

Ioannis A. Kougoumtzoglou, *Ph.D.*

Assistant Professor

Department of Civil Engineering & Engineering Mechanics
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Web (Google Scholar): http://scholar.google.gr/citations?hl=en&user=_ld2hfcAAAAJ

Research Expertise/Interests

Prof. Kougoumtzoglou and his research group develop primarily analytic and numerical stochastic methodologies for the analysis, reliability assessment, and optimization of complex engineering systems and structures under the presence of uncertainties. These methodologies lead eventually to robust and efficient design of dynamical systems ranging from the nano-scale (e.g. nano-mechanical oscillators) to the macro-scale (e.g. energy harvesters and civil infrastructure systems). Specific theoretical research themes include nonlinear stochastic dynamics and path integrals, fractional calculus modeling, computational stochastic mechanics, uncertainty quantification methodologies, as well as signal processing techniques. Additional research endeavors with diverse applications in structural, earthquake, marine and biomedical engineering include uncertainty modeling and propagation via joint time-frequency analysis tools such as wavelets, as well as big/incomplete data management via sparse representations and compressive sampling.

Current Position

- ***Assistant Professor*** (09/2014 – present)

Department of Civil Engineering & Engineering Mechanics
The Fu Foundation School of Engineering & Applied Science
Columbia University, NY, USA

Professional Experience

- **Lecturer in Uncertainty and Engineering** (09/2011 – 08/2014)
(UK equivalent to Assistant Professor)
Institute for Risk & Uncertainty
& Centre for Engineering Sustainability, School of Engineering
University of Liverpool, Liverpool, UK
- **Research Assistant** (08/2007 – 05/2011)
Advanced Stochastic Mechanics Group (directed by Prof. P. D. Spanos)
Department of Civil and Environmental Engineering
Rice University, Houston, TX, USA
- **Registered (Licensed) Professional Civil Engineer** (08/2008 - present)
Technical Chamber of Greece (TEE-TCG) (Chartered Engineer)

Visiting Professorships

- **Visiting Professor (Invited)** (07/2017)
Natural Ocean Engineering Laboratory (NOEL),
Mediterranea University of Reggio Calabria, Italy
- **Visiting Professor (Invited)** (03/2016)
Department of Civil Engineering,
Federico Santa Maria Technical University, Valparaiso, Chile
- **Visiting Professor (Invited)** (11/2012 - 12/2012)
Structural Engineering Department, São Carlos School of Engineering
University of São Paulo, São Carlos, SP, Brazil

Education

- Rice University, Houston, TX, USA
Department of Civil and Environmental Engineering
Doctor of Philosophy (05/2011)
Thesis title: “*Harmonic Wavelets Procedures and Wiener Path Integral Methods for Response Determination and Reliability Assessment of Nonlinear Systems/Structures*”
Supervisor: P. D. Spanos, L.B. Ryon Endowed Chair in Engineering
- Rice University, Houston, TX, USA
Department of Civil and Environmental Engineering
Master of Science (05/2009)

- Thesis title: “*Response and First-Passage Statistics of Nonlinear Structural Models under Evolutionary Stochastic Loads*”
 Supervisor: P. D. Spanos, L.B. Ryon Endowed Chair in Engineering
- National Technical University of Athens, Greece
 School of Civil Engineering
Diploma in Civil Engineering (07/2007)
 Thesis title: “*Extended Finite Element Method (X-FEM) for Fracture Mechanics Applications*”
 Supervisor: M. Papadrakakis, Professor

Honors and Awards

- National Science Foundation (NSF), USA (2018-2023)
Faculty Early Career Development Program (CAREER) Awardee
“Prof. Kougioumtzoglou has been chosen by the National Science Foundation (NSF) for the project entitled «CAREER: A Path Integral Methodology for Accurate and Computationally Efficient Stochastic Analysis of Diverse Dynamical Systems» to receive the prestigious CAREER Award, which recognizes early stage scholars with high levels of promise and excellence”
- ICVRAM-ISUMA-UNCERTAINTIES Conference (2018)
 Florianopolis, Brazil, April 8-11, 2018
Keynote Speaker
“Advanced Tools for Uncertainty Modeling and Propagation in Engineering Dynamics”
- ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems (2017)
Associate Managing Editor
“Appointed Associate Managing Editor for Part B. Mechanical Engineering, accepting invitation by the journal’s Editor-in-Chief”
- American Society of Mechanical Engineers (ASME) (2017)
Certificate of Achieving the Status of MEMBER
“By action of the Board of Direction Ioannis A. Kougioumtzoglou has been elected MEMBER”
- American Society of Civil Engineers (ASCE) - Engineering Mechanics Institute (EMI) Conference, University of California at San Diego, USA (2017)
Best Student Paper Award (Dynamics Committee Competition)
“Awarded to Ketson dos Santos for his paper «Stochastic Averaging of a Duffing oscillator with fractional derivative terms based on the Hilbert transform» co-authored with Pol D. Spanos, Ioannis A. Kougioumtzoglou and Andre Beck”
- ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems (2015)
Editorial Board Member
“Joined the journal’s editorial board for both Part A. Civil Engineering and Part B. Mechanical Engineering, accepting invitation by the journal’s Editor-in-Chief”
- American Society of Civil Engineers (ASCE) (2015)

Certificate of Achieving the Status of MEMBER

“By action of the Board of Direction Ioannis A. Kougioumtzoglou has been elected MEMBER”

- European Association of Structural Dynamics (EASD) (2014)
2014 EASD Junior Research Prize
 in the area of *“Development of Methodologies for Structural Dynamics”*
“Awarded to Ioannis Kougioumtzoglou, at EUROLYN 2014, Porto, 1 July 2014, for his innovative influence on the field of nonlinear stochastic dynamics”
- American Society of Civil Engineers (ASCE) (2014)
Certificate of Appreciation
“For extraordinary efforts towards organizing The Second International Conference on Risk and Uncertainty (ICVRAM-ISUMA) at University of Liverpool, UK”
- The Higher Education Academy (HEA), United Kingdom (2014)
Certificate of Achieving the Status of FELLOW (FHEA)
“This is to certify that Ioannis A. Kougioumtzoglou has achieved the status of Fellow of the Higher Education Academy in recognition of attainment against the UK Professional Standards Framework for teaching and learning support in higher education”
 Recognition reference: PR069711
- International Journal of Non-Linear Mechanics (2013)
Certificate of Excellence in Reviewing
“Awarded to Ioannis Kougioumtzoglou in recognition of an outstanding contribution to the quality of the Journal”
- IEEE Symposium Series on Computational Intelligence, Singapore (2013)
Best Student Paper Award (among approx. 600 papers)
“Awarded to Liam A. Comerford for his paper co-authored with Ioannis A. Kougioumtzoglou and Michael Beer and entitled «An Artificial Neural Network Based Approach for Power Spectrum Estimation and Simulation of Stochastic Processes Subject to Missing Data»”
- University of Liverpool, United Kingdom (2012)
Achieving Excellence Award
(as a member of the Civil Engineering Program Team for enhancing the quality and revamping the Civil Engineering curriculum as well as increasing student satisfaction rates)
“This award recognizes people who have made a demonstrable difference to how a service is delivered; made an outstanding contribution to the achievement of one of the University's strategic priorities; or achieved outstanding project delivery”
- Hellenic Professional Society of Texas, USA (2008)
Scholarship Award
“Scholarship for excellent academic performance in graduate studies at Rice University”
- Eugenides Foundation, Greece (2008)
Scholarship Award
“Scholarship for graduate studies based on academic merit assessed on a national basis by a committee of academic faculties of various disciplines”

- Rice University, Houston, TX, USA (2007-2011)
Research Scholarship Award
“Full tuition and stipend for research assistantship; granted/supervised by Prof. Pol. D. Spanos, Department of Civil and Environmental Engineering”
- National State Scholarships Foundation of Greece (2003-2006)
Scholarship Award
“Awarded annually to the top 1% of class for excellent academic performance in undergraduate studies at National Technical University of Athens”

Teaching / Supervising Experience

- **Professional / Invited Short Courses Taught**
 - Invited short course “*Stochastic Dynamics Techniques for Civil Engineering Applications*”, Natural Ocean Engineering Laboratory (NOEL), Mediterranean University of Reggio Calabria, Italy, (07/2017)
 - Invited short course “*Stochastic Engineering Dynamics*”, São Carlos School of Engineering, University of São Paulo, Brazil (11/2012 – 12/2012)
- **Courses / Modules Taught and Co-Taught**

Dept. of Civil Eng. & Eng. Mechanics, Columbia University (09/2014 - present)

 - *ENME E6220: Random Processes in Mechanics*
 - *ENME E3105: Mechanics*

School of Engineering, University of Liverpool (09/2011 – 08/2014)

