPERS FOR SEISMIC PROTECTION," <u>Journal of Intelligent Material Systems and Structures</u>, Vol. 8, 1998, pp. 644-657.
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- 58. Whittaker, A.S. and Constantinou, M.C., "SUPPLEMENTAL DAMPING FOR NEW AND RETROFIT CONSTRUCTION", <u>Revista de Ingenieria Sismica</u>, Vol. 61, Sociedad Mexicana de Ingenieria Sismica A. C., Mexico City, Dec. 1999.

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B. Discussions in Referred Journals

- 1. Constantinou, M.C., Gazetas, G. and Tadjbakhsh, I.G., Discussion on "EARTHQUAKE INDUCED DISPLACEMENTS OF SLIDING BLOCKS", by J.S. Lin and R.V. Whitman (Paper 20264), <u>Journal of Geotechnical Engineering</u>, ASCE, Vol. 113, No. 8, 1987, pp.958-961.
- 2. Constantinou, M.C., Gazetas, G., Discussion on 'TORSIONAL VIBRATIONS OF A CIRCULAR DISK ON AN INFINITE TRANSVERSELY ISOTROPIC MEDIUM", by Y.M. Tsai (published in Int. J. of Solids and Structures, Vol. 25 (9), 1989, pp. 1069-1076), <u>International Journal of Solids and Structures</u>, Vol. 27, No. 9, 1991, pp. 1209-1211.
- 3. Constantinou, M.C., Discussion on "COMPRESSION OF BONDED ANNULAR RUBBER BLOCKS," by Y. Ling et al. (published in <u>J. Engng. Mechanics</u>, ASCE, Vol. 121 (6), 1995, pp. 661-666), <u>Journal of Engineering Mechanics</u>, ASCE, Vol. 123 (No. 4), 1997, pp. 405-407.

C. <u>Invited Presentations</u>

- 1. Constantinou, M.C. and Gazetas, G., "FORTHCOMING APPLICATIONS OF SEISMIC ISOLATION IN GREECE," Post SMiRT Seminar on Seismic Isolation of Nuclear and Non-Nuclear Structures, Nara, Japan, 1991.
- 2. Buckle, I.G., Soong, T.T. and Constantinou, M.C., "RESEARCH ACTIVITIES IN SEISMIC ISOLATION AND OTHER PROTECTIVE SYSTEMS AT THE U.S. NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH," Post SMiRT Seminar on Seismic Isolation of Nuclear and Non-Nuclear Structures, Nara, Japan, 1991.
- 3. Constantinou, M.C., "SLIDING ISOLATION SYSTEMS FOR BRIDGES," 1st U.S.-Japan Workshop on Earthquake Protective Systems for Bridges, Buffalo, N.Y., 1991.
- 4. Constantinou, M.C., "SEISMIC ISOLATION: RESEARCH, TECHNOLOGY AND APPLICATION," Ministry of Public Works, Greece, Jan. 1992.
- 5. Constantinou, M.C., "FLUID DAMPERS IN APPLICATIONS OF VIBRATION AND SEISMIC ISOLATION AND ENERGY DISSIPATION", Institute of Environmental Sciences, Auburn, N.Y., April, 1992.
- 6. Constantinou, M.C., "SEISMIC ISOLATION: MATHEMATICAL MODELING, ANALYSIS, DESIGN AND CODE DEVELOPMENT", Ministry of Public Works, Greece, June 1992.
- 7. Soong, T.T. and Constantinou, M.C., "BASE ISOLATION AND ACTIVE CONTROL TECHNOLOGY-CASE STUDIES IN THE U.S.A.," IDNDR International Symposium on Earthquake Disaster Reduction Technology, Building Research Institute, Ministry of Construction, Tsukuba, Japan, December 1992.

