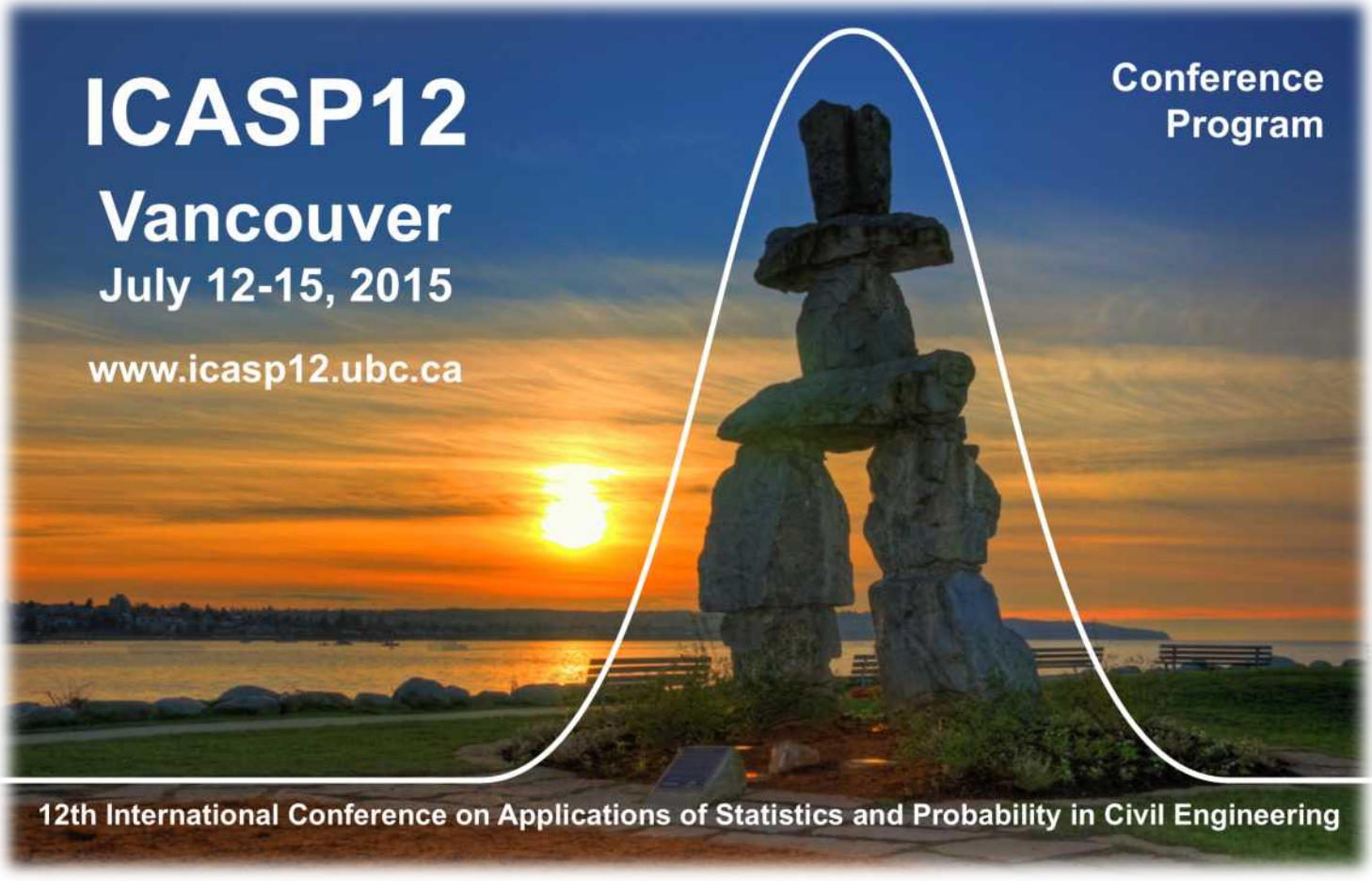

ICASP12
Vancouver
July 12-15, 2015
www.icasp12.ubc.ca
Conference
Program
12th International Conference on Applications of Statistics and Probability in Civil Engineering

Table of Contents

Photo credits:

- *The front-page photo of the Inukshuk near the ICASP12 venue is shot by Tim Shields. The ICASP12 organizers added the text and line. The original is posted at www.flickr.com and Shields' photo is used here for noncommercial purposes under the license agreement posted here: https://creativecommons.org/licenses/by-nc/2.0/legalcode.*
- *The image of Vancouver featured at the top of the conference website is provided by Chris Collacott. Through his website www.avision.ca and the store Fast Frames across the street from the conference venue he offers beautiful pictures of Vancouver that are excellent souvenirs from this city. You will find more nice souvenirs at Granville Island.*

Welcome

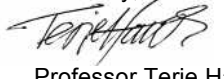
I am delighted to welcome you to Vancouver on the occasion of the twelfth ICASP. We convene in this beautiful city to discuss new developments and to motivate the next bloom of research in our field. We also come together to celebrate. Our research community is as vibrant as ever with strong contributions from far and wide. After a stringent review process applied to both abstracts and papers we will see nearly 300 presentations of high-quality papers at this conference, with delegates from more than 40 countries. We also convene at a time when the public and news media are taking a greater interest in risk and uncertainty associated with engineering projects. In Vancouver the earthquake hazard and the potential for oil spills are examples that are frequently discussed in the news and over water coolers. Our research plays a vital role in modelling the uncertainties, evaluating the risks, and identifying good decisions.

The ICASP conferences, i.e., the International Conferences on Applications of Statistics and Probability in Civil Engineering are organized under the auspices of CERRA, the Civil Engineering Risk and Reliability Association. The principal activity of CERRA is the sponsoring and overseeing of the ICASP conferences. You will find more information about CERRA at www.ce.berkeley.edu/projects/cerra. ICASP is one of the two major conferences on statistics, reliability, probability, and risk in engineering. The other is the International Conferences on Structural Safety and Reliability, ICOSSAR, organized by the International Association for Structural Safety and Reliability, IASSAR. It is an exciting development that IASSAR has provided sponsorship for the ICASP12 conference, which I am sincerely thankful for. This support will be reciprocated by CERRA at the next ICOSSAR and I hereby express my gratitude to both IASSAR and CERRA for this collaboration.

The primary reason for your visit to Vancouver is the ICASP12 proceedings, but you should also enjoy the city and the beautiful province of British Columbia. Vancouver is one of the World's most liveable cities and the conference venue in English Bay epitomizes many of the reasons why. When you stand at the corner of Davie Street and Denman Street you have nearby an unparalleled collection of beaches, parks, shops, restaurants, bars, and coffee shops. I also encourage you to explore the many walking and biking options in Stanley Park and along the equally famous Seawall that circumscribe Vancouver. Please visit the Activities page at the conference website, www.icasp12.ubc.ca, for some ideas. If you experience a serious emergency then dial 9-1-1 to reach ambulance/fire/police. For other matters you can simply email info@icasp12.ubc.ca at any time; we are eager to help you enjoy your stay in Vancouver!

On all three days of the conference we provide lunch at the hotel and two coffee breaks with snacks. I am counting on your attendance for the full three-day duration of the conference to ensure a vibrant and well-attended event. There will be plenty of high-quality contributions to see on all three days. In short, welcome to Vancouver and ICASP12. Enjoy!

Sincerely,



Professor Terje Haukaas
Chair of ICASP12

Sponsors

Financial sponsors

Gold:

Bronze:

Menun Risk Consulting Services, Inc.

Nonfinancial sponsors

International Civil Engineering Risk and Reliability Association, CERRA, the organization behind the ICASP conferences

International Association for Structural Safety and Reliability, IASSAR, the organization behind the ICOSSAR conferences

University of British Columbia
Department of Civil Engineering
Vancouver, Canada

University of British Columbia
Faculty of Applied Science
Vancouver, Canada

Conference Organization

Conference Chair:	Terje Haukaas
Local Organizing Committee:	Terje Haukaas, UBC Vancouver Ricardo Foschi, UBC Vancouver Frank Lam, UBC Vancouver
Organizing Association:	Civil Engineering Risk and Reliability Association, CERRA
CERRA Board of Directors:	Michael Faber, President, Denmark Terje Haukaas, Chairman, Canada Armen Der Kiureghian, Past President, Secretary, USA Samer Madanat, Treasurer, USA Jun Kanda, Past President, Japan David de Leon, Mexico Jie Li, China Junho Song, USA John D. Sorensen, Denmark Mark G. Stewart, Australia Daniel Straub, Germany Bruno Sudret, Switzerland

Scientific Committee

Jitendra Agarwal, UK
Laurence Alison, UK
Al H.-S. Ang, USA
Giuseppe T. Aronica, Italy
Sui-Kui Au, UK
Giuliano Augusti, Italy
Jack Baker, USA
Michele Barbato, USA
Emilio Bastidas-Arteaga, France
Z.P. Bazant, USA
Paolo Bazzurro, Italy
Armin Bebamzadeh, Canada
James L. Beck, USA
André T. Beck, Brazil
Michael Beer, UK
Fabio Biondini, Italy
Jean-Marc Bourinet, France
Karl Breitung, Germany
Michael Bründl, Switzerland
Christian Bucher, Austria
Joan Ramon Casas, Spain
Fabio Casciati, Italy
Eun Jeong Cha, USA
Alaa Chateauneuf, France
Jianbing Chen, China
Jianye Ching, Taiwan
Marios Chryssanthopoulos, UK
Gian Paolo Cimellaro, Italy
Joel P. Conte, USA
Ross Corotis, USA
Mayssa Dabaghi, USA
Dagang Lu, China
Markus Dann, Canada
David De Leon, Mexico
George Deodatis, USA
Armen Der Kiureghian, USA
Francisco A. Diaz De la O, UK
Leonardo Duenas-Osorio, USA
Bruce Ellingwood, USA
Michael P. Enright, USA
Luis Esteva Maraboto, Mexico
Michael H. Faber, Denmark
Lucia Faravelli, Italy
Gordon Fenton, Canada
Gerhard Fink, Switzerland
Ricardo Foschi, Canada
Paolo Franchin, Italy
Dan M. Frangopol, USA
Hitoshi Furuta, Japan
Carmine Galasso, UK
Paolo Gardoni, USA
Roger Ghanem, USA
Michel Ghosn, USA
Agathoklis Giaralis, UK
Massimiliano Gioffrè, Italy
Katsu Goda, UK
Wellison Gomes, Brazil
James A. Goulet, Switzerland
Mircea D. Grigoriu, USA
Carlos Guedes Soares, Portugal
Achintya Haldar, USA
Terje Haukaas, Canada
Hanping Hong, Canada
Bin Huang, China
Luc Huyse, USA
Iunio Iervolino, Italy
Fatemeh Jalayer, Italy
Hector Jensen, Chile
Boris Jeremic, USA
Jun Kanda, Japan
Ahsan Kareem, USA
Anne S. Kiremidjian, USA
Smitha Koduru, Canada
Jochen Koehler, Norway
Katerina Konakli, Denmark
Ioannis Kougioumtzoglou, UK
Frank Lam, Canada
Jan Laue, Switzerland
Bernt J. Leira, Norway
Jie Li, China
Yue Li, USA
Abbie Liel, USA
Niels C. Lind, Canada
Nicolas Luco, USA
Alessio Lupoi, Italy
Samer Madanat, USA
Marc A. Maes, Canada
Sankaran Mahadevan, USA
Mojtaba Mahsuli, Iran
Samy Missoum, USA
Torgeir Moan, Norway
Yasuhiro Mori, Japan
Jimmy Murphy, Ireland
Gabe Mythen, UK
Arvid Naess, Norway
Soren R.K. Nielsen, Denmark
Andrzej S. Nowak, USA
Alan O'Connor, Ireland
Vikram Pakrashi, Ireland
Mahesh Pandey, Canada
Weichiang Pang, USA
Costas Papadimitriou, Greece
Manolis Papadrakakis, Greece
Fulvio Parisi, Italy
Edoardo Patelli, UK
Yongbo Peng, China
Kok Kwang Phoon, Singapore
Paolo Emilio Pinto, Italy
Matteo Pozzi, USA
Sanaz Rezaeian, USA
David V. Rosowsky, USA
Tiziana Rossetto, UK
Johannes Royset, USA
Mauricio Sanchez-Silva, Colombia
Salvatore Sessa, Italy
Kallol Sett, USA
Robert G. Sexsmith, Canada
Abdollah Shafieezadeh, USA
Vitor Silva, Italy
Junho Song, Korea
John D. Sorensen, Denmark
Olga Spackova, Germany
Pol Spanos, USA
George Stefanou, Greece
Mark G. Stewart, Australia
Daniel Straub, Germany
Bruno Sudret, Switzerland
Luc Taerwe, Belgium
Alexandros Taflanidis, USA
Tsuyoshi Takada, Japan
Thomas Tannert, Canada
Solomon Tesfamariam, Canada
Sven Thelandersson, Sweden
Sebastian Thöns, Denmark
Dimitri Val, UK
Dimitrios Vamvatsikos, Greece
John van de Lindt, USA
Miroslav Vorechovsky, Czech Republic
Ton Vrouwenvelder, Netherlands
Naiyu Wang, USA
Xiaoming Wang, Australia
Fumio Yamazaki, Japan
Semih M. Yucemen, Turkey
Wenxing Zhou, Canada
Enrico Zio, Italy
Konstantin Zuev, UK

Keynote Speakers

Des Hartford

"From Abstraction to Reality: Roles of probability, loss, cost-benefit analysis and risk in safety decision-making"

Dr. Des Hartford, BA, BAI, MA, Ph.D, F.EIC, F.ICE, F.IEI, C.Eng, P.Eng, Eur.Ing, is Principal Engineering Scientist at BC Hydro reporting to the Director of Dam Safety. Dr. Hartford who has received several national and international awards and honours is an overseas member of the Royal Swedish Academy of Engineering Sciences and in 2011 was voted one of the 20 most influential engineers in the world of Hydropower and Dam Engineering. Dr. Hartford's responsibilities at BC Hydro span the development of risk management policy, risk informed decision processes, and risk-informed management systems for BC Hydro's Hydropower and Dams risk profile. He is also responsible for introducing Systems Engineering techniques into the analysis of functionality of river systems and associated hydropower sub-systems; guiding the application of Engineering Principles-based assessment of spillway gate reliability comparable to those of the UK nuclear safety case regime; and leading BC Hydro's research and development activities for dam safety. Dr. Hartford was appointed Adjunct Professor in Civil Engineering at the University of Western Ontario to provide industry guidance and supervision on a new research project to develop a prototype systems engineering model suitable for application in BC Hydro's natural and operating environment.