 - *ENGG 304: Uncertainty, Reliability and Risk I*
 - *CIVE 263/362: Capstone 1: Group Design Project*
 - *CIVE 262: Integrated Design*

Dept. of Civil & Environmental Engineering, Rice University (08/2007-05/2011)

 - *MECH 502: Mechanical Vibrations*
 - *MECH 678: Advanced Stochastic Mechanics*
 - *MECH 679: Applied Monte Carlo Analysis*
- **Teaching in Higher Education - Certificates / Programs / Workshops**
 - Faculty of Humanities and Social Sciences, Educational Development Division, University of Liverpool (2011-2013)
“Certificate in Professional Studies in Learning & Teaching in Higher Education”, (3 years cycle, accredited by the Higher Education Academy)

- Office of Graduate & Postdoctoral Studies, Rice University (2010)
“*Teaching Workshop for Future and Current Teachers*” (8 sessions)
- ***Ph.D. Students Supervised and Co-Supervised (4 defended; 6 in progress)***
Modeling, Analysis & Uncertainty Quantification in Civil Engineering /
Engineering Mechanics and selected Cross-disciplinary topics
 - Ioannis Mitseas (University of Liverpool)
“*An efficient stochastic dynamics framework for response determination, reliability assessment, and performance-based design of nonlinear structural systems*”
(Defended 03/2015; currently a Post-Doc at Leibniz University Hannover, Germany)
 - Liam Comerford (University of Liverpool)
“*Artificial neural network approaches and compressive sensing techniques for stochastic process estimation and simulation subject to incomplete data*”
(Defended 09/2015; currently self-employed and founder of a start-up)
 - Yuanjin Zhang (University of Liverpool)
“*Uncertainty modeling, propagation and quantification techniques with applications in engineering dynamics*”
(Defended 04/2017; currently a designer at Cccc WuHan Harbour Engineering Design And Research Co., China)
 - Vasileios Fragkoulis (University of Liverpool)
“*Random vibration of systems with singular matrices*”
(Defended 09/2017; currently a Post-Doc at Leibniz University Hannover, Germany)

Research Funding / Grants Awarded

- ***National Science Foundation (NSF), USA*** (500,000 \$): 09/2018 - 08/2023
“*CAREER: A Path Integral Methodology for Accurate and Computationally Efficient Stochastic Analysis of Diverse Dynamical Systems*”
- ***National Science Foundation (NSF), USA*** (298,918 \$): 09/2017 - 08/2020
“*Compressive Sampling for Uncertainty Modeling and Quantification of Dynamical Systems Subject to Highly Limited/Incomplete Data*”
- ***Columbia University***
SEAS Interdisciplinary Research Seed (SIRS) Funding Program (70,000 \$):
01/2017 - 12/2017
“*Real-time Elasticity Imaging*”
- ***Columbia University***
Hybrid Learning Course Redesign and Delivery (15,000 \$): 05/2016 - 08/2017
“*A Flipped Classroom approach to the courses “ENME E3105: Mechanics & CIEN E3111/E4111: Uncertainty and Risk in Civil Infrastructure Systems” by utilizing a web-based interactive tool*”
- ***Columbia University***
Hybrid Learning Course Redesign and Delivery (15,000 \$): 12/2014 - 08/2015

“A Flipped Classroom approach to the course “ENME E6220: Random Processes in Mechanics” by utilizing a web-based interactive tool”

- **Marie Curie International Research Staff Exchange Scheme (IRSES) – EU FP7** (281,400 €): 05/2014 – 04/2018
“PLENOSE - Large Multipurpose Platforms for Exploiting Renewable Energy in Open Seas”
- **UK Higher Education Innovation Funding (HEIF) for Knowledge Exchange** (1,000 £): 02/2013 – 07/2013
“Stochastic loss reserving and optimal pricing strategies for an insurer in a competitive market”
- **University of Liverpool (Business Gateway) Knowledge Exchange Voucher Scheme** (10,000 £): 01/2013 - 06/2013
“Efficient Uncertainty Quantification Techniques for Drill-String Dynamics”
- **Technology Strategy Board & Pavement Testing Services Ltd** (156,540 £): 08/2012 – 02/2015
“To develop a diagnostic and remedial maintenance system to predict failure of wearing courses on motorways and trunk roads, allowing preventative maintenance service planning”

Academic Services / Activities

- **Editor / Editorial Board Member - International Technical Journals**
 - *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems (Associate Managing Editor and Editorial Board Member)*
- **Editorial Work**
 - *Encyclopedia of Earthquake Engineering*, Springer, Editors: Beer M., **Kougioumtzoglou I. A.**, Patelli E., Au I. ISBN 978-3-642-35343-7
[http://www.springerreference.com/docs/navigation.do?m=Encyclopedia+of+Earthquake+Engineering+\(Engineering\)-book294](http://www.springerreference.com/docs/navigation.do?m=Encyclopedia+of+Earthquake+Engineering+(Engineering)-book294)
 - *Probabilistic Engineering Mechanics*, Special Issue on: *“Recent Advances and Future Challenges in Computational Stochastic Dynamics”*, vol. 38: 102-179, 2014
Guest Editors: Beer M., **Kougioumtzoglou I. A.**, Naess A.
 - *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems*, Special Issue on: *“Decision Making under Risk and Uncertainty using Systems and Control Theory Approach”*, vol. 1: Issue 2, 2015
Guest Editors: Pantelous A., **Kougioumtzoglou I. A.**
 - *International Journal of Reliability and Safety*, Special Issue on: *“Robust Engineering Solutions with Environmental Loading”*, vol.8: 97-195, 2014

Guest Editors: Patelli E., Beer M., **Kougioumtzoglou I. A.**

- *International Journal of Sustainable Materials and Structural Systems*, Special Issue on: “*Data Acquisition and Processing, Uncertainty Management and Inverse Problem Techniques for Structural Health Monitoring Applications*”, vol. 2, 2015

Guest Editors: Chatzi E., Giaralis A., **Kougioumtzoglou I. A.**

- *International Journal for Multiscale Computational Engineering*, Special Issue on: “*Uncertainty Modeling & Propagation Techniques in Engineering Mechanics: A Multi-Scale Perspective*”, vol. 14(3):191-321, 2016

Guest Editors: Deodatis G., **Kougioumtzoglou I. A.**, Spanos P. D.

○ **Reviewer - International Technical Journals**

- American Institute of Aeronautics and Astronautics (AIAA) Journal
- Applied Mathematical Modeling
- ASCE Journal of Engineering Mechanics
- ASCE Journal of Bridge Engineering
- ASCE Natural Hazards Review
- ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems
- ASME Journal of Applied Mechanics
- ASME Journal of Computational and Nonlinear Dynamics
- ASME Journal of Vibration and Acoustics
- Bulletin of Earthquake Engineering
- Chaos, Solitons & Fractals
- Computer-Aided Civil and Infrastructure Engineering
- Computers and Structures
- Earthquake Engineering and Engineering Vibration
- Earthquake Engineering and Structural Dynamics
- Earthquakes and Structures
- Engineering Structures
- European Journal of Applied Mathematics
- IEEE Transactions on Signal Processing
- IET Circuits, Devices & Systems
- IMechE Journal for Risk and Reliability
- IMechE Journal of Process Mechanical Engineering
- International Journal for Multiscale Computational Engineering
- International Journal for Uncertainty Quantification
- International Journal of Dynamics and Control
- International Journal of Electrical Power and Energy Systems
- International Journal of Non-Linear Mechanics
- International Journal for Numerical Methods in Engineering
- ISOPE Journal of Ocean and Wind Energy
- Journal of the Acoustical Society of America

- Journal of Computational Physics
 - Journal of Earthquake Engineering
 - Journal of the Institution of Engineers
 - Journal of Sound and Vibration
 - Journal of Vibration and Control
 - Journal of Zhejiang University-SCIENCE A
 - Meccanica
 - Mechanical Systems and Signal Processing
 - Mechanics Based Design of Structures and Machines
 - Nonlinear Dynamics
 - Physics Letters A
 - Probabilistic Engineering Mechanics
 - Soil Dynamics and Earthquake Engineering
 - Structural Control and Health Monitoring
 - Structure and Infrastructure Engineering
- **Reviewer - Technical Proposals**
 - Engineering and Physical Sciences Council (EPSRC), United Kingdom
 - National Science Center (Narodowe Centrum Nauki – NCN), Poland
 - National Science Foundation (NSF), USA
 - **Plenary / Keynote Lectures**
 - ICVRAM-ISUMA-UNCERTAINTIES Conference (2018)
Florianopolis, Brazil, April 8-11, 2018
Keynote Speaker
“Advanced Tools for Uncertainty Modeling and Propagation in Engineering Dynamics”
 - **Invited Seminars at Universities**
 - School of Civil Engineering, National Technical University of Athens (NTUA), Athens, Greece (04/2012)
 - Department of Civil & Environmental Engineering, Rensselaer Polytechnic Institute (RPI), Troy, NY, USA (03/2013)
 - Workshop on Uncertainty Analysis in Nonlinear Dynamics, Swansea University, UK (07/2013)
 - Department of Civil Engineering & Engineering Mechanics, Columbia University, New York, NY, USA (03/2014)
 - Department of Civil & Environmental Engineering, University of Southern California, Los Angeles, California, NY, USA (03/2014)
 - Department of Civil & Environmental Engineering, Tufts University, Medford, Massachusetts, USA (03/2014)
 - Department of Civil & Environmental Engineering, University of Amherst, Massachusetts, USA (10/2015)