- 8. Okamoto, S., Constantinou, M.C., Tsopelas, P., Fujii, S. and Ozaki, D., "SHAKE TABLE TEST OF A BRIDGE WITH SLIDING ISOLATION SYSTEM", 2nd U.S.-Japan Workshop on Protective Systems for Bridges, Tsukuba, Japan, Dec. 1992.
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- 10. Constantinou, M.C., "FLUID DAMPERS IN APPLICATIONS OF SEISMIC ISOLATION AND ENERGY DISSIPATION," Rensselaer Polytechnic Institute, Troy, N.Y., April 1993.
- 11. Constantinou, M.C., "DUAL-USE TECHNOLOGIES", CIRD Meeting, Tokyo, Dec. 1993.
- 12. Constantinou, M.C., Tsopelas, P. and Okamoto, S., "EXPERIMENTAL STUDY OF A CLASS OF BRIDGE SLIDING SEISMIC ISOLATION SYSTEMS," 3rd U.S.-Japan Workshop on Earthquake Protective Systems for Bridges, Berkeley, Jan. 1994.
- 13. Constantinou, M.C., "BRIDGE SEISMIC ISOLATION", Ministry of Public Works, Greece, Nov. 1994.
- 14. Constantinou, M.C., "SEISMIC ISOLATION AND ENERGY DISSIPATION: NEW TECHNOLOGIES FOR STRUCTURAL DESIGN AND SEISMIC REHABILITATION," 12th Greek Concrete Conference, Greece, October, 1996.
- 15. Whittaker, A.S. and Constantinou, M.C., "ADVANCES IN SUPPLEMENTAL DAMPING SYSTEMS FOR CIVIL INFRASTRUCTURE", VII Mexican Conference on Earthquake Engineering, Morelia, Mexico, November 1999.
- 16. Whittaker, A.S. and Constantinou, M.C., "FLUID VISCOUS DAMPERS FOR BUILDING CONSTRUCTION", Passive Structural Control Symposium 2000, Tokyo Institute of Technology, Yokohama, Japan, March 2000.
- 17. Constantinou, M.C., Tsopelas, P., Hammel, W. and Sigaher, A.N., "NEW CONFIGURATIONS OF FLUID VISCOUS DAMPERS FOR IMPROVED PERFORMANCE", Passive Structural Control Symposium 2000, Tokyo Institute of Technology, Yokohama, Japan, March 2000.
- 18. Constantinou, M.C., "DAMPING SYSTEMS FOR STRUCTURAL DESIGN AND RETROFIT", EERI 52nd Annual Meeting, St. Louis, May 31, 2000.
- 19. Constantinou, M.C., "NEW TECHNOLOGIES", International Conference on Earthquake Risk Minimization, Cyprus, March, 2002.

D. Publications in Conference Proceedings

 Constantinou, M.C. and Tadjbakhsh, I.G., "DYNAMIC INSTABILITY OF THE ELASTIC COUPLER OF A FOUR-BAR MECHANISM", 1982 Mechanisms Conference, American Society of Mechanical Engineers, Washington, D.C., Sept. 1982. Also published as ASME Pamphlet No. 82-DET-6.