Armen Der Kiureghian

"New developments in tail-equivalent linearization method for nonlinear stochastic dynamics"

Dr. Armen Der Kiureghian is currently the fourth President of the American University of Armenia and a Taisei Professor Emeritus of the University of California, Berkeley, where he served for 37 years in various positions. Der Kiureghian is a member of the American Society of Civil Engineers and a Fellow of its Institute of Engineering Mechanics. He is a past President of CERRA and served as Chair of the IASSAR Committee on System Reliability and Optimization. In the past, he has served as the Chair of the ASCE Engineering Mechanics Division Technical Committee on Probabilistic Methods and as Vice Chair of the Editorial Board of its Journal of Engineering Mechanics. Der Kiureghian's teaching and research have been in the areas of risk and reliability of constructed facilities and systems, stochastic structural dynamics, earthquake engineering, and engineering decision making. He has authored more than 400 publications, including 117 in archival journals. He has supervised 30 doctoral candidates to completion, all of whom are highly successful specialists in academia or industry. Der Kiureghian's research has been recognized by numerous awards, including the ASCE's Walter L. Huber Civil Engineering Research Prize (1988), Alfred M. Freudenthal Medal (2006), Thomas A. Middlebrooks Award (2006), George Winter Medal (2014), CERRA Award (1999), and the IASSAR's Distinguished Research Award (2013). He is an elected foreign member of the National Academy of Sciences of Armenia since 1998 and an elected member of the US National Academy of Engineering since 2011. Der Kiureghian received his B.S. and M.S. in Civil Engineering from Tehran University, Iran, and his Ph.D. in Civil Engineering from the University of Illinois at Urbana-Champaign.

Awards

2015 C. Allin Cornell CERRA Award: Dr. Gordon Fenton

As is generally known, a large number of aspects become relevant when assessing the reliability of a structure: Loads and agents, global structural behaviour, local properties of structural members and joints, and so on. It is perhaps obvious but often neglected that soil structures and foundations need to be assessed in the same way. To put it mildly, communication between structural and geotechnical engineers is not always optimal. In particular with respect to the reliability aspects, different terminology and approaches exist. It appears that the geotechnical world, so far, has taken less advantage from advanced reliability theory than the structural world. From its very beginning in Hong Kong in 1971, the ICASP conference has tried to be a counter-weight and an explicit meeting place for the structural and geotechnical engineer. Fortunately at every conference indeed we see quite a number of inspiring contributions in the field of application of theoretical and practical reliability to foundation engineering and other geotechnical applications. To reward this work the CERRA award committee is delighted to present the 2015 C. Allin Cornell CERRA Award to one of the most outstanding representatives in this group: Dr. Gordon Fenton.

2015 CERRA Lifetime Achievement Award: Dr. Bruce Ellingwood

As in other fields of science, the society of experts in reliability engineering is a mix of variously talented people. Some experts show a once-in-a-lifetime brilliant idea, others are able to organize and run a large group of graduate students, open a new field of application or produce a lifelong permanent flow of high level output. In this latter category, Niels Lind and Michael Hasofer received in 1999 the CERRA Lifetime Achievement Award. The present 2015 CERRA award committee decided that it had very good reasons to honour once more a person in this particular way. We are talking of someone with a really impressive publication and citation record, based on work that can be qualified as being of a high scientific standard as well as important engineering relevance. We also refer to a number of practically oriented contributions to several code and standard committees and, last but not least, we are talking about the driving force behind one of the most appreciated journals: Dr. Bruce Ellingwood.

2015 CERRA Student Recognition Awards

Junho Chun, University of Illinois at Urbana-Champaign
You Dong, Lehigh University
Boutros El Hajj, University of Nantes
Ioannis Gidaris, University of Notre Dame
Beliz Gokkaya, Stanford University
Elaina Jennings, Colorado State University
Tim Johnson, Florida Institute of Technology
Sabarethinam Kameshwar, Rice University
Sylvain Lacaze, University of Arizona
Binbin Li, University of California at Berkeley
Jian Li, Rice University
Chu Van Mai, ETH Zurich
Stylianos Minas, University College London
S.Nasim Rezaei, McGill University
Kilian Zwirglmaier, Technische Universität München

Instructions for Speakers

Please prepare a Powerpoint file with your presentation and include the Paper Number and the Last Name of the presenting author in the filename. You may submit the file either by email to info@icasp12.ubc.ca at least one day before your presentation or bring a USB memory stick to the session room at least 10 minutes before the start of the session. Please approach the ICASP12 Team member in that room for help with loading the presentation file onto the computer, which is a PC with Powerpoint. Laser pointers are also available. Please practice your presentation to ensure it fits within the 15-minute time limit. Remember, it is often best to avoid slides with large amounts of text.

Instructions for Chairpersons

Session chairs are responsible for introducing speakers, moderating the question period, and enforcing the time limits. The time allocated for each presentation is 15 minutes plus 3 minutes for short questions and answers. It is important that you strictly enforce this limit to enable delegates to move between rooms with predicable start time for each presentation. If a presenter is absent then please impose a break until the next presentation is scheduled to begin. A bell is placed in each session room to help you enforce the time limit in a firm but entertaining manner. An ICASP12 assistant will be present in each room to load presentation files and assist with technical issues.

About the Proceedings

The proceedings of ICASP12 are available online and accessible from www.icasp12.ubc.ca. The papers are published by cIRcle, the Digital Repository of the University of British Columbia, www.circle.ubc.ca, and they are indexed in Google Scholar, even before the conference. All papers will be submitted to major databases, including Compendex and Scopus. Each paper has a permanent URL online and there is no printed volume. Authors retain the copyright of their work, signing only a distribution license form. Abstracts were peer-reviewed and authors of accepted abstracts were invited to submit full papers, which were also peer reviewed.

Plenary Debate

A plenary debate led by the panellists Bruce Ellingwood, Daniel Straub, Fatemeh Jalayer, Inger Birgitte Kroon, Kok Kwang Phoon, and Ton Vrouwenvelder takes place on Tuesday morning. Please feel free to approach the conference chair or the panellists prior to the debate with your views on what the pressing questions for our research community are. And be prepared to engage on Tuesday morning!

Banquet Dinner and Monte Carlo Casino

The banquet dinner on Tuesday evening will be accompanied by a practical and entertaining exercise in applying the rules of probability. During the reception prior to the dinner and also after dinner there will be a Monte Carlo themed Casino with blackjack, poker, roulette, craps, and other games. Winners will be given a price to acknowledge their skills in applying probabilities in practice! Please review the gambling rules inserted in your conference bag and calculate your odds before betting, using Monte Carlo sampling or other techniques.

Schedule at a Glance

	Sunday July 12	**Monday** July 13	**Tuesday** July 14	**Wednesday** July 15	**Thursday** July 16
8:30am-9am		Opening	Plenary panel debate		
9am-10am		Plenary keynote: D. Hartford		Plenary keynote: A. Der Kiureghian	
10am-10:30am		Coffee break	Coffee break	Coffee break	Post-conference tour
10:30am-12noon		Morning sessions	Morning sessions	Morning sessions	
12noon-1:30pm		Lunch at conference level	Lunch at conference level	Lunch at conference level	
1:30pm-3pm		Early afternoon sessions	Early afternoon sessions	Early afternoon sessions	
3pm-3:30pm		Coffee break	Coffee break	Coffee break	
3:30pm-5pm		Late afternoon sessions	Late afternoon sessions	Late afternoon sessions	
	Registration and reception at 6pm	CERRA General Meeting at 5:30pm	Reception with Monte Carlo Casino at 6pm and banquet dinner at 7pm	Closing remarks at 5pm	

Overview of General Sessions and Mini-Symposia

General Sessions (GS)

GS-1: Probabilistic Models
GS-3: Reliability Methods
GS-5: System Reliability Analysis
GS-7: Uncertainty Analysis
GS-8: Probabilistic Finite Element Analysis
GS-9: Sensitivity Analysis
GS-10: Random Vibrations and Stochastic Processes
GS-12: Hazard Analysis
GS-13: Damage and Deterioration
GS-15: Earthquake Engineering
GS-17: Wind Engineering
GS-18: Risk-based Optimization
GS-19: Risk Assessment and Management
GS-20: Decision-making
GS-21: Maintenance and Inspection
GS-23: Bridge Engineering
GS-24: Special Structures
GS-25: Code Calibration
GS-26: Applications

Mini-symposia (MS)

MS-1: Bayesian Networks and Decision Graphs for Engineering Risk Analysis
Organized by Daniel Straub, Matteo Pozzi, James-A. Goulet, Armen Der Kiureghian
MS-3: Taming the Computational Complexity of Structure and Infrastructure Performance Assessment Metrics
Organized by Leonardo Duenas-Osorio, Junho Song
MS-4: Risk Management of Natural Hazards
Organized by Michael Bründl, Olga Špačková, Ross Corotis
MS-5: Probabilistic Risk Assessment for Rainfall-induced Phenomena
Organized by Fatemeh Jalayer, Carmine Galasso, Giuseppe Aronica, Fulvio Parisi
MS-6: Structural Reliability and Probabilistic Modelling of Timber
Organized by Gerhard Fink, Jochen Kohler, Frank Lam
MS-9: Surrogate Models for Uncertainty Quantification, Reliability Analysis and Robust Design
Organized by Bruno Sudret, Jean-Marc Bourinet, Sankaran Mahadevan, Samy Missoum
MS-10: Probabilistic Modeling and Impact Assessment of Cascading Geophysical Hazards
Organized by Katsuichiro Goda, Tiziana Rossetto
MS-11: Risk and Resilience Analysis of Infrastructure Systems
Organized by Paolo Franchin, Alessio Lupoi

MS-12: Bayesian Inference in Engineering: New Methods and Algorithms
Organized by Francisco Alejandro Diaz De la O, Edoardo Patelli, Siu-Kui Au, James L. Beck
MS-13: Stochastic Dynamics and Simulation-based Techniques for Performance-based Earthquake Engineering
Organized by Agathoklis Giaralis, Ioannis Kougioumtzoglou, Alexandros Taflanidis, Dimitrios Vamvatsikos
MS-14: Reliability and Risk Assessment of Pipelines
Organized by Markus R. Dann, Marc A. Maes
MS-15: Reliability of Geotechnical Structures, sponsored by ISSMGE TC304 and GI-RAM
Organized by Kok-Kwang Phoon, Gordon A. Fenton, Jianye Ching
MS-16: Probability Density Evolution Theory and Its Applications
Organized by Jie Li, Jianbing Chen, Yongbo Peng, Pol D. Spanos
MS-17: Communicating Risk Under High Uncertainty: Developing Cross-disciplinary Knowledge
Organized by Laurence Alison, Gabe Mythen, Michael Beer, Ross B. Corotis
MS-19: Risk-targeted Response Spectra for Seismic Design
Organized by Nicolas Luco, Sanaz Rezaeian, Vitor Silva, Paolo Bazzurro
MS-20: Stochastic Earthquake Ground Motion Simulation, Validation, and Engineering Applications
Organized by Sanaz Rezaeian, Nicolas Luco, Mayssa Dabaghi
MS-21: Advances and Outlooks in Seismic Risk Analysis
Organized by Salvatore Sessa, Katerina Konakli
MS-22: Probabilistic Aspects of System Identification and Health Monitoring
Organized by Siu-Kui Au, Francisco Alejandro Diaz De la O, Costas Papadimitriou
MS-23: Robust, Performance-based and Reliability-based Optimization Under Uncertainty
Organized by André T. Beck, Hector Jensen, Michael Beer, Alaa Chateauneuf
MS-24: Advanced Simulation Methods for Probabilistic Analysis of Complex Engineering Problems
Organized by Edoardo Patelli, Kostantin Zuev, Siu-Kui Au, Enrico Zio
MS-25: Recent Developments in Reliability and Cost Prediction of Building Inventories and Civil Infrastructure Systems
Organized by Naiyu Wang, Bruce R. Ellingwood
MS-26: Value of Information in Civil Engineering
Organized by Michael H. Faber, Marc Maes, Jochen Köhler, Sebastian Thöns
MS-27: Life Cycle Based Design and Optimization of Structural Systems under Uncertainty
Organized by Fabio Biondini and Dan M. Frangopol
MS-28: Predicting and Adapting to Climate Change
Organised by Alan O'Connor, Mark Stewart, Xiaoming Wang, Dimitri Val, Emilio Bastidas-Arteaga