- Department of Mechanical Engineering, MIT, Massachusetts, USA (12/2015)
 - Department of Civil Engineering, Federico Santa Maria Technical University, Valparaiso, Chile (03/2016)
 - Department of Civil & Environmental Engineering, University of Maryland, College Park, MD, USA (04/2016)
 - Department of Civil & Environmental Engineering, Rice University, Houston, TX, USA (11/2017)
 - Department of Civil Engineering, Johns Hopkins University, Baltimore, MD, USA (02/2018)
- ***Scientific/Program Committees and Boards of Conferences***
- Scientific Committee member: Engineering Mechanics Institute (EMI) Probabilistic Methods Committee
 - Scientific Committee member: Engineering Mechanics Institute (EMI) Dynamics Committee
 - Scientific Committee member: 6th International Conference on Scalable Uncertainty Management (SUM 2012), *September 17-19, 2012, Marburg, Germany*
 - Scientific Committee member: 7th International Conference on Computational Stochastic Mechanics (CSM7), *June 15-18, 2014, Santorini, Greece*
 - Scientific Committee member: 5th International Conference on Computational Methods (ICCM2014), *July 28-30, 2014, Cambridge, UK*
 - Scientific Committee member: 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 12), *July 12 - 15, 2015, Vancouver, Canada*
 - Scientific Committee member: 3rd International Conference on Materials and Reliability (ICMR 2015), *November 23-25, 2015, Jesu, Korea*
 - Program Committee member: 11th HSTAM International Congress on Mechanics (HSTAM 2016), *May 27-30, 2016, Athens, Greece*
 - Scientific Committee member: Engineering Mechanics Institute Conference (EMI 2016) / Probabilistic Mechanics and Reliability Conference (PMC 2016), *May 22-25, 2016, Vanderbilt University, TN, USA*
 - Scientific Committee member: Stochastic Mechanics - Meccanica Stocastica Conference 16SM-MS16, *June 12-15, 2016, Capri, Italy*
 - Scientific Committee member: 7th International Workshop on Reliable Engineering Computing (REC 2016), *June 15-17, 2016, Bochum, Germany*
 - Scientific Committee member: Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2017) and the 6th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2017), *June 15-17, 2017, Rhodes Island, Greece*
 - Scientific Committee member: 8th International Conference on Computational Methods (ICCM2017), *July 25-29, 2017, Guilin, Guangxi, China*
 - Scientific Committee member: 15th International Probabilistic Workshop (IPW 2017), Dresden, Germany, September 27-29, 2017
 - Scientific Committee member: ASCE 3rd International Conference on Vulnerability and Risk Analysis and Management & 7th International Symposium on Uncertainty Modeling and Analysis, & 4th International Symposium on Uncertainty

- Quantification and Stochastic Modeling (2018 ICVRAM-ISUMA-UNCERTAINTIES), Florianopolis, Brazil, April 8-11, 2018
 - Scientific Committee member: 8th International Workshop on Reliable Engineering Computing (REC 2018), Liverpool, UK, July 16-18, 2018
 - Scientific Committee member: 9th International Conference on Computational Methods (ICCM2018), August 6-10, 2018, Rome, Italy
 - Scientific Committee member: Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2019) and the 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2019), June 24-26, 2019, Crete Island, Greece
 - Scientific Committee member: 13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), May 26-30, 2019, Seoul National University, Seoul, South Korea
- **Organization / Chairing of Conferences / Workshops**
- Conference Management Chair: ASCE 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM2014) & 6th International Symposium on Uncertainty Modeling and Analysis (ISUMA2014), University of Liverpool, Liverpool, July 13-16, 2014
 - Conference Chair: 13th International Probabilistic Workshop (IPW 2015), Liverpool, November 4-6, UK, 2015
- **Organization / Chairing of mini-Symposia (MS) / Sessions**
- the MS “Nonlinear Stochastic Dynamics: Current Status and Future Challenges”, with M. Beer and P. D. Spanos - 11th ASCE Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability (EMI/PMC 2012, June 17-20, 2012, University of Notre Dame, USA)
 - the MS “Uncertainty, Reliability and Risk in Engineering” with E. Patelli and M. Beer - 6th International Conference on Scalable Uncertainty Management (SUM 2012, September 17-19, 2012, Marburg, Germany)
 - the MS “Risk Assessment and Quantification in Engineering: A Multi-Disciplinary Perspective”, with E. Patelli, M. Beer and A. Naess - 4th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2013, June 12-14, Kos Island, Greece)
 - the MS “Recent Advances and Future Challenges in Computational Stochastic Dynamics”, with M. Beer, P. D. Spanos and A. Naess - 11th International Conference on Structural Safety and Reliability (ICOSSAR 2013, June 16-20, Columbia University, New York, NY, USA)
 - the MS “Engineering Analyses with Vague and Imprecise Information”, with M. Beer, E. Patelli, K.-K. Phoon and V. Kreinovich - 11th International Conference on Structural Safety and Reliability (ICOSSAR 2013, June 16-20, Columbia University, New York, NY, USA)
 - the MS “Efficient and Realistic Uncertainty Quantification”, with M. Beer and E. Patelli - 5th Asia Pacific Congress on Computational Mechanics & the 4th International Symposium on Computational Mechanics (APCOM & ISCM 2013, December 11-14, Singapore)

- the MS “*Control Theory of Uncertain Systems and its Applications*”, with E. Antoniou, B. Gashi, G. Halikias and A. Pantelous - Second International Conference on Vulnerability and Risk Analysis and Management (*ICVRAM 2014*) & Sixth International Symposium on Uncertainty Modelling and Analysis (*ISUMA 2014*), July 13 – 16, 2014, University of Liverpool, Liverpool, UK
- the MS “*Efficient methods for uncertainty quantification*”, with A. DiazDelaO, M. Beer, E. Patelli, S. K. Au, K. Zuev - 5th International Conference on Computational Methods (*ICCM*), July 28 – 30, 2014, Cambridge, UK
- the MS “*Computational Modelling of Materials with Uncertainty*”, with A. DiazDelaO, E. S. Flores, M. Beer, P. G. Soto - 5th International Conference on Computational Methods (*ICCM*), July 28 – 30, 2014, Cambridge, UK
- the MS “*Novel Stochastic Dynamics Methodologies and Signal Processing Techniques for Civil Engineering Applications*”, with A. Pirrotta, P. D. Spanos and M. Di Paola - *EMI 2015 - Engineering Mechanics Institute Conference*, June 16-19, 2015, Stanford University, USA
- the MS “*Stochastic dynamics and simulation based techniques for Performance-based Earthquake Engineering*” with A. Giaralis, A. Taflanidis, and D. Vamvatsikos - *12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 12)*, July 12 - 15, 2015, Vancouver, Canada
- the MS “*Uncertainty Modeling & Propagation Techniques in Engineering Mechanics*” with S. Adhikari, M. Beer and A. Pirrotta – *3rd International Conference on Materials and Reliability*, November 23-25, 2015, Jesu, Korea
- the MS “*Uncertainty Modeling & Propagation Techniques in Stochastic Dynamics*”, with A. Pirrotta, P. D. Spanos and M. Di Paola - *EMI 2016 Engineering Mechanics Institute / PMC 2016 – Probabilistic Mechanics & Reliability Conferences*, May 22-25, Vanderbilt University, USA
- the MS “*Uncertainty Modeling & Propagation in Nonlinear Stochastic Dynamics: Current Status & Future Challenges*” with M. Beer, J. Chen, and P. D. Spanos - *6th Asian-Pacific Symposium on Structural Reliability and Its Applications (APSSRA)*, May 28-30, 2016, Tongji University, Shanghai, China
- the MS “*Advances in data acquisition, uncertainty quantification, and inverse problems for structural health monitoring applications*” with E. Chatzi and A. Giaralis - *11th HSTAM International Congress on Mechanics (HSTAM 2016)*, May 27-30, 2016, Athens, Greece
- the MS “*Computational methods for the solution of stochastic differential equations*” with V. Papadopoulos, and J. Chen - *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016)*, June 5-10, 2016, Crete, Greece
- the MS “*Recent Advances in Nonlinear Dynamics and Control: A Stochastic Perspective*”, with M. Beer, A. Pantelous, and D. Yurchenko - *EMI 2016 Engineering Mechanics International Conference*, October 25-27, Metz, France
- the MS “*Stochastic dynamics and simulation based techniques for Performance-based Earthquake Engineering*” with A. Giaralis, and D. Vamvatsikos – *16th World Conference on Earthquake Engineering (16WCEE 2017)*, January 7-13, 2017, Santiago de Chile, Chile