- 2. Constantinou, M.C., "SOIL-STRUCTURE INTERACTION EFFECTS IN THE DESIGN OF BASE-ISOLATED STRUCTURES", ATC-17 Seminar on Base Isolation and Passive Energy Dissipation, March 12-13, 1986, San Francisco. CA., pp. 371-380.
- 3. Tadjbakhsh, I. and Constantinou, M.C., "OPTIMUM DESIGN OF ISOLATION SYSTEMS FOR STRUCTURES", ASCE 1983 Spring Convention, Philadelphia, PA, May 1983.
- 4. Constantinou, M.C. and Gazetas, G., "PROBABILISTIC SEISMIC SLIDING DEFORMATIONS OF EARTH DAMS AND SLOPES", Proc., ASCE Specialty Conference on Probabilistic Mechanics and Structural Reliability, Berkeley, CA, January 1987, pp. 318 321.
- 5. Constantinou, M.C., "SYSTEMS OF ASEISMIC BASE ISOLATION: OPTIMIZATION ASPECTS", Proc. 2nd International Conference on Soil Dynamics and Earthquake Engineering, June 1985, on board QE2, pp. 1 49/1 58.
- 6. Constantinou, M.C., "DYNAMICS OF 3 D BASE ISOLATED STRUCTURES", 3rd ASCE Engineering Mechanics Conference on Dynamic Response of Structures, March April 1986, UCLA, CA.
- 7. Constantinou, M.C. and Kneifati, M.C., "EFFECT OF SOIL STRUCTURE INTERACTION ON DAMPING AND FREQUENCIES OF BASE ISOLATED STRUCTURES", 3rd U.S. National Conference on Earthquake Engineering, August 1986, Charleston, S.C.
- 8. McNamee, B.M. and Constantinou, M.C., "AN ANSYS APPLICATION IN THE DESIGN/ANALYSIS OF A STEEL SHELVING SYSTEM", 3rd ANSYS Conference, April 1987, Newport Beach, CA.
- 9. Constantinou, M.C. and Tadjbakhsh, I.G. "SOME THEORETICAL LIMITS OF BASE ISOLATION SYSTEMS", 6th ASCE Engineering Mechanics Specialty Conference, University at Buffalo, SUNY, 1987.
- 10. Constantinou, M.C. and Reinhorn, A.M., "RESPONSE OF BASE ISOLATED STRUCTURE", ICOSSAR 89, San Francisco, CA, August 1989.
- 11. Constantinou, M.C., Reinhorn, A. and Watson, R., "TEFLON BEARINGS IN ASEISMIC BASE ISOLATION: EXPERIMENTAL STUDIES," 1988 ASME PVP Conference, Pittsburgh, PA, June 1988, Proc. Vol. 147, pp. 9-13.
- 12. Mokha, A., Constantinou, M.C. and Reinhorn, A.M., "SLIDING ISOLATED STRUCTURES: EXPERIMENTS AND MATHEMATIC MODELING", 1989 ASME PVP Conference, Hawaii, July 1989, Proc. Vol. 181, pp. 101-106.
- 13. Makris, N., Constantinou, M.C. and Hueffmann, G., "TESTING AND MODELING OF VISCOUS DAMPERS," 1991 ASME PVP Conference, San Diego, CA, June 1991.
- 14. Constantinou, M.C., Reinhorn, A.M., Kartoum, A. and Watson, R., "TEFLON DISC BEARING AND DISPLACEMENT CONTROL DEVICE ISOLATION SYSTEM FOR UPGRADING SEISMICALLY VULNERABLE BRIDGES," Proc., 3rd World Congress on Joints and Bearings, Toronto, Canada, October 1991. **Best Paper Award**.

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- 16. Makris, N. and Constantinou, M.C., "EXPERIMENTAL STUDY AND ANALYTICAL PREDICTION OF RESPONSE OF SPRING-VISCOUS DAMPER ISOLATION SYSTEM," Proc. Tenth World Conference on Earthquake Engineering, July 1992, Madrid, Spain, pp. 2467-2471.
- 17. Constantinou, M.C., Symans, M.D. and Taylor, D.P., "FLUID VISCOUS DAMPERS FOR IMPROVING THE EARTHQUAKE RESISTANCE OF BUILDINGS," Structures Congress 1993, ASCE, April 1993, Irvine, CA.
- 18. Constantinou, M.C., Winters, C.W. and Theodossiou, D., "EVALUATION OF SEAOC/UBC ANALYSIS PROCEDURES. PART 2: FLEXIBLE SUPERSTRUCTURE," Proc. ATC-17-1 Seminar on Seismic Isolation, Passive Energy Dissipation, and Active Control, March 1993, San Francisco, CA.
- 19. Constantinou, M.C., Symans, M.D., Tsopelas, P. and Taylor, D.P., "FLUID VISCOUS DAMPERS IN APPLICATIONS OF SEISMIC ENERGY DISSIPATION AND SEISMIC ISOLATION," Proc. ATC-17-1 Seminar on Seismic Isolation, Passive Energy Dissipation, and Active Control, March 1993, San Francisco, CA.
- 20. Nagarajaiah, S., Tsopelas, P., Li, C., Reinhorn, A.M. and Constantinou, M.C., "3D-BASIS: A CLASS OF COMPUTERS PROGRAMS FOR NONLINEAR DYNAMIC ANALYSIS OF BASE ISOLATION STRUCTURES," Proc. ATC-17-1 Seminar on Seismic Isolation, Passive Energy Dissipation, and Active Control, March 1993, San Francisco, CA.
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