Session Schedule

MONDAY, July 13

Room:	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific	Bayside
Morning:	GS-1-A	MS-4-A	MS-11-A	MS-9-A	GS-13	MS-23-A	MS-15-A	
Early afternoon:	GS-1-B	MS-4-B	MS-11-B	MS-9-B	MS-14	MS-23-B	MS-15-B	
Late afternoon:	MS-17	GS-3	MS-11-C	MS-9-C	GS-21	MS-23-C	MS-3	MS-5

TUESDAY, July 14

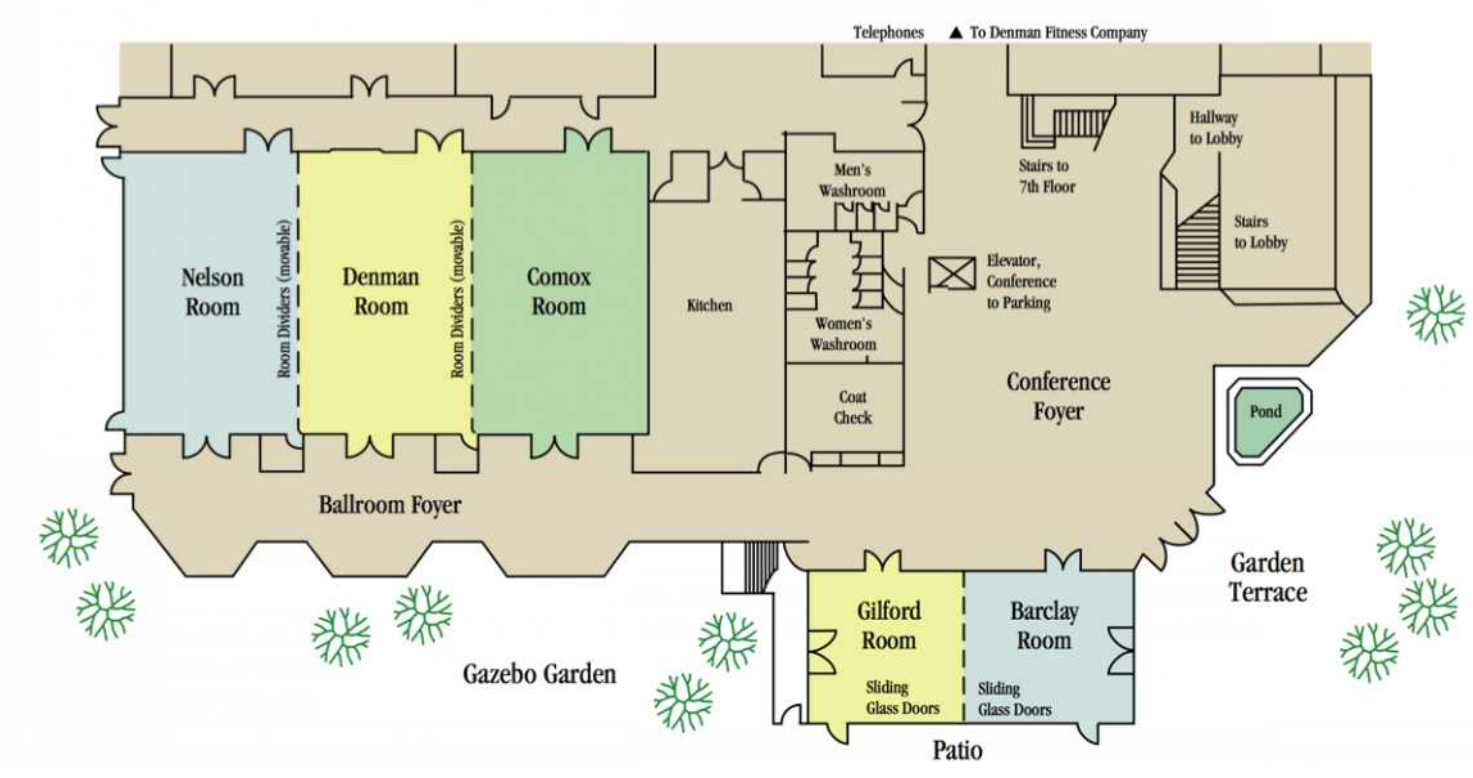
Room:	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific	Bayside
Morning:	MS-1-A	MS-27-A	GS-12	MS-9-D	MS-20-A	MS-6-A	MS-15-C	
Early afternoon:	MS-1-B	MS-27-B	MS-28-A	GS-8/9	MS-25-A	MS-24	MS-20-B	MS-6-B
Late afternoon:	MS-1-C	MS-19	MS-28-B	GS-25	MS-25-B	GS-26	GS-7	

WEDNESDAY, July 15

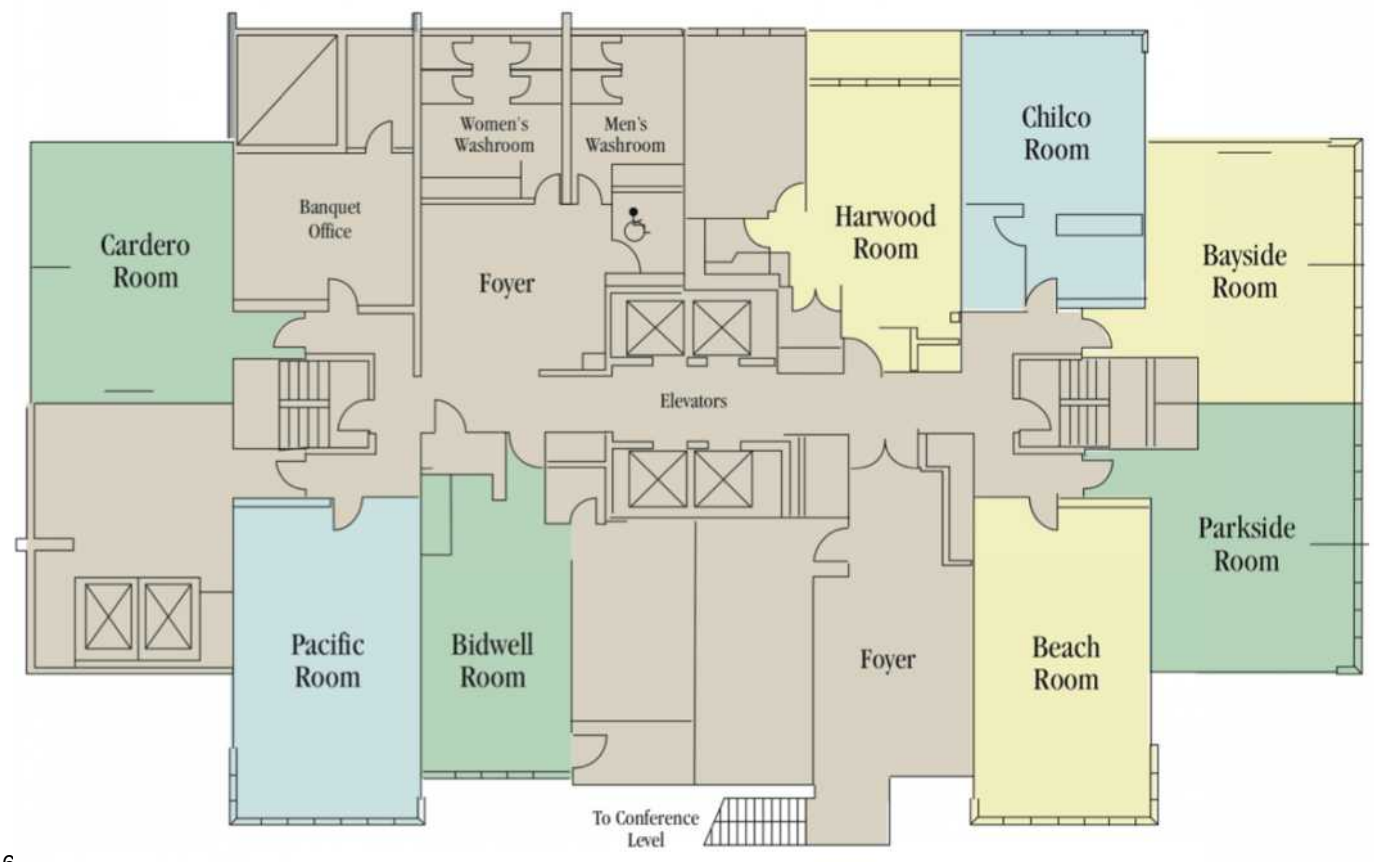
Room:	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Morning:	MS-13-A	GS-18/20	MS-12-A	GS-17-A	GS-10	GS-24	MS-10
Early afternoon:	MS-13-B	GS-15	MS-12-B	GS-17-B	GS-23	MS-26-A	MS-16-A
Late afternoon:	MS-13-C	MS-21	GS-5	MS-22	GS-19	MS-26-B	MS-16-B

On subsequent pages an asterisk (*) identifies the presenting author

Conference Level Floor Plan



Upper Conference Level Floor Plan



Monday Morning (10:30am – 12noon)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	GS-1-A: Probabilistic Models	MS-4-A: Risk Management of Natural Hazards	MS-11-A: Risk and Resilience Analysis of Infrastructure Systems	MS-9-A: Surrogate Models for Uncertainty Quantification, Reliability Analysis and Robust Design, Polynomial Chaos I	GS-13: Damage and Deterioration	MS-23-A: Robust, Performance-based and Reliability-based Optimization Under Uncertainty	MS-15-A: Reliability of Geotechnical Structures, sponsored by ISSMGE TC304 and GI-RAM
Chairs	S. Madanat, C. Caprani	M. Bründl, O. Špačková, R. Corotis	P. Franchin, A. Lupoi	B. Sudret	E. Bastidas-Arteaga, Y. Huang	A.T. Beck, H. Jensen, Beer, Chateauneuf	K.K. Phoon, G.A. Fenton, J. Ching
10:30	297-Inter-relationship between Physical-Chemical Processes and Extreme Value Modelling *Melchers**	122-Assessing and Managing Natural Risks at the Panama Canal *Alfaro*, Baecher, Guerra, Patev*	106-Risk, Resilience, and Sustainability Assessment of Infrastructure Systems in a Life-Cycle Context Considering Uncertainties *Dong*, Frangopol*	501-Data-Driven Polynomial Chaos Basis Estimation *Spiridonakos*, Chatzi*	428-The Continuous Wavelet Transform as a Stochastic Process for Damage Detection *Balafas*, Rajagopal, Kiremidjian*	134-Design of Floor Isolation Systems Through Multi-objective Criteria for Seismic Risk Performance *Gidaris*, Taflanidis, Lopez-Garcia, Mavroeidis*	504-Reliability-Based Geotechnical Design: Towards a Unified Theory *Fenton*, Naghibi, Griffiths*
10:48	180-Prediction of Water Mains Failure - A Bayesian Approach *Kabir*, Tesfamariam, Sadiq*	*161-The Effect of Under-reporting of Non-fatal Involvements in Snow Avalanches on Vulnerability* Jamieson*, Jones	163-Vulnerability Importance Measures Toward Resilience-Based Network Design *Barker, Nicholson*, Ramirez-Marquez*	187-Polynomial Chaos Expansions for Damped Oscillators *Mai*, Sudret*	318-Life-cycle Robustness: Quantification and Challenges *Wendner*, Tamparopoulos, Bergmeister*	151-Optimization of Non-linear Truss Considering Expected Consequences of Failure *Pedrosa, Beck**	461-Effects of Spatial Soil Heterogeneities on Structural Behavior of a Steel Sheet Pile *Yáñez-Godoy*, Elachachi*
11:06	356-Dimension Reduction Methods for Reliability Problems *Breitung**	263-Quantifying the Effect of Early Warning Systems on Natural Hazard Risk *Sättele, Bründl, Straub*	212-Identifying the Needs and Future Directions of Seismic Hazard for Probabilistic Infrastructure Risk Analysis *Weatherill*, Pagani*	244-Time-Variant Reliability Analysis using Polynomial Chaos Expansion *Hawchar, El-Soueidy*, Schoefs*	415-A Unified Formalism For Modeling And Reliability Estimation of Degrading Systems *Riascos-Ochoa*, Sánchez-Silva, Klutke*	215-Risk Optimization of Trusses Using a New Gradient Estimation Method *Gomes**	532-On the Use of Spatially Averaged Shear Strength for the Bearing Capacity of a Shallow Foundation *Ching*, Hu, Phoon*
11:24	484-Hierarchical Modeling of Systems with Similar Components *Memarzadeh, Pozzi*, Kolter*	364-Risk-based Optimization of Adaptable Protection Measures against Natural Hazards *Spackova*, Dittes, Straub*	237-Stochastic Modeling of Recovery from Seismic Shocks *Iervolino*, Giorgio*	159-Low-rank Tensor Approximations for Reliability Analysis *Konakli*, Sudret*	597-Reliability of Corroded Pipelines Accounting for System Effects *Leira*, Næss, Brandrud Næss*	275-Topology Optimization of Linear Structural System Under Stationary Stochastic Excitation *Zhu, Yang, Shields*, Guest*	291-Subset Simulation-based Random Finite Element Method for Slope Reliability Analysis and Risk Assessment *Li*, Xiao, Cao, Zhou*
11:42	154-Improved Probability Distribution Models for Seismic Fragility Assessment *Qin*, Mackie, Stojadinovic*			442-Uncertainty Propagation in Seismic Reliability Evaluation of Aging Transportation Networks *Rokneddin, Ghosh, Duenas-Osorio, Padgett, (Presented by Kameshwar)*	654-Evaluation of Structural Reliability for Reinforced Concrete Buildings Exposed to Corrosion *Carrillo-Bueno*, Ruiz, Tolentino*	359-Approximating Sensitivity of Failure Probability in Reliability-Based Design Optimization *Liu*, Paulino, Gardoni*	143-Determination of Soil Property Characteristic Values from Standard Penetration Tests Wang, Zhao*, Cao