- the MS “*Numerical Methods for Engineering Stochastic Dynamical Systems*”, with M. Grigoriu, A. Pantelous, and A. Pirrotta, - *EMI 2017 Engineering Mechanics Conference, June 4-7, 2017, UC San Diego, USA*
- the MS “*Stochastic Engineering Dynamics: Recent Advances and Future Challenges*”, with A. Pirrotta, P. D. Spanos and M. Di Paola - *12th International Conference On Structural Safety And Reliability (ICOSSAR 2017), August 6-10, TU Wien, Vienna, Austria*
- the MS “*Uncertainty Quantification for complex structures in dynamic environments*”, with D. Yurchenko, M. Beer, J. Chen, J. Li - *12th International Conference On Structural Safety And Reliability (ICOSSAR 2017), August 6-10, TU Wien, Vienna, Austria*
- the MS “*Recent Advances in Stochastic Structural Dynamics*”, with M. Hanss, A. Pirrotta - *10th International Conference on Structural Dynamics (EURODYN 2017), September 10-13, Rome, Italy*
- the MS “*Approaches for Uncertainty Quantification in Structural Dynamics*”, with M. Beer, H. Jensen, E. Patelli, M. Valdebenito - *(2018 ICVRAM-ISUMA-UNCERTAINTIES), Florianopolis, Brazil, April 8-11, 2018*
- the MS “*Numerical Methods for Stochastic Engineering Dynamics*”, with A. Naess, A. Pirrotta, A. Pantelous, - *EMI 2018 Engineering Mechanics Conference, May 29 – June 1, 2018, MIT, USA*

Memberships / Professional Associations

- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- Engineering Mechanics Institute (EMI)
- EMI Probabilistic Methods Committee
- EMI Dynamics Committee
- International Civil Engineering Risk and Reliability Association (CERRA)
- International Association for Structural Safety and Reliability (IASSAR)
- European Association for Structural Dynamics (EASD)
- The Higher Education Academy, United Kingdom (HEA)
- Technical Chamber of Greece (Registered/Chartered Professional Civil Engineer)
- Hellenic Society for Theoretical and Applied Mechanics (HSTAM)

Skills

- **Languages:** Greek (Native); English (Excellent); German (Advanced)

Publications

(underline denotes current/past PhD students)

A. Books

- A1. Beer M., **Kougioumtzoglou I. A.**, Patelli E., Au I.S.-K., (Eds.), 2015. Encyclopedia of Earthquake Engineering, *Springer*, ISBN 978-3-642-35343-7. <http://www.springer.com/engineering/civil+engineering/book/978-3-642-35343-7>

B. Book Chapters

- B1. Beer M., **Kougioumtzoglou I. A.**, Patelli E., 2014. Emerging concepts and approaches for efficient and realistic uncertainty quantification, *Maintenance and Safety of Aging Infrastructure*, Frangopol D. M. & Tsompanakis Y. (Eds.), p. 121-161, *Structures & Infrastructures Book Series*, CRC Press, Taylor & Francis Group, 978-0-415-65942-0.

C. Peer-Reviewed International Journals

o *Papers (Published / In Press)*

- C1. **Kougioumtzoglou I. A.**, Spanos P. D., 2009. An approximate approach for nonlinear system response determination under evolutionary stochastic excitation, *Current Science, Indian Academy of Sciences*, vol. 97: 1203-1211, (Special Issue, Invited).
- C2. Spanos P. D., **Kougioumtzoglou I. A.**, Soize C., 2011. On the determination of the power spectrum of randomly excited oscillators via stochastic averaging: An alternative perspective, *Probabilistic Engineering Mechanics*, vol. 26: 10-15, (Special Issue, Invited).
- C3. Spanos P. D., **Kougioumtzoglou I. A.**, 2012. Harmonic wavelets based statistical linearization for response evolutionary power spectrum determination, *Probabilistic Engineering Mechanics*, vol. 27: 57-68, (Special Issue, Invited).
- C4. Spanos P. D., Castillo D. H., **Kougioumtzoglou I. A.**, Tapia R. A., 2012. A nonlinear model for top fuel dragster dynamic performance assessment, *Vehicle System Dynamics*, vol. 50: 281-297.
- C5. **Kougioumtzoglou I. A.**, Spanos P. D., 2012. An analytical Wiener path integral technique for non-stationary response determination of nonlinear oscillators, *Probabilistic Engineering Mechanics*, vol. 28: 125-131, (Special Issue, Invited).

- C6. **Kougioumtzoglou I. A.**, Spanos P. D., 2013. An identification approach for linear and nonlinear time-variant structural systems via harmonic wavelets, *Mechanical Systems and Signal Processing*, vol. 37: 338-352.
- C7. Lancaster I. M., Khalid H. A., **Kougioumtzoglou I. A.**, 2013. Extended FEM modeling of crack propagation using semi-circular bending test, *Construction and Building Materials*, vol. 48: 270-277.
- C8. **Kougioumtzoglou I. A.**, Spanos P. D., 2013. Response and first-passage statistics of nonlinear oscillators via a numerical path integral approach, *ASCE Journal of Engineering Mechanics*, vol. 139: 1207-1217.
- C9. **Kougioumtzoglou I. A.**, Spanos P. D., 2013. Nonlinear MDOF system stochastic response determination via a dimension reduction approach, *Computers and Structures*, vol. 126: 135-148, (Special Issue, Invited).
- C10. **Kougioumtzoglou I. A.**, 2013. Stochastic joint time-frequency response analysis of nonlinear structural systems, *Journal of Sound and Vibration*, vol. 332: 7153-7173.
- C11. Spanos P. D., **Kougioumtzoglou I. A.**, 2014. Survival probability determination of nonlinear oscillators subject to evolutionary stochastic excitation, *ASME Journal of Applied Mechanics*, vol. 81, 051016: 1-9.
- C12. **Kougioumtzoglou I. A.**, Spanos P. D., 2014. Stochastic response analysis of the softening Duffing oscillator and ship capsizing probability determination via a path integral approach, *Probabilistic Engineering Mechanics*, vol. 35: 67-74 (Special Issue, Invited).
- C13. Spanos P. D., **Kougioumtzoglou I. A.**, 2014. Galerkin scheme based determination of first-passage probability of nonlinear system response, *Structure and Infrastructure Engineering*, vol. 10: 1285-1294, (Special Issue, Invited).
- C14. **Kougioumtzoglou I. A.**, Spanos P. D., 2014. Non-stationary stochastic response determination of nonlinear systems: A Wiener path integral formalism, *ASCE Journal of Engineering Mechanics*, vol. 140: 04014064: 1-14.
- C15. Kong F., Spanos P. D., Li J., **Kougioumtzoglou I. A.**, 2014. Response evolutionary power spectrum determination of chain-like MDOF nonlinear structural systems via harmonic wavelets, *International Journal of Non-Linear Mechanics*, vol. 66: 3-17 (Special Issue, Invited).
- C16. Beck A. T., **Kougioumtzoglou I. A.**, dos Santos K. M., 2014. Optimal performance-based design of non-linear stochastic dynamical RC structures subject to stationary wind excitation, *Engineering Structures*, vol. 78: 145-153 (Special Issue, Invited).

- C17. Di Matteo A., **Kougioumtzoglou I. A.**, Pirrotta A., Spanos P. D., Di Paola M., 2014. Stochastic response determination of nonlinear oscillators with fractional derivatives elements via the Wiener path integral, *Probabilistic Engineering Mechanics*, vol. 38: 127-135 (Special Issue, Invited).
- C18. Tubaldi E., **Kougioumtzoglou I. A.**, 2015. Nonstationary stochastic response of structural systems equipped with nonlinear viscous dampers under seismic excitation, *Earthquake Engineering and Structural Dynamics*, vol. 44: 121-138.
- C19. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., 2015. An artificial neural network approach for stochastic process power spectrum estimation subject to missing data, *Structural Safety*, vol. 52: 150-160 (Special Issue, Invited).
- C20. Zhang Y., **Kougioumtzoglou I. A.**, 2015. Nonlinear oscillator stochastic response and survival probability determination via the Wiener path integral, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B. Mechanical Engineering*, vol.1: 021006:1-15.
- C21. **Kougioumtzoglou I. A.**, Di Matteo A., Spanos P. D., Pirrotta A., Di Paola M., 2015. An efficient Wiener path integral technique formulation for stochastic response determination of nonlinear MDOF systems, *ASME Journal of Applied Mechanics*, vol. 82, 101005: 1-7.
- C22. **Kougioumtzoglou I. A.**, Zhang Y., Beer M., 2015. Softening Duffing oscillator reliability assessment subject to evolutionary stochastic excitation, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A. Civil Engineering*, vol. 2 (2), C4015001: 1-10 (Special Issue, Invited).
- C23. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., 2015. On quantifying the uncertainty of stochastic process power spectrum estimates subject to missing data, *International Journal of Sustainable Materials and Structural Systems*, vol. 2: 185-206 (Special Issue, Invited).
- C24. Fragkoulis V., **Kougioumtzoglou I. A.**, Pantelous A., 2016. Linear random vibration of structural systems with singular matrices, *ASCE Journal of Engineering Mechanics*, vol. 142 (2), 04015081: 1-11.
- C25. **Kougioumtzoglou I. A.**, Spanos P. D., 2016. Harmonic wavelets based response evolutionary power spectrum determination of linear and nonlinear oscillators with fractional derivative elements, *International Journal of Non-Linear Mechanics*, vol. 80: 66-75 (Special Issue, Invited).
- C26. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., 2016. Compressive sensing based stochastic process power spectrum estimation subject to missing data, *Probabilistic Engineering Mechanics*, vol. 44: 66-76 (Special Issue, Invited).

- C27. Spanos P. D., Kong F., Li J., **Kougioumtzoglou I. A.**, 2016. Harmonic wavelets based excitation-response relationships for linear systems: A critical perspective, *Probabilistic Engineering Mechanics*, vol. 44: 163-173 (Special Issue, Invited).
- C28. Mitseas I. P., **Kougioumtzoglou I. A.**, Beer M., 2016. An approximate stochastic dynamics approach for nonlinear structural system performance-based multi-objective optimum design, *Structural Safety*, vol. 60: 67-76.
- C29. Fragkoulis V., **Kougioumtzoglou I. A.**, Pantelous A., 2016. Statistical linearization of nonlinear structural systems with singular matrices, *ASCE Journal of Engineering Mechanics*, vol. 142 (9), 04016063: 1-11.
- C30. Mitseas I. P., **Kougioumtzoglou I. A.**, Spanos P. D., Beer M., 2016. Nonlinear MDOF structural system survival probability determination subject to evolutionary stochastic excitation, *Strojniški vestnik - Journal of Mechanical Engineering*, vol. 62: 440-451 (Special Issue, Invited).
- C31. Hillier J. K., **Kougioumtzoglou I. A.**, Stokes C. R., Smith M. J., Clark C. D., Spagnolo M. S., 2016. Exploring explanations of subglacial bedform sizes using statistical models, *PLOS ONE*, vol. 11(7): e0159489, doi:10.1371/journal.pone.0159489.
- C32. Kong F., **Kougioumtzoglou I. A.**, Spanos P. D., Li S., 2016. Nonlinear system response evolutionary power spectral density determination via a harmonic wavelets based Galerkin technique, *International Journal for Multiscale Computational Engineering*, vol. 14 (3): 255-272 (Special Issue, Invited).
- C33. Gazis N., **Kougioumtzoglou I. A.**, Patelli E., 2017. Ice gouge depth determination via an efficient stochastic dynamics technique, *ASME Journal of Offshore Mechanics and Arctic Engineering*, vol. 139, 011501: 1-8.
- C34. Antoniou E. N., Pantelous A. A., **Kougioumtzoglou I. A.**, Pirrotta A., 2017. Response determination of linear dynamical systems with singular matrices: A polynomial matrix theory approach, *Applied Mathematical Modeling*, vol. 42: 423-440.
- C35. Comerford L. A., Jensen H., Mayorga F., Beer M., **Kougioumtzoglou I. A.**, 2017. Compressive sensing with an adaptive wavelet basis for structural system response and reliability analysis under missing data, *Computers and Structures*, vol. 182: 26-40.
- C36. **Kougioumtzoglou I. A.**, dos Santos K. R. M., Comerford L., 2017. Incomplete data based parameter identification of nonlinear and time-variant oscillators with fractional derivative elements, *Mechanical Systems and Signal Processing*, vol. 94: 279-296.

- C37. **Kougoumtzoglou I. A.**, 2017. A Wiener path integral solution treatment and effective material properties of a class of one-dimensional stochastic mechanics problems, *ASCE Journal of Engineering Mechanics*, vol. 143 (6), 04017014: 1-12.
- C38. **Kougoumtzoglou I. A.**, Fragkoulis V., Pantelous A., Pirrotta A., 2017. Random vibration of linear and nonlinear structural systems with singular matrices: A frequency domain approach, *Journal of Sound and Vibration*, vol. 404: 84-101.
- C39. Zhang Y., Comerford L. A., **Kougoumtzoglou I. A.**, Patelli E., Beer M., 2017. Uncertainty quantification of power spectrum and spectral moments estimates subject to missing data, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A. Civil Engineering*, vol. 4 (3), 04017020: 1-10.
- C40. Laface V., **Kougoumtzoglou I. A.**, Malara G., Arena F., 2017. Efficient processing of water wave records via compressive sensing and joint time-frequency analysis via harmonic wavelets, *Applied Ocean Research*, vol. 69: 1-9.
- C41. Zhang Y., Comerford L., **Kougoumtzoglou I. A.**, Beer M., 2018. L_p -norm minimization for stochastic process power spectrum estimation subject to incomplete data, *Mechanical Systems and Signal Processing*, vol. 101: 361-376.
- C42. Meimaris A., **Kougoumtzoglou I. A.**, Pantelous A., 2017. A closed form approximation and error quantification for the response transition probability density function of a class of stochastic differential equations, *Probabilistic Engineering Mechanics*, doi.org/10.1016/j.probengmech.2017.07.005 (In Press).
- C43. Spanos P. D., **Kougoumtzoglou I. A.**, dos Santos K. R. M., Beck A. T., 2018. Stochastic averaging of nonlinear oscillators: Hilbert transform perspective, *ASCE Journal of Engineering Mechanics*, vol. 144 (2), 04017173: 1-9.
- C44. Mitseas I. P., **Kougoumtzoglou I. A.**, Giaralis A., Beer M., 2018. A novel stochastic linearization framework for seismic demand estimation of hysteretic MDOF systems subject to linear response spectra, *Structural Safety*, vol. 72: 84-98.
- C45. Malara G., **Kougoumtzoglou I. A.**, Arena F., 2018. Extrapolation of random wave field data via compressive sampling, *Ocean Engineering*, vol. 157: 87-95.
- **Technical Notes**
- C46. dos Santos K. R. M., **Kougoumtzoglou I. A.**, Beck A. T., 2016. Incremental dynamic analysis: A nonlinear stochastic dynamics perspective, *ASCE Journal of Engineering Mechanics*, vol. 142 (10), 06016007: 1-7.

D. Peer-Reviewed International Journals (Scholarship of Teaching & Learning)

- D1.* Comerford L., Mannis A., De Angelis M., **Kougioumtzoglou I. A.**, Beer M., 2017. Utilising database-driven interactive software to enhance independent home-study in a flipped classroom setting: going beyond visualising engineering concepts to ensuring formative assessment, *European Journal of Engineering Education*, doi:10.1080/03043797.2017.1293617 (In Press)

E. Conferences

o Peer-Reviewed Conference Proceedings (Papers)