Monday Early Afternoon (1:30pm – 3pm)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	GS-1-B: Probabilistic Models	MS-4-B: Risk Management of Natural Hazards	MS-11-B: Risk and Resilience Analysis of Infrastructure Systems	MS-9-B: Surrogate Models for Uncertainty Quant., Reliability Analysis and Robust Design, Poly. Chaos II	MS-14: Reliability and Risk Assessment of Pipelines	MS-23-B: Robust, Performance-based and Reliability-based Optimization Under Uncertainty	MS-15-B: Reliability of Geotechnical Structures, sponsored by ISSMGE TC304 and GI-RAM
Chairs	H.P. Hong, T. Lin	M. Bründl, O. Spačková, R. Corotis	P. Franchin, A. Lupoi	L. Graham-Brady	M.R. Dann, M.A. Maes	A.T. Beck, H. Jensen, M. Beer, A. Chateauneuf	K.K. Phoon, G.A. Fenton, J. Ching
1:30	575-Pedestrian Bridges Monitoring Data for Stochastic Modelling of Human-induced Loads *Casciati, Casciati, Faravelli**	368-Flood Risk and Economically Optimal Safety Targets for Coastal Flood Defense Systems *Dupuits*, Schweckendiek*	276-Probabilistic Demand and Supply Resilience Model for Electric Power Supply System under Seismic Hazard *Sun*, Didier, Delé, Stojadinovic*	209-Compressive Polynomial Chaos Expansion for Multi Dimensional Model Maps *Marelli, Sudret**	160-Estimating Event Probabilities using Zero Failure Data *Breitung, Maes**	464-Risk Measures in Engineering Design under Uncertainty *Rockafellar, Royset**	590-Variability of Allowable Bearing Capacity of Soft Soil Stabilized by End-bearing Deep Mixed Columns *Zhang, Chen*, Huang*
1:48	557-Nanomechanics Based Theory of Size Effect on Strength, Lifetime and Residual Strength Distributions of Quasibrittle Failure: A Review *Salviato*, Kirane, Bazant*	558-Using Random Simulation of Hurricane Tracks for Risk Analysis *Garrè*, Dudek*	309-Prob. Assessment of Increased Flooding Vulnerability in Christchurch City after the Canterbury 2010-2011 Earthquake Sequence *Cavalieri*, Franchin, Ko, Giovinazzi, Hart*	116-Propagation of Uncertainties Modelled by Parametric p-boxes using Sparse Polynomial Chaos Expansions *Schöbi*, Sudret*	172-Comparative Studies on Assessment of Corrosion Rates in Pipelines as Semi-Probabilistic and Fully Stochastic Values *Opeyemi*, Patelli, Beer, Timashev*	465-The SL-AVV Approach to System Level Reliability-Based Design Optimization of Large Uncertain and Stochastic Dynamic Systems *Spence**	634-Geotechnical Reliability-based Designs and Links with LRFD *Low*, Phoon*
2:06	656-On a Newly Developed Estimator for More Accurate Modeling with an Application to Civil Engineering *Habibullah*, Shan-E-Fatima*	444-A Bayesian Network Approach to Coastal Storm Impact Modeling *Jäger*, Heijer, Bolle, Hanea*	343-Integrated Multi-Hazard Framework for the Fragility Analysis of Roadway Bridges *Gehl*, D'Ayala*	612-Efficient Stochastic Simulation of Dynamic Brittle Strength Using a Random Perturbation-based Micromechanics Model *Graham-Brady*, Liu*	653-Time-dependent Reliability Assessment for Corroding Pipelines Based on Imperfect Inspection Data *Zhang*, Kariyawasam, Zhou*	495-Topology Optimization of Structures under Constraints on First Passage Probability *Chun*, Song, Paulino*	249-Model Uncertainty for the Capacity of Strip Footings under Negative and General Combined Loading *Phoon*, Tang*
2:24	384-The Role of Fiber Volume Fraction in Tensile Strength of Fibrous Composites *Rypl*, Vorechovsky, Chudoba*	616-Cost-Benefit Assessment of Different Storm Mitigation Techniques for Residential Buildings using the PBHE Framework *Unnikrishnan, Barbato**	344-Development of Empirical Vulnerability Curves for Electrical Supply Systems Subjected to Wind Hazard *Dunn*, Wilkinson, Galasso, Manning, Alderson*		252-Population-based Approach to Estimate Corrosion Growth in Pipelines *Dann*, Maes*	526-Probabilistic Performance-based Optimum Seismic Design with Application to the California High-Speed Rail Prototype Bridge *Li, Conte**	574-Effect of Correlation Structure Model on Geotechnical Reliability-based Serviceability Limit State Simulations *Huffman, Stuedlein**
2:42		238-Economic Optimization Considerations in South African Dam Rehabilitations *Viljoen, Reynolds (Presented by Botha)*			251-Bayesian Approach to Estimate Corrosion Frowth From a Limited Set of Matched Features *Dann*, Huyse*		429-Probabilistic Capacity Assessment of a Prestressed Concrete Pile in a Corrosive Marine Environment *Schmuhl, Shafieezadeh, Hur**

Monday Late Afternoon (3:30pm – 5pm)

Rm	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific	Bayside
Ses	MS-17: Comm. Risk Under High Uncert.: Dev. Cross-discipl. Knowledge	GS-3: Reliability Methods	MS-11-C: Risk and Resilience Analysis of Infrastructure Systems	MS-9-C: Surrogate Models for Uncert. Quantification, Rel. Analysis and Robust Design, Kriging I	GS-21: Maintenance and Inspection	MS-23-C: Robust, Performance-based and Reliability-based Opt. Under Uncertainty	MS-3: Taming the Comp. Complexity of Struct. and Infras. Performance Assessment Metrics	MS-5: Probabilistic Risk Assessment for Rainfall-induced Phenomena
Chair	Alison, Mythen, Beer, Corotis	R. Melchers, D. Rosowsky	P. Franchin, A. Lupoi	B. Gaspar	A. Yuan, R. Caspeele	Beck, Jensen, Beer, Chateauneuf	L. Duenas-Osorio, J. Song	Jalayer, Galasso, Aronica, Parisi
3:30	107-Communicating Risk in Major Incidents: the Public's Perception *Swan*, Waring, Alison, Beer*	536-Application of the Multiplicative Dimensional Reduction Method to a Probabilistic Fracture Mechanics Problem *Raimbault*, Walbridge, Pandey*	388-Probabilistic Risk Assessment of Infrastructure Networks Subjected to Hurricanes *Scherb*, Garrè, Straub*	220-A Sampling-based RBDO Algorithm with Local Refinement and Efficient Gradient Estimation *Lacaze*, Missoum, Brevault, Balesdent*	247-A Condition-based Maint. Policy based on a Prob. Meta-model for Chloride Corrosion *El Hajj*, Castanier, Schoefs, Bastidas-Arteaga, Yeung*	537-A Framework for Performance-Based Optimization of Structural Robustness *Marjanishvili*, Katz*	178-Local Measures of Disruption for Quantifying Seismic Risk and Reliability of Complex Networks *Baker*, Miller, Markhvida*	317-Comparing Flood Mitigation Strategies for Non-engineered Masonry Structures using DCFD *Carozza*, Jalayer, De Risi, Manfredi, Mbuya*
3:48	113-Likelihood of Progressive Collapse of Buildings from Terrorist Attacks *Stewart*, Grant*	358-Targeted Random Sampling for Time-invariant Reliability Analysis *Shields*, Sundar*	483-A Time-Dep. Seismic Resilience Analysis Approach for Networked Lifelines *Paredes*, Dueñas-Osorio*	529-Adaptive Kriging Reliability-based Design Opt. of an Automotive Body Structure under Crashworthiness Constraints *Moustapha*, Sudret, Bourinet, Guillaume*	272-Incorporating Network Considerations into Pavement Management Systems *Medury*, Madanat*	538-Reliability-based Design of Tuned Mass-Damper-Inerter (TMDI) Equipped Multi-storey Frame Buildings under Seismic Excitation *Giaralis*, Taflanidis*	184-Efficient Post-hazard Probabilistic Flow Analysis of Water Pipe Networks *Kang*, Lee*	324-Return Period Determ. for Several Extreme Rainfall-induced Events using the IDF Relation Obtained via Copulas *Bezak*, Šraj, Brilly, Mikoš*
4:06	137-A Clustering Approach to Identification of Seismic Building Damage Patterns … *Elwood, Corotis**	389-Estimation of the Failure Probability of a Floating Wind Turbine under Environmental Load *Murangira, Munoz Zuniga*, Perdrizet*	579- Opt. Evacuation Scenarios for Seismic Emergency Mngmnt. *Zanini*, Pellegrino, Rossi, Gastaldi, Modena*	257-Adaptive Surrogate Model with Active Refinement Combining Kriging and a Trust Region Method *Gaspar*, Teixeira, Guedes Soares*	332-Probability of Detection of Potential Mapping and its Impact on Service Life Prediction *Kessler*, Gehlen*	594-Efficient Optimal Design-Under-Uncertainty of Passive Structural Control Devices *De, Wojtkiewicz*, Johnson*	497-Network Reliability Analysis for Cluster Connectivity Using AdaBoost *Stern*, Song, Work*	354-Fragility of Reinforced Concrete Framed Structures to Flow-type Landslides *Parisi*, Sabella, Galasso*
4:24	190-Learning from Accidents: Analysis and Representation of Human Errors in Multi-attribute Events *Moura*, Beer, Lewis, Patelli*	598-Nonlinear Combination of Multiple Environmental Design Parameters Based on FORM Algorithms *Leira**	638-A Bayesian Network Model to Assess Seismic Risk of Reinforced Concrete Girder Bridges *Franchin*, Lupoi, Noto, Tesfamariam*	152-Performance of Surrogate Modelling Techniques in Structural Reliability *Kroetz, Beck**	407-Life-cycle Maintenance, Monitoring, and Inspection Opt. for Ship Structures under Uncertainty *Soliman, Frangopol*, Mondoro*	615-Reliability-based Maintenance Optimization of Pipelines Considering Space-variant Corrosion Rate *Sahraoui, Chateauneuf*, Khelif*	379-Comput. Complexity of Probabilistic Interdependent Network Design Problems *González*, Dueñas-Osorio, Sánchez-Silva, Medaglia*	397-A Compendium of Existing Vulnerability and Fragility Relationships for Flood: Preliminary Results *Pregnolato*, Galasso, Parisi*
4:42	565-Risk Perception in Civil Engineering Applications *Micic*	648- Audze-Eglajs Criterion for Space-filling Designs *Vořechovský*, Eliáš* 5pm: 453-Impt. Sampling in the Evaluation and Opt. of Buffered Failure Prob. *Harajli*, Rockafellar, Royset*		182-Reproducing Kernel-Based Support Vector Machine for Struct. Rel. Analysis *Lu*, Li*	361-Characterization of Measurement Uncertainties in Crack Profiles Assessed by In-Line Inspection Tools *Koduru*, Lu, Skow*		635-Vulnerability Analysis of Interdependent Infrastructure Systems *Galvan*, Agarwal*	398- Risk Of Transport Infrastructure Disruption From Extreme Rainfall *Pregnolato*, Ford, Dawson*

Tuesday Morning (10:30am – 12noon)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	MS-1-A: Bayesian Networks and Decision Graphs for Engineering Risk Analysis	MS-27-A: Life Cycle Based Design and Optimization of Structural Systems under Uncertainty	GS-12: Hazard Analysis	MS-9-D: Surrogate Models for Uncertainty Quantification, Reliability Analysis and Robust Design, Kriging II	MS-20-A: Stochastic Earthquake Ground Motion Simulation, Validation, and Engineering Applications	MS-6-A: Structural Reliability and Probabilistic Modelling of Timber	MS-15-C: Reliability of Geotechnical Structures, sponsored by ISSMGE TC304 and GI-RAM
Chairs	Straub, Pozzi, Goulet, Der Kiureghian	F. Biondini, D.M. Frangopol	A. Liel, G. Weatherill	A. Beck	S. Rezaeian, N. Luco, M. Dabaghi	J. Kohler	K.K. Phoon, G.A. Fenton, J. Ching
10:30	528-Parameter Identification In Chloride Ingress From Accelerated Test Using Bayesian Network *Tran, Bastidas-Arteaga*, Bonnet, Schoefs*	214-Bayesian Updated Time-Dependent Chloride-Induced Corrosion Assessment Using Redundancy Factors *Botte*, Caspeele, Taerwe*	323-A Multi Hazard Risk Assessment Methodology Accounting for Cascading Hazard Events *Ní Choine, O'Connor, Gehl, D'Ayala, García-Fernández, Jiménez, Gavin, Van Gelder, Salceda, Power**	223-Fusing Simulation Results from Multifidelity Aero-servo-elastic Simulators - Application to Extreme Loads on Wind Turbine *Abdallah*, Sudret, Lataniotis, Sørensen, Natarajan*	127-Tuning of Record-based Stochastic Ground Motion Models for Hazard-compatibility and Applications to Seismic Risk Assessment *Vetter, Taflanidis*, Mavroeidis*	363-Joint Earthquake-Snow Hazard Characterization and Fragility Analysis of Wood-frame Structures *Wang, Rosowsky**	156-Levee Reliability Analysis Considering Different Failure Mechanisms – A Case Study (Gueishan Levee) in Southern Taiwan *Huang*, Yu*
10:48	125-Prediction of Soil Corrosivity Index: A Bayesian Belief Network Approach *Demissie*, Tesfamariam, Sadiq*	108-Role of Uncertainty in Life-Cycle Design of Concrete Structures *Biondini*, Frangopol*	387-Application of Region of Influence Approach to Estimate Extreme Snow Load for a Northeastern Province in China *Mo*, Fan, Hong*	573-Building Probability of Detection Curves via Metamodels *Browne*, Le Gratiet, Blatman, Cordeiro, Goursaud, Iooss, Maurice*	162-A Fully Parametric Non-stationary Spectral-based Stochastic Ground Motion Model *Vlachos*, Deodatis, Papakonstantinou*	265-Comparison of Two Reliability Assessment Methods for the Seismic Performance of Timber Steel Hybrid Structures *Lam*, Li, He, Li*	624-An Efficient Method to Compute the Failure Probability *Gong*, Juang, Martin, Zhang*
11:06	405-Operational Modal Analysis using Variational Bayes *Li*, Der Kiureghian*	205-Ethical Discounting for Intergenerational Life-cycle Risk Assessment *Lee*, Ellingwood*	440-An Improved Approach for Aftershock Hazard Assessment *Muderrisoğlu*, Yazgan*	145-Computational Simulation of Hydraulic Fracturing Nonlinear Dynamics using Gaussian Processes Surrogates *Zio, Rochinha**	185-Stochastic Ground Motion Simulation for Crustal Earthquakes in Japan *Itoi**	266-Seismic Reliability Analyses of Timber-Steel-Hybrid System *Zhang*, Fairhurst, Tannert*	475-Diagnosis of Earth-fill Dams by Synthesized Approach of Sounding and Surface Wave Method *Nishimura*, Shibata, Shuku*
11:24	400-Bayesian Networks for Model Updating and Inspection Support of Marine Structures Subject to Fatigue *Groden*, Collette*	123-Life-cycle System Performance of Bridges: A Robustness-based Approach *Cavaco, Casas*, Neves*	520-Reliability-based Seismic Hazard Analysis *Rahimi, Mahsuli*, Bakhshi*	439-Use of Kriging to Surrogate Finite Element Models of Bonded Double Cantilever Beams *Sessa*, Valoroso*	436-Simulation of Earthquake Ground Motions in The Eastern U.S. Using Physics-based and Stochastic Approaches *Rezaeian*, Hartzell, Sun, Mendoza*	370-Extension of Data Sets for a more Reliable Prediction of the Fire Resistance of Finger Joint Connections *Fink*, Klippel, Frangi*	102-Bayesian Methods and Liquefaction *Christian*, Baecher*
11:42	155-Enhanced Bayesian Networks approach to Risk Assessment of Spent Fuel Ponds *Tolo*, Patelli, Beer, Broggi*			365-Applications of Dynamic Trees to Sensitivity Analysis *Becker**		580-Optimal Design of New Deteriorating Timber Comp. under Climate Variations *Bastidas-Arteaga, Aoues*, Chateauneuf*	

Tuesday Early Afternoon (1:30pm – 3pm)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific	Bayside
Session	MS-1-B: Bayesian Networks and Decision Graphs for Engineering Risk Analysis	MS-27-B: Life Cycle Based Design and Optimization of Structural Systems under Uncertainty	MS-28-A: Predicting and Adapting to Climate Change	GS-8/GS-9: Probabilistic Finite Element Analysis / Sensitivity Analysis	MS-25-A: Reliability and Cost Prediction of Building Inventories and Civil Infrast. Systems	MS-24: Advanced Simulation Methods for Probabilistic Analysis of Complex Engrg Problems	MS-20-B: Stochastic Earthquake Ground Motion Simulation, Validation, and Engineering Applications	MS-6-B: Structural Reliability and Probabilistic Modelling of Timber
Chairs	Straub, Pozzi, Goulet, Der Kiureghian	F. Biondini, D.M. Frangopol	O'Connor, Stewart, Wang, Val, Bastidas-Arteaga	M. Vořechovský, M. Barbato	N. Wang, B.R. Ellingwood	E. Patelli, K. Zuev, S.-K. Au, E. Zio	S. Rezaeian, N. Luco, M. Dabaghi	G. Fink
1:30	434-Simulation-Based Analysis of Reconfigurable System of System Network Topologies for Resilience Using Bayesian Networks *Francis**	259-Optimization of Inspection Plans for Structures Submitted to Non-stationary Stochastic Degradation Processes *Decatoire*, Elachachi, Yalamas, Schoefs*	271-Implications of Hurricane-Sea Surface Temperature Relationship *Mudd, Letchford, Rosowsky**	200-Finite Element Reliability Analysis of Structures using the Dimensional Reduction Method *Balomenos*, Pandey*	651-A Framework to Develop Community Resilience Performance Goals and Assessment Metrics for Decision Making *McAllister**	139-Simulation of Strongly Non-Gaussian and Non-stationary Stochastic Processes by Karhunen-Loève Expansion *Kim*, Shields*	402-Validation of the Use of Synthetic Near-Fault Ground Motions to Estimate the Response of a Concrete Building *Dabaghi*, Galanis, Der Kiureghian, Moehle*	210-Numerical Description of Size and Load Configuration Effects in Glulam Structures *Frese*, Blass*
1:48	491-Prob. Modeling of System Deterioration with Inspection and Monitoring Data using Bayesian Networks *Luque*, Straub*	230-Travel Time Reliability Based Bridge Network Maintenance Optimization under Budget Constraint *Zhang, Cao, Wang**	408-Statistical Investigation of Extreme Weather Conditions *Proske**	133-Stochastic Multi-scale Finite Element Analysis for Laminated Composite Plates *Zhou*, Gosling*	142-Preliminary Extension of FORM for Combined Seismic and Wind Hazard Loss Estimation for a Portfolio of Buildings *Corotis*, Bonstrom*	245-Efficient Monte Carlo Algorithm for Rare Failure Event Simulation *Patelli*, Au*	270-Generation of Synthetic Accelerograms Compatible with a Set of Design Specifications *Batou*, Soize*	294-Duration-of-Load Effect on the Rolling Shear Strength of CLT: Analysis and DOL Strength Adjustment Factor *Li, Lam**
2:06	541-Sensor Network Optimization using Bayesian Networks, Decision Graphs, and Value of Information *Malings*, Pozzi*	502-Prediction of Creep and Shrinkage based on Gamma Process Models *Strauss*, Wendner, Vidovic, Zambon, Frangopol*	254-Reliability of Extreme Wave Prediction Methods *Barker, Murphy, Pakrashi**	357-Sensitivity Analysis of Fluid-Structure Interaction using the PFEM *Zhu, Scott**	179-Multi-Objective Community-Level Seismic Retrofit Opt. for Resiliency using Engineering and Socioeconomic Variables *Jennings*, van de Lindt, Peek*	255-Rare Event Simulation: A Point Process Interpretation with Application in Probability and Quantile Estimation *Walter, Defaux**	445-Sensitivity of Ground Motion Simulation Validation Criteria to Filtering *Khoshnevis, Taborda**	218-Serial Correlation of Withdrawal Properties from Axially-Loaded Self-Tapping Screws *Brandner*, Bratulic, Ringhofer*
2:24	489-A Data Fusion Probabilistic Model for Hurricane-Induced Outages in Electric Power Grids *Mensah*, Dueñas-Osorio*	394-Probabilistic Model for Ageing Masonry Walls *Micic, Asenov**	114-Cost-Effective Design and Maintenance of Timber Power Distribution Poles in a Changing Climate *Ryan*, Stewart, Spencer*	279-Random Field Modelling for the Prediction of Wall Thickness of Nuclear Pipes… *Adegbola*, Yuan, Wang*	225-Disaggregating Community Resilience Objectives to Achieve building Performance Goals *Wang*, Ellingwood*	456-Resource Allocation and Uncertainty when Modeling Infrastructure Networks as Socio-technical Systems *Gómez*, Sánchez-Silva, Dueñas-Osorio*	533-Response of Buried Pipes Taking into Account Seismic and Soil Spatial Variabilities *Elachachi*, Yanez-Godoy*	264-Impact of Growth Characteristics on the Fracture Perpendicular to the Grain of Timber *Jockwer*, Serrano, Gustafsson, Steiger*
2:42	207-Risk-based Decision Making for Deterioration Processes Using POMDP *Nielsen*, Sørensen*				274-Quantification of Resilience Improvements for Critical Facilities through Advanced Technologies *Cimellaro*, Terzic, Mahin*		550-Conditional Simulation of Spatially Variable Motions on 2D Grid *Ancheta*, Stewart*	349-Aspects of Code-based Design of Timber Structures *Köhler*, Fink*

Tuesday Late Afternoon (3:30pm – 5pm)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	MS-1-C: Bayesian Networks and Decision Graphs for Engineering Risk Analysis	GS-25: Code Calibration	MS-28-B: Predicting and Adapting to Climate Change	MS-19: Risk-targeted Response Spectra for Seismic Design	MS-25-B: Recent Developments in Reliability and Cost Prediction of Building Inventories and Civil Infrastructure Systems	GS-26: Applications	GS-7: Uncertainty Analysis
Chairs	Straub, Pozzi, Goulet, Der Kiureghian	W. Pang, J. Casas	O'Connor, Stewart, Wang, Val, Bastidas-Arteaga	N. Luco, S. Rezaeian, V. Silva, P. Bazzurro	N. Wang, B.R. Ellingwood	B.K. Low, A. Medury	T. Takada, G. Baecher
3:30	121-The Assessment of the Reliability of Potentially Deteriorated Reinforced Concrete Elements with Bayesian Networks *Hackl*, Kohler*	231-Reliability-based Calibration of Partial Safety Factors for Wave Energy Converters *Ambühl*, Kramer, Sørensen*	458-Addressing Uncertainty in Ensemble Sea-Level Rise Predictions *Thomas*, Lin*	583-Advances on Risk-targeted Hazard Estimation within the European Context *Silva*, Crowley, Bazzurro*	399-A Case-study on Scenario-based Probabilistic Seismic Loss Assessment for a Portfolio of Bridges *Miano, Jalayer*, De Risi, Prota, Manfredi*	472-Strategies for Separation of Aleatory and Epistemic Uncertainties *Koduru**	390-Uncert. Quant. of Heavy Gas Release Over a Barrier *Shoeibi Omrani*, O'Mahoney, Mack, Witteveen*
3:48	269-Bayesian Networks in Levee System Reliability *Roscoe*, Hanea*	246-Defining a Braking Probability to Estimate Extreme Braking Forces on Road Bridges *Martins*, Fénart, Feltrin, Dumont, Beyer*	606-Reliability Based Design Optimization of Insulation Systems Considering Climate Change and Workmanship Uncertainties *Aïssani*, Chateauneuf, Fontaine*	584-Investigation of Structural Fragility for Risk-targeted Hazard Assessment *Martins*, Silva, Crowley, Bazzurro, Marques*	425-Integrated Spatial Community Resilience Decision Tool Unifying Social Vulnerability Indices and Relative Sea-Level Rise Predictions *Francis*, Esfandiary*	433-Shake Table Tests of Stochastic Optimal Polynomial Control of Two Span Bridge Equipped with MR Dampers *El-Khoury*, Kim, Shafieezadeh, Hur, Heo*	622-Influence on Structural Reliability of Uncertainty in Estimated Extreme Values of Load-Effects *Reid*, Naess*
4:06	460-Compression and Inference Algorithms for Bayesian Network Modeling of Infrastructure Systems *Tien*, Der Kiureghian*	171-On Standardization of the Reliability Basis of Structural Design *Holicky*, Retief, Diamantidis, Viljoen*	158-Dynamic Restricted Equilibrium Model to Determine Statistically the Resilience of a Traffic Network to Extreme Weather Events *Nogal*, Martinez-Pastor, O'Connor, Caulfield*	637-Development of Earthquake Risk-Targeted Ground Motions for Indonesian Eq. Resistance Building Code SNI 1726-2012 *Sengara*, Irsyam, Sidi, Mulia, Asrurifak, Hutabarat*	443-Efficient Computational Models for the Optimal Representation of Correlated Regional Hazard *Christou*, Bocchini*	655-Evaluation of Decisions to Rehabilitate South African Dams in terms of the ANCOLD ALARP Criterion and SWTP for Human Safety *Viljoen, Reynolds (Presented by Botha)*	646-Small-sample Probabilistic Simulation Software Tool FReET *Novak*, Vořechovský*
4:24	313-Discretization of Structural Reliability Problems: An Application to Runway Overrun *Zwirglmaier*, Straub*	621-Calibration of Partial Safety Factors for Fatigue Design of Steel Bridges *D'Angelo*, Faber, Nussbaumer*	338-Quantifying the Impact of Critical Infrastructure Failure due to Extreme Weather Events *OBrien, Hajializadeh, Power**	404-Modifications to Risk-Targeted Seismic Design Maps for Subduction and Near-Fault Hazards *Liel*, Luco, Raghunandan, Champion*	650-Stochastic Renewal Process Models for Life Cycle Cost and Utility Analysis *Pandey*, Cheng, Wang*	341-Application of Expert Judgment to the Quantification of a Damage Scale for RC Buildings Exposed to Fire *Ioannou*, Rush, Bisby, Aspinall, Rossetto*	
4:42	435-BN to Quantify Transition Rates in Degradation Modeling: Application to a Set of Steel Bridges in the Netherlands *Kosgodagan*, Morales-Napoles, Maljaars, Yeung, Castanier*	522-Determination of Target Safety for Structures *Holicky*, Diamantidis, Sykora*	419-A Markov Regime-Switching Framework Application for Describing El Niño Southern Oscillation Patterns *Cárdenas Gallo*, Sánchez-Silva, Akhavan-Tabatabaei, Bastidas-Arteaga*	391-Reliability-Based Snow Load Maps for Building Design *DeBock, Liel*, Harris, Torrents* 5pm: 268-Env. Contours for Determination of Seismic Design Response Spectra *Loth, Baker**	119-Reliability-Based Progressive Collapse and Redundancy Analysis of Suspension Bridges *Yang*, Ghosn*		