- Ep1.* Spanos P. D., **Kougioumtzoglou I. A.**, An approximate approach for nonlinear system evolutionary response spectrum determination via wavelets, *Proceedings of the IUTAM Symposium on Nonlinear Stochastic Dynamics and Control, Hangzhou, China, 10-14 May, 2010, W. Q. Zhu et al. (Eds.), IUTAM BOOK SERIES 29: 87-96, Springer, ISBN: 978-94-007-0731-3* (Invited Lecture).
- Ep2.* **Kougioumtzoglou I. A.**, Spanos P. D., A Wiener path integral method for non-stationary response determination of nonlinear oscillators under random loading, *Proceedings of the 6th International Conference on Computational Stochastic Mechanics (CSM 6), Rhodos, Greece, 13-16 June, 2010, G. Deodatis and P. D. Spanos (Eds.): 370-379, Research Publishing, ISBN: 978-981-08-7619-7.*
- Ep3.* Giaralis A., Spanos P. D., **Kougioumtzoglou I. A.**, A stochastic approach for deriving effective linear properties of bilinear hysteretic systems subject to design spectrum compatible strong ground motions, *Proceedings of the 8th International Conference on Structural Dynamics (EURODYN 2011), Leuven, Belgium, 4-6 July, 2011, G. De Roeck et al. (Eds): 2819-2826, K. U. Leuven, ISBN: 978-90-760-1931-4.*
- Ep4.* Spanos P. D., **Kougioumtzoglou I. A.**, Harmonic wavelet-based statistical linearization of the Bouc-Wen hysteretic model, *Proceedings of the 11th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 11), Zurich, Switzerland, 1-4 August, 2011, Faber et al. (Eds.), 2649-2656, Taylor and Francis Group, ISBN: 978-0-415-66986-3.*
- Ep5.* **Kougioumtzoglou I. A.**, Kong F., Spanos P. D., Li J., Some observations on wavelets based evolutionary power spectrum estimation, *Proceedings of the Stochastic Mechanics Conference (SM12), Ustica, Italy, 7-10 June, 2012, Meccanica dei Materiali e delle Strutture, vol. 3: 37-44 (2012), ISSN: 2035-679X.*

- Ep6. **Kougioumtzoglou I. A.**, A dimension reduction approach for MDOF nonlinear system response determination under evolutionary stochastic excitation, *Proceedings of the 6th International ASRANet Conference for Integrating Structural Analysis, Risk and Reliability (ASRANet 2012)*, London, UK, 2-4 July, 2012.
- Ep7. **Kougioumtzoglou I. A.**, Spanos P. D., Harmonic wavelets based identification of nonlinear and time-variant systems, *Proceedings of the 6th International Conference on Scalable Uncertainty Management (SUM 2012)*, Marburg, Germany, 17-20 September, 2012, Huellermeier et al. (Eds.), LNAI 7520: 247-260, Springer-Verlag, ISBN: 978-3-642-33361-3.
- Ep8. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., An artificial neural network based approach for power spectrum estimation and simulation of stochastic processes subject to missing data, *Proceedings of the 2013 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2013)*, Singapore, 16-19 April, 2013, art. no. 6611738, pp. 118-124 (Best Student Paper Award).
- Ep9. **Kougioumtzoglou I. A.**, Vassilopoulou I., Gantes C. J., Stochastic response determination and reliability assessment of a nonlinear cable net structural system, *Proceedings of the 4th ECCOMAS Thematic International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2013)*, Papadrakakis et al. (Eds), Kos, Greece, 12-14 June, 2013.
- Ep10. **Kougioumtzoglou I. A.**, Spanos P. D., A Wiener path integral technique for determining the response of a bending beam with random material properties, *Proceedings of the 11th International Conference on Structural Safety And Reliability (ICOSSAR 2013)*, New York, USA, 16-20 June, 2013, G. Deodatis, B. Ellingwood and D. Frangopol (Eds.), 2013, Taylor & Francis Group, London, p. 1001-1007, ISBN 978-1-138-00086-5.
- Ep11. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., An artificial neural network based approach for power spectrum estimation subject to limited and/or missing data, *Proceedings of the 11th International Conference on Structural Safety And Reliability (ICOSSAR 2013)*, New York, USA, 16-20 June, 2013, G. Deodatis, B. Ellingwood and D. Frangopol (Eds.), 2013 Taylor & Francis Group, London, p. 1083-1090, ISBN: 978-1-138-00086-5.
- Ep12. Mitseas I. P., **Kougioumtzoglou I. A.**, Beer M., Optimal design of nonlinear structures under evolutionary stochastic earthquake excitations, *Proceedings of the International Conference on Engineering and Applied Sciences Optimization (OPT-i)*, Kos, Greece, June 4 - 6, 2014, M. G. Karlaftis, N. D. Lagaros, M. Papadrakakis, (Eds.), p. 2213-2233, ISBN: 978-960-99994-5-8.
- Ep13. **Kougioumtzoglou I. A.**, Spanos P. D., Harmonic wavelets based response evolutionary power spectrum determination of nonlinear oscillators with

- fractional derivative elements, *Proceedings of the 7th International Conference on Computational Stochastic Mechanics (CSM 7), Santorini, Greece, 15-18 June, 2014, G. Deodatis, P. D. Spanos (Eds.), Research Publishing, ISBN: 978-981-09-5348-5, p. 367-376.*
- Ep14. Fragkoulis V., **Kougioumtzoglou I. A.**, Pantelous A., Random vibration of linear systems with singular mass matrices, *Proceedings of the 7th International Conference on Computational Stochastic Mechanics (CSM 7), Santorini, Greece, 15-18 June, 2014, G. Deodatis, P. D. Spanos (Eds.), Research Publishing, ISBN: 978-981-09-5348-5, p. 277-285.*
- Ep15. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., A compressive sensing based approach for evolutionary power spectrum estimation subject to missing data, *Proceedings of the 7th International Conference on Computational Stochastic Mechanics (CSM 7), Santorini, Greece, 15-18 June, 2014, G. Deodatis, P. D. Spanos (Eds.), Research Publishing, ISBN: 978-981-09-5348-5, p. 206-217.*
- Ep16. Mitseas I. P., **Kougioumtzoglou I. A.**, Spanos P. D., Beer M., Reliability assessment of nonlinear MDOF systems subject to evolutionary stochastic excitation, *Proceedings of the 7th International Conference on Computational Stochastic Mechanics (CSM 7), Santorini, Greece, 15-18 June, 2014 G. Deodatis, P. D. Spanos (Eds.), Research Publishing, ISBN: 978-981-09-5348-5, p. 420-431.*
- Ep17. Zhang Y., **Kougioumtzoglou I. A.**, Wiener path integral based nonlinear oscillator survival probability determination, *Proceedings of the 7th International Conference on Computational Stochastic Mechanics (CSM 7), Santorini, Greece, 15-18 June, 2014, G. Deodatis, P. D. Spanos (Eds.), Research Publishing, ISBN: 978-981-09-5348-5, p. 789-800.*
- Ep18. **Kougioumtzoglou I. A.**, Response evolutionary power spectrum determination of nonlinear oscillators subject to stochastic excitation, *Proceedings of the IX International Conference on Structural Dynamics (EURODYN 2014), Porto, Portugal, June 30 – July 2, 2014, A. Cunha, E. Caetano, P. Ribeiro, G. Müller (Eds.), ISSN: 2311-9020; ISBN: 978-972-752-165-4. P. 2883-2888.*
- Ep19. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., A compressive sensing based approach for estimating stochastic process power spectra subject to missing data, *Proceedings of the IX International Conference on Structural Dynamics (EURODYN 2014), Porto, Portugal, June 30 – July 2, 2014. , A. Cunha, E. Caetano, P. Ribeiro, G. Müller (Eds.), ISSN: 2311-9020; ISBN: 978-972-752-165-4, p. 2995-2999.*
- Ep20. Beck A. T., **Kougioumtzoglou I. A.**, dos Santos K. M., Optimum design of nonlinear stochastic dynamical systems, *Proceedings of the 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014)*

& 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA 2014), University of Liverpool, Liverpool, UK, July 13 – 16, 2014, M. Beer, S.-K. Au, J. W. Hall, (Eds.), American Society of Civil Engineers (ASCE), pp. 96-105, doi: 10.1061/9780784413609.010.