Wednesday Morning (10:30am – 12noon)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	MS-13-A: Stochastic Dynamics and Simulation-based Techniques for Performance-based Earthquake Engineering	GS-18/GS-20: Risk-based Optimization / Decision-making	MS-12-A: Bayesian Inference in Engineering: New Methods and Algorithms	GS-17-A: Wind Engineering	GS-10: Random Vibrations and Stochastic Processes	GS-24: Special Structures	MS-10: Probabilistic Modeling and Impact Assessment of Cascading Geophysical Hazards
Chairs	Giaralis, Kougioumtzoglou, Taflanidis, Vamvatsikos	M. Sanchez-Silva, M. Shields	F.A. Diaz De la O, E. Patelli, S.-K. Au, J.L. Beck	J.P. Pinelli	M. Grigoriu, B. Leira	Y. Aoues, W. Gomes	K. Goda, T. Rossetto
10:30	507-Energy-based Seismic Collapse Risk Assessment of Structures *Deniz, Song*, Hajjar*	618-Protocols for Communication and Governance of Risks *Vrouwenvelder*, Lind, Faber*	103-Seismic Hazard Analysis with the Bayesian Approach *Wang**	124-Variability of Time Independent Wind Load Components *Botha*, Retief, Viljoen*	331-Simulation of Narrowband Non-Gaussian Processes Using Envelope Distribution *Tsuchida*, Kimura*	221-Fragility Assessment of Above Ground Petroleum Storage Tanks under Storm Surge *Kameshwar*, Padgett*	148-Seismic Risk Assessment of Mega-thrust Mw9-class Subduction Earthquakes and Aftershocks in Victoria, British Columbia, Canada Using Multi-variate Seismic Demand Models *Goda*, Tesfamariam*
10:48	452-Illustrating a Bayesian Approach to Seismic Collapse Risk Assessment *Gokkaya*, Baker, Deierlein*	620-On the Regulation of Life Safety Risk *Faber*, Sørensen, Vrouwenvelder*	194-Bayesian Assessment of the Compressive Strength of Structural Masonry *Nagel*, Mojsilovic, Sudret*	199-An Agent-based Framework for Modeling the Effectiveness of Hurricane Mitigation Incentives *Pei, Pang*, Testik, Ravichandran*	437-A Constrained Nonlinear Stochastic Optimal Control for Dynamical Systems *El-Khoury*, Shafieezadeh*	423-Vulnerability Analysis of Transmission Towers subjected to Unbalanced Ice Loads *Rezaei*, Chouinard, Legeron, Langlois*	192-Coupled Simulation of Ground Shaking and Tsunami for Mega-thrust Subduction Earthquakes *Goda*, De Risi, Rossetto*
11:06	236-Age- and State-Dependent Seismic Reliability of Structures *Iervolino, Giorgio, Chioccarelli**	111-A Reliability-Based Optimization Scheme for Maintenance Management in Large-Scale Bridge Networks *Hu, Daganzo, Madanat**	396-Force Identification by Comparing Likelihood Function using Bayesian Filtering Methods *Radhika**	248-Fatigue Reliability of Casted Wind Turbine Components due to Defects *Mirzaei Rafsanjani*, Sørensen*	566-The Moment Equation Closure Method Revisited through the Use of Complex Fractional Moments *Alotta, Bucher, Di Matteo, Di Paola, Pirrotta**	424-Life Cycle Cost-Benefit Evaluation of Self-centering and Conventional Concentrically Braced Frames *Dyanati, Huang*, Roke*	197-Quantifying and Accounting for Aftershock Hazard in Performance-Based Earthquake Engineering *van de Lindt*, Nazari, Li*
11:24	146-Seismic Optimization of a Novel Tuned Sloshing Damper for the Chilean Region based on Life-cycle Cost Criteria *Ruiz, Taflanidis, Lopez-Garcia**	316-Optimization of Future Drinking Water Pipe Renewal under Uncertainty *Large*, Tomasian, Elachachi, Le Gat, Renaud, Breysse*	420-Uncertainty Management of Safety-Critical Systems: A Solution to the Back-Propagation Problem *de Angelis*, Patelli, Beer*	282-System Reliability of Suspension Bridges Considering Static Divergence and Flutter *Øiseth, Rønnquist*, Naess*	642-Random Vibration of Arbitrarily Supported Single-span Beams Subject to Random Moving Loads *Caprani**	633-Stochastic Dynamic Analysis of a Marine Riser using the First-Order Reliability Method *Alibrandi*, Koh*	307-Towards Quantifying the Effect of Aftershocks in Seismic Risk Assessment *Jalayer*, Ebrahimian, Manfredi*
11:42	157-Nonlinear Stochastic Dynamic analysis for Performance-based Multi-objective Optimum Design Considering Life Cycle Seismic Loss Estimation *Mitseas, Kougioumtzoglou, Beer, (Presented by Zhang)*			373-Reducing Wind Turbine Load Simulation Uncertainties by Means of a Constrained Gaussian Turbulence Field *Dimitrov*, Lazarov*			330-Evaluating Desktop Methods for Assessing Liquefaction-Induced Damage to Infrastructure for the Insurance Sector *Kongar*, Rossetto, Giovinazzi*

Wednesday Early Afternoon (1:30pm – 3pm)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	MS-13-B: Stochastic Dynamics and Simulation-based Techniques for Performance-based Earthquake Engineering	GS-15: Earthquake Engineering	MS-12-B: Bayesian Inference in Engineering: New Methods and Algorithms	GS-17-B: Wind Engineering	GS-23: Bridge Engineering	MS-26-A: Value of Information in Civil Engineering	MS-16-A: Probability Density Evolution Theory and Its Applications
Chairs	A. Giaralis, I. Kougioumtzoglou, A. Taflanidis, D. Vamvatsikos	A. Kiremidjian, F. De Luca	F.A. Diaz De la O, E. Patelli, S.-K. Au, J.L. Beck	A. Rønnquist, J.S. Nielsen	S. Kessler, R. De Risi	M.H. Faber, M. Maes, J. Köhler, S. Thöns	J. Li, J. Chen, Y. Peng, P.D. Spanos
1:30	131-Structural System Response and Reliability Analysis under Incomplete Earthquake Records *Comerford*, Jensen, Beer, Mayorga, Kougioumtzoglou, Kusanovic*	147-Probabilistic Reliability Assessment of Real-Time Hybrid Simulation of Structures with Degradation *Ryan, Chen*, Richardson*	478-Sparse Bayesian Learning with Gibbs Sampling for Structural Health Monitoring with Noisy Incomplete Modal Data *Huang*, Beck*	525-Application of the Box-Cox Power Transformation in Extreme Value Analysis of Wind Speed *Hong**	226-Probabilistic Fatigue Life Prediction for Bridges Using System Reliability Analysis and SHM-based Finite Element Model Updating *Lee*, Cho*	135-Pre-posterior Optimization of Sequence of Measurement and Intervention Actions under Structural Reliability Constraint *Goulet*, Der Kiureghian, Li*	128-An Approximate Approach for Assessing the Reliability of a Stochastically Excited Softening Duffing Oscillator *Zhang*, Kougioumtzoglou*
1:48	588-Probabilistic Hazard Model of Inelastic Oscillator based on Semi-theoretical Solutions of First Passage Problem *Mori*, Tahashima, Kojima, Ozaki*	250-Development of Stochastic Heterogeneous Slip Distribution Model for Simulation of Earthquake Ground Motion *Abe*, Sekimura, Itoi*	494-A Dynamic Bayesian Network Framework for Risk Assessment of Systems Based on Sensor Measurements *Tien*, Pozzi, Der Kiureghian*	636-Reliability Assessment of Wind Turbines *Sørensen**	239-Estimating Characteristic Bridge Traffic Load Effects Using Bayesian Statistics *Leahy, OBrien, Enright, Power, (Presented by O'Connor)*	188-Parameter Study on Optimal Sampling Planning based on Value of Information *Yoshida**	256-A New Probabilistic Model of Fully Non-Stationary Ground Motion and its Application *Liu*, Liu, Dan*
2:06	514-A Stochastic Dynamics Approach for Response Spectrum Analysis of Bilinear Systems using Time-dependent Equivalent Linear Properties *Giaralis*, Kougioumtzoglou*	321-Load Combination of Aftershocks and Tsunami for Tsunami-resistant Design *Choi*, Nishida, Itoi, Takada*	576-Probabilistic Damage Identification of the Dowling Hall Footbridge through Hierarchical Bayesian Model Updating *Behmanesh, Moaveni**	476-Analytical Damage Quantification Method for Residential Developments Subjected to Hurricane Wind Hazards *Grayson*, Pang*	298-System Fragility Curves for a Long Multi-Frame Bridge under Differential Support Motions *Jeon*, Shafieezadeh, DesRoches*	224-A Bayesian Change Point Model to Detect Changes in Event Occurrence Rates, with Application to Induced Seismicity *Gupta*, Baker*	459-A Random Field Representation Based on Stochastic Harmonic Functions *Chen*, He, Li*
2:24	517-A View of Seismic Robustness Based on Uncertainty *Vamvatsikos**	337-Shaking Table Experiment of Fault-Tolerant Seismic Vibration Control of a Building Based on Sensor Reliability *Tanaka, Kohiyama**	479-Material Parameter Estimation in Distributed Plasticity FE Models Using the Unscented Kalman Filter *Astroza, Ebrahimian, Conte**	372-Multivariate Modelling of Extreme Load Combinations for Wind Turbines *Dimitrov**	367-Time-Dependent Fatigue Reliability Assessment of Ting Kau Bridge Based on Weigh-In-Motion Data *Zhang*, Au*	243-Value of Information in Retrofitting of Flood Defenses *Schweckendiek*, Vrouwenvelder*	521-Physically-based Seismic Reliability Evaluation of Water Distribution Networks *Liu*, Sun, Li*
2:42	336-A Nonlinear Wavelet Density-based Importance Sampling for Reliability Analysis *Wang*, Dai*	492-Probabilistic Analysis of Soil-Structure Interaction *Mirzaie, Mahsuli, Ghannad**					

Wednesday Late Afternoon (3:30pm – 5pm)

Room	Nelson	Denman	Comox	Gilford	Barclay	Beach	Pacific
Session	MS-13-C: Stochastic Dynamics and Simulation-based Techniques for Performance-based Earthquake Engineering	MS-21: Advances and Outlooks in Seismic Risk Analysis	GS-5: System Reliability Analysis	MS-22: Probabilistic Aspects of System Identification and Health Monitoring	GS-19: Risk Assessment and Management	MS-26-B: Value of Information in Civil Engineering	MS-16-B: Probability Density Evolution Theory and Its Applications
Chairs	A. Giaralis, I. Kougioumtzoglou, A. Taflanidis, D. Vamvatsikos	S. Sessa, K. Konakli	J. Conte, J. van de Lindt	S.-K. Au, I. Yoshida	U. Alibrandi, JV Retief	M.H. Faber, M. Maes, J. Köhler, S. Thöns	J. Li, J. Chen, Y. Peng, P.D. Spanos
3:30	581-Analytical Seismic Vulnerability Assessment for a Class of Modern Low-Rise Steel Frames *Kazantzi, Vamvatsikos*, Porter*	380-Influence of Failure Modes of RC Columns on Simplified Seismic Loss Assessment *De Luca*, Galasso*	281-Reliability and Controllability of Infrastructure Networks: Do They Match? *Li*, Dueñas-Osorio, Chen*	455-Message-passing Sequential Detection of Multiple Structural Damages *Liao*, Rajagopal*	277-Probabilistic Treatment of Storm Rotation and Wind-driven Rain Deposition in a Hurricane Model *Johnson*, Pinelli, Cocke*	273-Value of Information on the Risk/Benefit of Infrastructure under Strong Winds in Mexico *De Leon*, Lopez, Esteva*	530-A Phase Space Reconstruction Method for getting Instantaneous Probability Density Function of Nonlinear Stochastic Systems *Jiang, Li**
3:48	639-Performance-Based Seismic Analysis of Light SDoF Secondary Substructures *Kasinos*, Palmeri, Lombardo*	320-Spectral Shape Proxies and Simplified Fragility Analysis of Mid-rise Reinforced Concrete Buildings *Minas*, Galasso, Rossetto*	314-Reliability Analysis of Systems Based on Survival Signature *Feng*, Patelli, Beer*	202-A Comparison of Unscented and Extended Kalman Filtering for Nonlinear System Identification *Al-Hussein*, Haldar*	333-Pushover-Based Loss Estimation of Masonry Buildings with Consideration of Uncertainties *Snoj*, Dolšek*	605-Quantification of the Value of Structural Health Monitoring Information for Fatigue Deteriorating Structural Systems *Thöns*, Schneider, Faber*	544-A Two-step Density Estimation Method and Its Applications *Tao*, Li*
4:06	450-Seismic Intensity Measures for Probabilistic Demand Modeling of Rocking Rigid Components *Hur*, Shafieezadeh*	258-Building Performance Loss After Damaging Earthquakes: An Investigation Towards Reparability Decisions *Gaetani d'Aragona, Polese*, Elwood, Baradaran Shoraka, Prota, Manfredi*	353-Systems Reliability of Flow Control in Dam Safety *Komey*, Deng, Baecher, Zielinski, Atkinson*	261-Identification Uncertainty of Close Modes in Operational Modal Analysis *Zhu, Au*, Jones*	426-Risk Management of Multi-State Multi-Component Bridge Systems Using a Partially Observable Markov Decision Process *Shafieezadeh*, Fereshtehnejad*	617-On the Value of SHM in the Context of Service Life Integrity Management *Qin*, Thöns, Faber*	578-Stochastic Optimal Control of MR Damped Structures with Uncertain Parameters *Peng*, Yang, Li*
4:24	577-Topology Optimization for Buildings in Seismic Zones within a PBEE Framework *Bobby, Spence*, Kareem*	513-Fragility Functions for Pipeline in Liquefiable Sand: A Case Study on the Groningen Gas Network *Miraglia*, Courage, Meijers*	493-Fragility Curves of Restoration Processes for Resilience Analysis *Barberis, Malavisi, Cimellaro*, Mahin*		438-Application of a Scenario-Based Assessment Framework for the Seismic Resilience of Seaports *Ivey Burden, Shafieezadeh**		593-Dynamic Response and Reliability of Tunnel under Earthquakes *Yue*, Ang*
4:42 (No last-day presentations at this time)							

Author Index

Paper numbers are **boldface**

Paper Index

185: Stochastic Ground Motion Simulation for Crustal Earthquakes in Japan, *Itoi*,* **MS-20-A**
187: Polynomial Chaos Expansions for Damped Oscillators, *Mai*, Sudret,* **MS-9-A**
188: Parameter Study on Optimal Sampling Planning based on Value of Information, *Yoshida*,* **MS-26-A**
190: Learning from Accidents: Analysis and Representation of Human Errors in Multi-attribute Events, *Moura*, Beer, Lewis, Patelli,* **MS-17**
192: Coupled Simulation of Ground Shaking and Tsunami for Mega-thrust Subduction Earthquakes, *Goda*, De Risi, Rossetto,* **MS-10**
194: Bayesian Assessment of the Compressive Strength of Structural Masonry, *Nagel*, Mojsilovic, Sudret,* **MS-12-A**
197: Quantifying and Accounting for Aftershock Hazard in Performance-Based Earthquake Engineering, *van de Lindt*, Nazari, Li,* **MS-10**
199: An Agent-based Framework for Modeling the Effectiveness of Hurricane Mitigation Incentives, *Pei, Pang*, Testik, Ravichandran,* **GS-17-A**
200: Finite Element Reliability Analysis of Structures using the Dimensional Reduction Method, *Balomenos*, Pandey,* **GS-8/GS-9**
202: A Comparison of Unscented and Extended Kalman Filtering for Nonlinear System Identification, *Al-Hussein*, Haldar,* **MS-22**
205: Ethical Discounting for Intergenerational Life-cycle Risk Assessment, *Lee*, Ellingwood,* **MS-27-A**
207: Risk-based Decision Making for Deterioration Processes Using POMDP, *Nielsen*, Sørensen,* **MS-1-B**
209: Compressive Polynomial Chaos Expansion for Multi Dimensional Model Maps, *Marelli, Sudret*,* **MS-9-B**
210: Numerical Description of Size and Load Configuration Effects in Glulam Structures, *Frese*, Blass,* **MS-6-B**
212: Identifying the Needs and Future Directions of Seismic Hazard for Probabilistic Infrastructure Risk Analysis, *Weatherill*, Pagani,* **MS-11-A**
214: Bayesian Updated Time-Dependent Chloride-Induced Corrosion Assessment Using Redundancy Factors, *Botte*, Caspeele, Taerwe,* **MS-27-A**
215: Risk Optimization of Trusses Using a New Gradient Estimation Method, *Gomes*,* **MS-23-A**
218: Serial Correlation of Withdrawal Properties from Axially-Loaded Self-Tapping Screws, *Brandner*, Bratulic, Ringhofer,* **MS-6-B**
220: A Sampling-based RBDO Algorithm with Local Refinement and Efficient Gradient Estimation, *Lacaze*, Missoum, Brevault, Balesdent,* **MS-9-C**
221: Fragility Assessment of Above Ground Petroleum Storage Tanks under Storm Surge, *Kameshwar*, Padgett,* **GS-24**
223: Fusing Simulation Results from Multifidelity Aero-servo-elastic Simulators - Application to Extreme Loads on Wind Turbine, *Abdallah*, Sudret, Lataniotis, Sørensen, Natarajan,* **MS-9-D**
224: A Bayesian Change Point Model to Detect Changes in Event Occurrence Rates, with Application to Induced Seismicity, *Gupta*, Baker,* **MS-26-A**
225: Disaggregating Community Resilience Objectives to Achieve building Performance Goals, *Wang*, Ellingwood,* **MS-25-A**
226: Probabilistic Fatigue Life Prediction for Bridges Using System Reliability Analysis and SHM-based Finite Element Model Updating, *Lee*, Cho,* **GS-23**
230: Travel Time Reliability Based Bridge Network Maintenance Optimization under Budget Constraint, *Zhang, Cao, Wang*,* **MS-27-B**
231: Reliability-based Calibration of Partial Safety Factors for Wave Energy Converters, *Ambühl*, Kramer, Sørensen,* **GS-25**
236: Age- and State-Dependent Seismic Reliability of Structures, *Iervolino, Giorgio, Chioccarelli*,* **MS-13-A**
237: Stochastic Modeling of Recovery from Seismic Shocks, *Iervolino*, Giorgio,* **MS-11-A**
238: Economic Optimization Considerations in South African Dam Rehabilitations, *Viljoen, Reynolds, (Presented by Botha),* **MS-4-B**
239: Estimating Characteristic Bridge Traffic Load Effects Using Bayesian Statistics, *Leahy, OBrien, Enright, Power, (Presented by O'Connor),* **GS-23**
243: Value of Information in Retrofitting of Flood Defenses, *Schweckendiek*, Vrouwenvelder,* **MS-26-A**
244: Time-Variant Reliability Analysis using Polynomial Chaos Expansion, *Hawchar, El-Soueidy*, Schoefs,* **MS-9-A**
245: Efficient Monte Carlo Algorithm for Rare Failure Event Simulation, *Patelli*, Au,* **MS-24**
246: Defining a Braking Probability to Estimate Extreme Braking Forces on Road Bridges, *Martins*, Fénart, Feltrin, Dumont, Beyer,* **GS-25**
247: A Condition-based Maintenance Policy based on a Probabilistic Meta-model in the case of Chloride-induced Corrosion, *El Hajj*, Castanier, Schoefs, Bastidas-Arteaga, Yeung,* **GS-21**
248: Fatigue Reliability of Casted Wind Turbine Components due to Defects, *Mirzaei Rafsanjani*, Sørensen,* **GS-17-A**
249: Model Uncertainty for the Capacity of Strip Footings under Negative and General Combined Loading, *Phoon*, Tang,* **MS-15-B**
250: Development of Stochastic Heterogeneous Slip Distribution Model for Simulation of Earthquake Ground Motion, *Abe*, Sekimura, Itoi,* **GS-15**
251: Bayesian Approach to Estimate Corrosion Frowth From a Limited Set of Matched Features, *Dann*, Huyse,* **MS-14**
252: Population-based Approach to Estimate Corrosion Growth in Pipelines, *Dann*, Maes,* **MS-14**
254: Reliability of Extreme Wave Prediction Methods, *Barker, Murphy, Pakrashi*,* **MS-28-A**
255: Rare Event Simulation: A Point Process Interpretation with Application in Probability and Quantile Estimation, *Walter, Defaux*,* **MS-24**
256: A New Probabilistic Model of Fully Non-Stationary Ground Motion and its Application, *Liu*, Liu, Dan,* **MS-16-A**
257: Adaptive Surrogate Model with Active Refinement Combining Kriging and a Trust Region Method, *Gaspar*, Teixeira, Guedes Soares,* **MS-9-C**
258: Building Perform. Loss After Damaging Earthquakes: An Investigation Towards Reparability Decisions, *Gaetani d'Aragona, Polese*, Elwood, Baradaran Shoraka, Prota, Manfredi,* **MS-21**
259: Optimization of Inspection Plans for Structures Submitted to Non-stationary Stochastic Degradation Processes, *Decatoire*, Elachachi, Yalamas, Schoefs,* **MS-27-B**
261: Identification Uncertainty of Close Modes in Operational Modal Analysis, *Zhu, Au*, Jones,* **MS-22**
263: Quantifying the Effect of Early Warning Systems on Natural Hazard Risk, *Sättele, Bründl, Straub,* **MS-4-A**
264: Impact of Growth Characteristics on the Fracture Perpendicular to the Grain of Timber, *Jockwer*, Serrano, Gustafsson, Steiger,* **MS-6-B**
265: Comparison of Two Reliability Assessment Methods for the Seismic Performance of Timber Steel Hybrid Structures, *Lam*, Li, He, Li,* **MS-6-A**