- Ep21. **Kougioumtzoglou I. A.**, Kong F., Spanos P. D., Li J., Harmonic wavelets based response power spectrum determination of MDOF nonlinear structural systems, *Proceedings of the 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014) & 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA 2014)*, University of Liverpool, Liverpool, UK, July 13 – 16, 2014, M. Beer, S.-K. Au, J. W. Hall, (Eds.), American Society of Civil Engineers (ASCE), pp. 1625-1634, doi: 10.1061/9780784413609.163
- Ep22. Di Matteo A., Di Paola M., **Kougioumtzoglou I. A.**, Pirrotta A., Spanos P. D., A Wiener path integral technique for non-stationary response determination of nonlinear oscillators with fractional derivatives elements, *Proceedings of the 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014) & 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA 2014)*, University of Liverpool, Liverpool, UK, July 13 – 16, 2014, M. Beer, S.-K. Au, J. W. Hall, (Eds.), American Society of Civil Engineers (ASCE), pp. 1923-1932, doi: 10.1061/9780784413609.192.
- Ep23. McCarthy J. C., **Kougioumtzoglou I. A.**, Pantelous A. A., A Wiener path integral technique for the asset price process: Geometric Brownian motion and Vasicek, *Proceedings of the 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014) & 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA 2014)*, University of Liverpool, Liverpool, UK, July 13 – 16, 2014, M. Beer, S.-K. Au, J. W. Hall, (Eds.), American Society of Civil Engineers (ASCE), pp. 1205-1213, doi: 10.1061/9780784413609.121.
- Ep24. Comerford L. A., **Kougioumtzoglou I. A.**, Beer M., Uncertainty quantification in power spectrum estimation of stochastic processes subject to missing data, *Proceedings of the 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014) & 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA 2014)*, University of Liverpool, Liverpool, UK, July 13 – 16, 2014, M. Beer, S.-K. Au, J. W. Hall, (Eds.), American Society of Civil Engineers (ASCE), pp. 370-377, doi: 10.1061/9780784413609.038.
- Ep25. Mitseas I. P., **Kougioumtzoglou I. A.**, Beer M., Patelli E., Mottershead J. E., Robust design optimization of dynamical systems under evolutionary stochastic seismic excitation, *Proceedings of the 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014) & 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA 2014)*,

University of Liverpool, Liverpool, UK, July 13 – 16, 2014, M. Beer, S.-K. Au, J. W. Hall, (Eds.), American Society of Civil Engineers (ASCE), pp. 215-224, doi: 10.1061/9780784413609.022

- Ep26. Fragkoulis V., **Kougoumtzoglou I. A.**, Pantelous A., Pirrotta A., Higher order matrix differential equations with singular coefficient matrices, *Proceedings of the 12th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2014), Rhodes, Greece, 22-28 September, 2014, American Institute of Physics (AIP) Conf. Proc. 1648, 340002-1–340002-4; doi: 10.1063/1.4912578.*
- Ep27. Comerford L., **Kougoumtzoglou I. A.**, Beer M., Compressive sensing based power spectrum estimation from incomplete records by utilizing an adaptive basis, *Proceedings of the 2014 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2014), Orlando, Florida, USA, 9-12 December, 2014, doi:10.1109/CIES.2014.7011840, pp. 117-124.*
- Ep28. Gazis N., **Kougoumtzoglou I. A.**, A stochastic dynamics approach for ice gouge depth determination, *Proceedings of the 25th International Ocean and Polar Engineering Conference (ISOPE 2015), Kona, Big Island, Hawaii, USA, June 21-26, 2015.*
- Ep29. Zhang Y., **Kougoumtzoglou I. A.**, An approximate approach for assessing the reliability of a stochastically excited softening Duffing oscillator, *Proceedings of the 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 12), Vancouver, Canada, 12-15 July, 2015.*
- Ep30. Mitseas I. P., **Kougoumtzoglou I. A.**, Beer M., Nonlinear stochastic dynamic analysis for performance based multi-objective optimum design considering life cycle seismic loss estimation, *Proceedings of the 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 12), Vancouver, Canada, 12-15 July, 2015.*
- Ep31. Comerford L., Jensen H. A., Beer M., Mayorga C., **Kougoumtzoglou I. A.**, Kusanovic D., Structural system response and reliability analysis under incomplete earthquake records, *Proceedings of the 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 12), Vancouver, Canada, 12-15 July, 2015.*
- Ep32. Giaralis A., **Kougoumtzoglou I. A.**, A stochastic dynamics approach for response spectrum analysis of bilinear systems using equivalent linear properties, *Proceedings of the 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 12), Vancouver, Canada, 12-15 July, 2015.*

- Ep33. Zhang Y., Comerford L., **Kougioumtzoglou I. A.**, Beer M., Compressive sensing for power spectrum estimation of multi-dimensional processes under missing data, *Proceedings of the 22nd International Conference on Systems, Signals and Image Processing (IWSSIP 2015)*, London, UK, 10-12 September, 2015, ISBN: 978-1-4673-8353-0.
- Ep34. Zhang Y., Comerford L., **Kougioumtzoglou I. A.**, Patelli E., Beer M., Spectral moments estimates uncertainty quantification under incomplete data, *Proceedings of the 6th Asia-Pacific Symposium on Structural Reliability and its Applications (APSSRA 2016)*, H.W. Huang, J. Li, J. Zhang & J.B. Chen (editors), May 28-30, 2016, Shanghai, China, ISBN 978-7-5608- 6303-0, pp. 377-384.
- Ep35. Spanos P. D., **Kougioumtzoglou I. A.**, dos Santos K. R. M., Beck A. T., Hilbert transform based stochastic averaging of nonlinear oscillators, *Proceedings of the Stochastic Mechanics Conference (SM 2016)*, Capri, Italy, 12-15 June, 2016, *Meccanica dei Materiali e delle Strutture, Vol. VI (2016), no.1*, pp. 187-194, ISSN: 2035-679X
- Ep36. Meimaris A. T., **Kougioumtzoglou I. A.**, Pantelous A. A., Some observations on the accuracy of the Wiener path integral solution based on the most probable path approximation, *Proceedings of the Stochastic Mechanics Conference (SM 2016)*, Capri, Italy, 12-15 June, 2016, *Meccanica dei Materiali e delle Strutture, Vol. VI (2016), no.1*, pp. 195-202, ISSN: 2035-679X
- Ep37. dos Santos K. R. M., **Kougioumtzoglou I. A.**, Beck A. T., A stochastic dynamics approach for efficient incremental dynamic analysis, *Proceedings of the 8th International Conference on Bridge Maintenance, Safety and Management (IAMBAS 2016)*, Foz do Iguaçu, Brazil, 26-30 June, 2016.
- Ep38. dos Santos K. M., **Kougioumtzoglou I. A.**, Beck A. T., An approximate approach for efficient stochastic incremental dynamic analysis, *Proceedings of the 16th World Conference on Earthquake Engineering (WCEE 2017)*, Santiago, Chile, 9-13 January, 2017.
- Ep39. Giaralis A., **Kougioumtzoglou I. A.**, dos Santos K. M., A stochastic dynamics approach for response determination of bilinear hysteretic systems to pulse-like ground motions using time-dependent equivalent linear properties, *Proceedings of the 16th World Conference on Earthquake Engineering (WCEE 2017)*, Santiago, Chile, 9-13 January, 2017.
- Ep40. Laface V., Arena F., **Kougioumtzoglou I. A.**, dos Santos K., Joint time-frequency analysis of small scale ocean storms via the harmonic wavelet transform, *Proceedings of the 36th International Conference on Ocean, Offshore & Arctic Engineering (OMAE 2017)*, Trondheim, Norway, 25-30 June, 2017, Paper No. OMAE2017-61761, pp. V03AT02A046; 8 pages doi:10.1115/OMAE2017-61761, ISBN: 978-0-7918-5765-6

- Ep41. Fragkoulis V. C., **Kougioumtzoglou I. A.**, Pantelous A. A., Pirrotta A., A Moore-Penrose frequency domain approach for stochastic response determination of structural systems with singular matrices, *Proceedings of the 12th International Conference On Structural Safety And Reliability (ICOSSAR 2017)*, 6-10 August, 2017, TU Wien, Vienna, Austria.
- Ep42. Antoniou E. N., Pantelous A. A., **Kougioumtzoglou I. A.**, Pirrotta A., A polynomial matrix theory approach for determining the response of structural systems with singular matrices, *Proceedings of the 12th International Conference On Structural Safety And Reliability (ICOSSAR 2017)*, 6-10 August, 2017, TU Wien, Vienna, Austria.
- Ep43. **Kougioumtzoglou I. A.**, Stochastic response determination and effective material properties of a class of one-dimensional mechanics problems, *Proceedings of the 12th International Conference On Structural Safety And Reliability (ICOSSAR 2017)*, 6-10 August, 2017, TU Wien, Vienna, Austria.
- Ep44. Zhang Y., Comerford L., **Kougioumtzoglou I. A.**, Beer M., Enhancing sparsity in compressive sensing based power spectrum estimation of gappy processes, *Proceedings of the 12th International Conference On Structural Safety And Reliability (ICOSSAR 2017)*, 6-10 August, 2017, TU Wien, Vienna, Austria.
- Ep45. Mitseas I. A., **Kougioumtzoglou I. A.**, Giaralis A., Beer M., A stochastic dynamics approach for seismic response spectrum-based analysis of hysteretic MDOF structures, *Proceedings of the 12th International Conference On Structural Safety And Reliability (ICOSSAR 2017)*, 6-10 August, 2017, TU Wien, Vienna, Austria.

○ **Peer-Reviewed Conferences (Abstracts)**

- Ea1. Spanos P. D., **Kougioumtzoglou I. A.**, Soize C., On the determination of the power spectrum of randomly excited oscillators via stochastic averaging: An alternative perspective, *Proceedings of the International Conference on Stochastic Methods in Mechanics: Status and Challenges, Warsaw, Poland, 28-30 September, 2009* (Invited Lecture).
- Ea2. **Kougioumtzoglou I. A.**, Spanos P. D., Response and first-passage analysis of nonlinear oscillators under evolutionary excitation by a path integral approach, *Proceedings of the International Conference of the Engineering Mechanics Institute (EMI 2010)*, Los Angeles, USA, 8-11 August, 2010.
- Ea3. Spanos P. D., **Kougioumtzoglou I. A.**, Galerkin scheme based determination of first-passage probability of nonlinear system response, *Proceedings of the*

International Symposium on Reliability Engineering and Risk Management (ISRERM 2010), Shanghai, China, 23-26 September, 2010 (Keynote Lecture).

- Ea4.* **Kougioumtzoglou I. A.**, Spanos P. D., Non-Stationary stochastic response determination of nonlinear systems: An analytical Wiener path integral formalism, *Proceedings of the 11th ASCE Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability (EMI/PMC 2012), Notre Dame, USA, 17-20 June, 2012.*
- Ea5.* **Kougioumtzoglou I. A.**, Spanos P.D., A Wiener path integral technique for non-stationary stochastic response determination of nonlinear MDOF structural systems, *Proceedings of the 10th HSTAM International Congress on Mechanics (HSTAM 2013), Chania, Crete, Greece, 25 – 27 May, 2013.*
- Ea6.* Duller R. A., De Angelis A., **Kougioumtzoglou I. A.**, Assessing the fractal nature of terrestrial gravel systems, *Proceedings of the 10th International Conference on Fluvial Sedimentology (ICFS 10), Leeds, UK, 14-19 July, 2013.*
- Ea7.* Beer M., Patelli E., **Kougioumtzoglou I. A.**, Conceptual directions in uncertainty quantification, *Proceedings of the European Safety and Reliability Conference (ESREL 2014), Wroclaw, Poland, 14-18 September, 2014.*
- Ea8.* **Kougioumtzoglou I. A.**, Di Matteo A., Pirrotta A., Spanos P., Di Paola M., An efficient Wiener path integral technique formulation for stochastic response determination of nonlinear MDOF systems, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2015), Stanford University, June 16-19, 2015.*
- Ea9.* **Kougioumtzoglou I. A.**, Zhang Y., Beer M., Reliability assessment of a softening Duffing oscillator under evolutionary stochastic excitation, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2015), Stanford University, June 16-19, 2015.*
- Ea10.* Fragkoulis V., **Kougioumtzoglou I. A.**, Pantelous A., Statistical linearization of nonlinear systems with singular mass matrices, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2015), Stanford University, June 16-19, 2015.*
- Ea11.* Comerford L., **Kougioumtzoglou I. A.**, Beer M., A compressive sensing based framework for evolutionary power spectrum estimation subject to missing data, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2015), Stanford University, June 16-19, 2015.*
- Ea12.* Mitseas L., **Kougioumtzoglou I. A.**, Beer M., Fragility analysis of hysteretic MDOF structural systems subject to evolutionary stochastic excitations, *Proceedings of the 8th GRACM International Congress on Computational*

Mechanics, Volos, Greece, 12-15 July, 2015, ISBN: 978-960-9439-36-7, University of Thessaly Press 2015, editors, N. Pelekasis and G.E. Stavroulakis.

- Ea13.* Comerford L., **Kougioumtzoglou I. A.**, Beer M., Uncertainty quantification in evolutionary power spectrum estimation subject to missing data, *Proceedings of the 8th GRACM International Congress on Computational Mechanics, Volos, Greece, 12-15 July, 2015, ISBN: 978-960-9439-36-7, University of Thessaly Press 2015, editors, N. Pelekasis and G.E. Stavroulakis.*
- Ea14.* Zhang Y., Comerford L., **Kougioumtzoglou I. A.**, Beer M., A compressive sensing based approach for power spectrum estimation of multi-variate stochastic processes under missing data, *Proceedings of the 13th International Probabilistic Workshop (IPW2015), University of Liverpool, Liverpool, UK, 4-6 November, 2015.*
- Ea15.* Giaralis A., **Kougioumtzoglou I. A.**, Derivation of time-dependent equivalent linear properties of bilinear hysteretic systems subject to pulse-like ground motions via a stochastic dynamics approach, *Proceedings of the 13th International Probabilistic Workshop (IPW2015), University of Liverpool, Liverpool, UK, 4-6 November, 2015.*
- Ea16.* **Kougioumtzoglou I. A.**, dos Santos K. R. M., Comerford L., Nonlinear system with fractional derivative terms parameter identification subject to incomplete non-stationary data, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2016) and the Probabilistic Mechanics and Reliability Conference (PMC 2016), Vanderbilt University, May 22-25, 2016.*
- Ea17.* Spanos P. D., Fragkoulis V. C., **Kougioumtzoglou I. A.**, Pantelous A. A., Random vibration integrals for systems endowed with fractional derivative elements, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2016) and the Probabilistic Mechanics and Reliability Conference (PMC 2016), Vanderbilt University, May 22-25, 2016.*
- Ea18.* dos Santos K. R. M., **Kougioumtzoglou I. A.**, Beck A. T., Efficient incremental dynamic analysis via stochastic averaging, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2016) and the Probabilistic Mechanics and Reliability Conference (PMC 2016), Vanderbilt University, May 22-25, 2016.*
- Ea19.* **Kougioumtzoglou I. A.**, dos Santos K. R. M., Comerford L., Incomplete data based identification of nonlinear systems endowed with fractional derivative elements, *Proceedings of the 11th HSTAM International Congress on Mechanics (HSTAM 2016), Athens, Greece, 27 – 30 May, 2016, ISBN: 978-618-82609-1-7, editors, H. G. Georgiades and V. K. Koumousis.*
- Ea20.* **Kougioumtzoglou I. A.**, Di Matteo A., Spanos P., Pirrotta A., Di Paola M., Efficient stochastic response determination of dynamical systems via the Wiener

path integral, *Proceedings of the 11th HSTAM International Congress on Mechanics (HSTAM 2016), Athens, Greece, 27 – 30 May, 2016, ISBN: 978-618-82609-1-7, editors, H. G. Georgiades and V. K. Koumouis.*

- Ea21.* Fragkoulis V. C., **Kougioumtzoglou I. A.**, Pantelous A. A., Stochastic response determination of linear and nonlinear dynamical systems with singular matrices, *Proceedings of the 11th HSTAM International Congress on Mechanics (HSTAM 2016), Athens, Greece, 27 – 30 May, 2016, ISBN: 978-618-82609-1-7, editors, H. G. Georgiades and V. K. Koumouis.*
- Ea22.* Meimaris A., **Kougioumtzoglou I. A.**, Pantelous A. A., Some observations on the approximations of the Wiener path integral technique, *Proceedings of the Engineering Mechanics Institute International Conference, Metz, France, October 25-27, 2016.*
- Ea23.* dos Santos K. R. M., **Kougioumtzoglou I. A.**, Spanos P. D., Beck A. T., Stochastic averaging of a Duffing oscillator with fractional derivative terms based on the Hilbert transform, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*
- Ea24.* Malara G., **Kougioumtzoglou I. A.**, Arena F., Compressive sampling based extrapolation of random wave field data, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*
- Ea25.* Meimaris A., **Kougioumtzoglou I. A.**, Pantelous A., Assessing the accuracy of the Wiener Path Integral technique for a class of stochastic differential equations, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*
- Ea26.* Brudastova O., **Kougioumtzoglou I. A.**, Malara G., Psaros A., A Wiener path integral technique for stochastic response determination of structural systems under non-white excitation processes, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*
- Ea27.* Psaros A., **Kougioumtzoglou I. A.**, Sparse Representations and Wiener Path Integral for Efficient Stochastic Response Determination of MDOF Systems, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*
- Ea28.* Mitseas I., **Kougioumtzoglou I. A.**, Beer M., An approximate stochastic dynamics approach for inelastic stochastic design spectrum-based analysis, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*

- Ea29.* Fragkoulis V. C., **Kougoumtzoglou I. A.**, Pantelous A. A., A frequency domain methodology for determining the stochastic response of dynamical systems with singular matrices, *Proceedings of the Engineering Mechanics Institute Conference (EMI 2017) University of California, San Diego (UCSD), June 4-7, 2017.*

F. Peer-Reviewed Conference Proceedings (Scholarship of Teaching & Learning)

- F1.* Comerford L., De Angelis M., Mannis A., Beer M., **Kougoumtzoglou I. A.**, An open approach to educational resource development with a specific example from structural engineering, *SEFI Annual Conference Birmingham, UK, 15-19 September 2014.*