266: Seismic Reliability Analyses of Timber-Steel-Hybrid System, *Zhang*, Fairhurst, Tannert,* **MS-6-A**
268: Environmental Contours for Determination of Seismic Design Response Spectra, *Loth, Baker*,* **MS-19**
269: Bayesian Networks in Levee System Reliability, *Roscoe*, Hanea,* **MS-1-C**
270: Generation of Synthetic Accelerograms Compatible with a Set of Design Specifications, *Batou*, Soize,* **MS-20-B**
271: Implications of Hurricane-Sea Surface Temperature Relationship, *Mudd, Letchford, Rosowsky*,* **MS-28-A**
272: Incorporating Network Considerations into Pavement Management Systems, *Medury*, Madanat,* **GS-21**
273: Value of Information on the Risk/Benefit of Infrastructrure under Strong Winds in Mexico, *De Leon*, Lopez, Esteva,* **MS-26-B**
274: Quantification of Resilience improvements for Critical Facilities through Advanced Technologies, *Cimellaro*, Terzic, Mahin,* **MS-25-A**
275: Topology Optimization of Linear Structural System Under Stationary Stochastic Excitation, *Zhu, Yang, Shields*, Guest,* **MS-23-A**
276: Probabilistic Demand and Supply Resilience Model for Electric Power Supply System under Seismic Hazard, *Sun*, Didier, Delé, Stojadinovic,* **MS-11-B**
277: Probabilistic Treatment of Storm Rotation and Wind-driven Rain Deposition in a Hurricane Model, *Johnson*, Pinelli, Cocke,* **GS-19**
279: Random Field Modelling for the Prediction of Wall Thickness of Nuclear Pipes Considering Data Misalignment, *Adegbola*, Yuan, Wang,* **GS-8/GS-9**
281: Reliability and Controllability of Infrastructure Networks: Do They Match?, *Li*, Dueñas-Osorio, Chen,* **GS-5**
282: System Reliability of Suspension Bridges Considering Static Divergence and Flutter, *Øiseth, Rønnquist*, Naess,* **GS-17-A**
291: Subset Simulation-based Random Finite Element Method for Slope Reliability Analysis and Risk Assessment, *Li*, Xiao, Cao, Zhou,* **MS-15-A**
294: Duration-of-Load Effect on the Rolling Shear Strength of Cross Laminated Timber: Reliability Analysis and Duration-of-Load Strength Adjustment Factor, *Li*, Lam,* **MS-6-B**
297: Inter-relationship between Physical-Chemical Processes and Extreme Value Modelling, *Melchers*,* **GS-1-A**
298: System Fragility Curves for a Long Multi-Frame Bridge under Differential Support Motions, *Jeon*, Shafieezadeh, DesRoches,* **GS-23**
307: Towards Quantifying the Effect of Aftershocks in Seismic Risk Assessment, *Jalayer*, Ebrahimian, Manfredi,* **MS-10**
309: Probabilistic Assessment of Increased Flooding Vulnerability in Christchurch City after the Canterbury 2010-2011 Earthquake Sequence, *Cavalieri*, Franchin, Ko, Giovinazzi, Hart,* **MS-11-B**
313: Discretization of Structural Reliability Problems: An Application to Runway Overrun, *Zwirglmaier*, Straub,* **MS-1-C**
314: Reliability Analysis of Systems Based on Survival Signature, *Feng*, Patelli, Beer,* **GS-5**
316: Optimization of Future Drinking Water Pipe Renewal under Uncertainty, *Large*, Tomasian, Elachachi, Le Gat, Renaud, Breysse,* **GS-18/GS-20**
317: Comparing Alternative Flood Mitigation Strategies for Non-engineered Masonry Structures using Demand and Capacity Factored Design, *Carozza*, Jalayer, De Risi, Manfredi, Mbuya,* **MS-5**
318: Life-cycle Robustness: Quantification and Challenges, *Wendner*, Tamparopoulos, Bergmeister,* **GS-13**
320: Spectral Shape Proxies and Simplified Fragility Analysis of Mid-rise Reinforced Concrete Buildings, *Minas*, Galasso, Rossetto,* **MS-21**
321: Load Combination of Aftershocks and Tsunami for Tsunami-resistant Design, *Choi*, Nishida, Itoi, Takada,* **GS-15**
323: A Multi Hazard Risk Assessment Meth. Accounting for Cascading Hazards, *Ní Choine, O'Connor, Gehl, D'Ayala, García-Fernández, Jiménez, Gavin, Van Gelder, Salceda, Power*,* **GS-12**
324: Return Period Determination for Several Extreme Rainfall-induced Events using the IDF Relationship Obtained via Copulas, *Bezak*, Šraj, Brilly, Mikoš,* **MS-5**
330: Evaluating Desktop Methods for Assessing Liquefaction-Induced Damage to Infrastructure for the Insurance Sector, *Kongar*, Rossetto, Giovinazzi,* **MS-10**
331: Simulation of Narrowband Non-Gaussian Processes Using Envelope Distribution, *Tsuchida*, Kimura,* **GS-10**
332: Probability of Detection of Potential Mapping and its Impact on Service Life Prediction, *Kessler*, Gehlen,* **GS-21**
333: Pushover-Based Loss Estimation of Masonry Buildings with Consideration of Uncertainties, *Snoj*, Dolšek,* **GS-19**
336: A Nonlinear Wavelet Density-based Importance Sampling for Reliability Analysis, *Wang*, Dai,* **MS-13-B**
337: Shaking Table Experiment of Fault-Tolerant Seismic Vibration Control of a Building Based on Sensor Reliability, *Tanaka, Kohiyama*,* **GS-15**
338: Quantifying the Impact of Critical Infrastructure Failure due to Extreme Weather Events, *OBrien, Hajializadeh, Power*,* **MS-28-B**
341: Application of Expert Judgment to the Quantification of a Damage Scale for Reinforced Concrete Buildings Exposed to Fire, *Ioannou*, Rush, Bisby, Aspinall, Rossetto,* **GS-26**
343: Integrated Multi-Hazard Framework for the Fragility Analysis of Roadway Bridges, *Gehl*, D'Ayala,* **MS-11-B**
344: Development of Empirical Vulnerability Curves for Electrical Supply Systems Subjected to Wind Hazard, *Dunn*, Wilkinson, Galasso, Manning, Alderson,* **MS-11-B**
349: Aspects of Code-based Design of Timber Structures, *Köhler*, Fink,* **MS-6-B**
353: Systems Reliability of Flow Control in Dam Safety, *Komey*, Deng, Baecher, Zielinski, Atkinson,* **GS-5**
354: Fragility of Reinforced Concrete Framed Structures to Flow-type Landslides, *Parisi*, Sabella, Galasso,* **MS-5**
356: Dimension Reduction Methods for Reliability Problems, *Breitung*,* **GS-1-A**
357: Sensitivity Analysis of Fluid-Structure Interaction using the PFEM, *Zhu, Scott*,* **GS-8/GS-9**
358: Targeted Random Sampling for Time-invariant Reliability Analysis, *Shields*, Sundar,* **GS-3**
359: Approximating Sensitivity of Failure Probability in Reliability-Based Design Optimization, *Liu*, Paulino, Gardoni,* **MS-23-A**
361: Characterization of Measurement Uncertainties in Crack Profiles Assessed by In-Line Inspection Tools, *Koduru*, Lu, Skow,* **GS-21**
363: Joint Earthquake-Snow Hazard Characterization and Fragility Analysis of Wood-frame Structures, *Wang, Rosowsky*,* **MS-6-A**
364: Risk-based Optimization of Adaptable Protection Measures against Natural Hazards, *Spackova*, Dittes, Straub,* **MS-4-A**
365: Applications of Dynamic Trees to Sensitivity Analysis, *Becker*,* **MS-9-D**

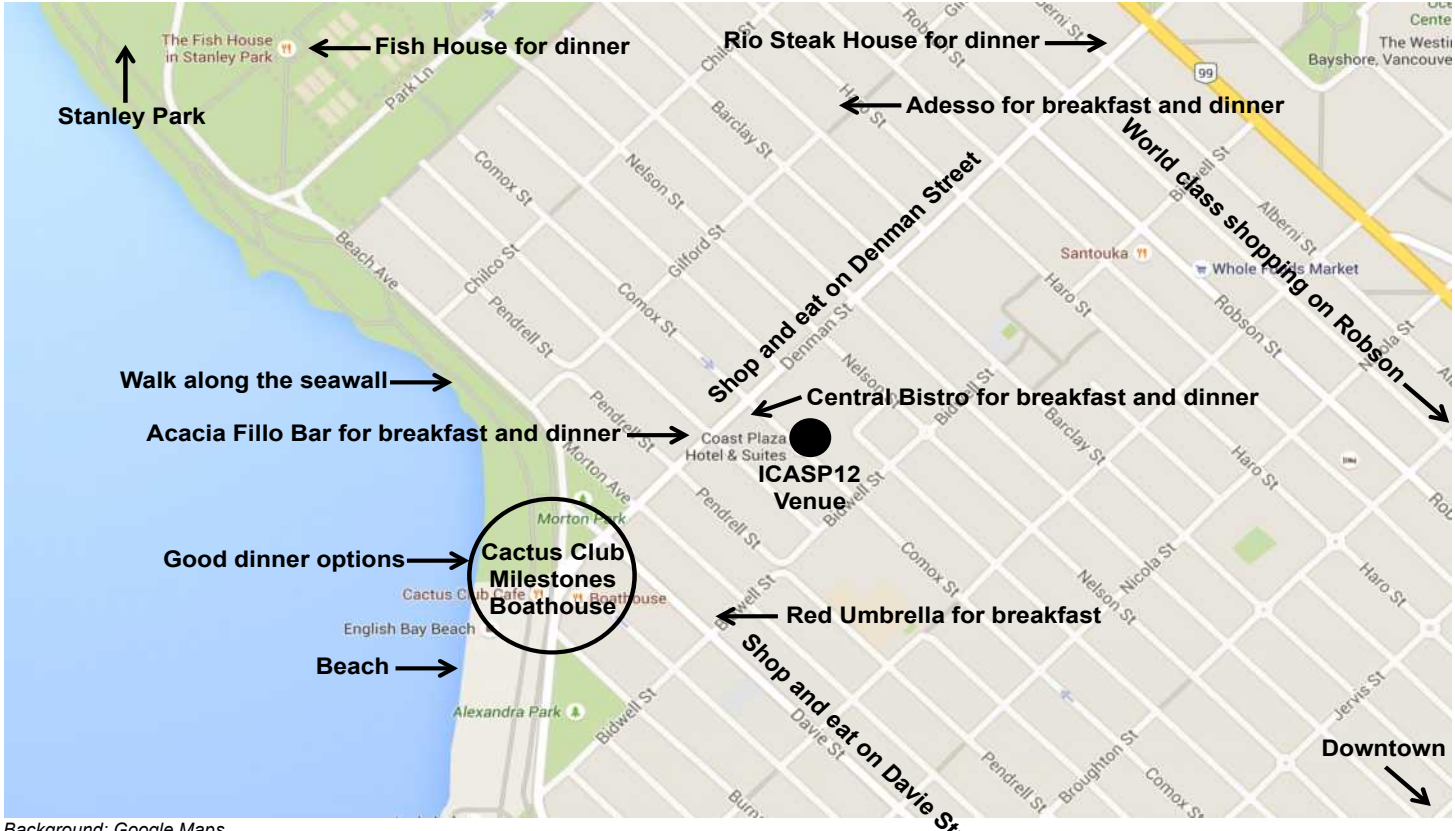
367: Time-Dependent Fatigue Reliability Assessment of Ting Kau Bridge Based on Weigh-In-Motion Data, *Zhang*, Au,* **GS-23**
368: Flood Risk and Economically Optimal Safety Targets for Coastal Flood Defense Systems, *Dupuits*, Schweckendiek,* **MS-4-B**
370: Extension of Data Sets for a more Reliable Prediction of the Fire Resistance of Finger Joint Connections, *Fink*, Klippel, Frangi,* **MS-6-A**
372: Multivariate Modelling of Extreme Load Combinations for Wind Turbines, *Dimitrov*,* **GS-17-B**
373: Reducing Wind Turbine Load Simulation Uncertainties by Means of a Constrained Gaussian Turbulence Field, *Dimitrov*, Lazarov,* **GS-17-A**
379: The Computational Complexity of Probabilistic Interdependent Network Design Problems, *González*, Dueñas-Osorio, Sánchez-Silva, Medaglia,* **MS-3**
380: Influence of Failure Modes of RC Columns on Simplified Seismic Loss Assessment, *De Luca*, Galasso,* **MS-21**
384: The Role of Fiber Volume Fraction in Tensile Strength of Fibrous Composites, *Rypl*, Vorechovsky, Chudoba,* **GS-1-B**
387: Application of Region of Influence Approach to Estimate Extreme Snow Load for a Northeastern Province in China, *Mo*, Fan, Hong,* **GS-12**
388: Probabilistic Risk Assessment of Infrastructure Networks Subjected to Hurricanes, *Scherb*, Garrè, Straub,* **MS-11-C**
389: Estimation of the Failure Probability of a Floating Wind Turbine under Environmental Load, *Murangira, Munoz Zuniga*, Perdrizet,* **GS-3**
390: Uncertainty Quantification of Heavy Gas Release Over a Barrier, *Shoeibi Omrani*, O'Mahoney, Mack, Witteveen,* **GS-7**
391: Reliability-Based Snow Load Maps for Building Design, *DeBock, Liel*, Harris, Torrents,* **MS-19**
394: Probabilistic Model for Ageing Masonry Walls, *Micic, Asenov*,* **MS-27-B**
396: Force Identification by Comparing Likelihood Function using Bayesian Filtering Methods, *Radhika*,* **MS-12-A**
397: A Compendium of Existing Vulnerability and Fragility Relationships for Flood: Preliminary Results, *Pregnolato*, Galasso, Parisi,* **MS-5**
398: Analysis Of The Risk Of Transport Infrastructure Disruption From Extreme Rainfall, *Pregnolato*, Ford, Dawson,* **MS-5**
399: A Case-study on Scenario-based Probabilistic Seismic Loss Assessment for a Portfolio of Bridges, *Miano, Jalayer*, De Risi, Prota, Manfredi,* **MS-25-B**
400: Bayesian Networks for Model Updating and Inspection Support of Marine Structures Subject to Fatigue, *Groden*, Collette,* **MS-1-A**
402: Validation of Synthetic Near-Fault Ground Motions to Estimate the Response of a Concrete Building in a Risk Assessment Framework, *Dabaghi*, Galanis, Der Kiureghian, Moehle,* **MS-20-B**
404: Modifications to Risk-Targeted Seismic Design Maps for Subduction and Near-Fault Hazards, *Liel*, Luco, Raghunandan, Champion,* **MS-19**
405: Operational Modal Analysis using Variational Bayes, *Li*, Der Kiureghian,* **MS-1-A**
407: Life-cycle Maintenance, Monitoring, and Inspection Optimization for Ship Structures under Uncertainty, *Soliman, Frangopol*, Mondoro,* **GS-21**
408: Statistical Investigation of Extreme Weather Conditions, *Proske*,* **MS-28-A**
415: A Unified Formalism For Modeling And Reliability Estimation Of Degrading Systems, *Riascos-Ochoa*, Sánchez-Silva, Klutke,* **GS-13**
419: A Markov Regime-Switching Framework Application for Describing El Niño Southern Oscillat. Patterns, *Cárdenas Gallo*, Sánchez-Silva, Akhavan-Tabatabaei, Bastidas-Arteaga,* **MS-28-B**
420: Uncertainty Management of Safety-Critical Systems: A Solution to the Back-Propagation Problem, *de Angelis*, Patelli, Beer,* **MS-12-A**
423: Vulnerability Analysis of Transmission Towers subjected to Unbalanced Ice Loads, *Rezaei*, Chouinard, Legeron, Langlois,* **GS-24**
424: Life Cycle Cost-Benefit Evaluation of Self-centering and Conventional Concentrically Braced Frames, *Dyanati, Huang*, Roke,* **GS-24**
425: Integrated Spatial Community Resilience Decision Tool Unifying Social Vulnerability Indices and Relative Sea-Level Rise Predictions, *Francis*, Esfandiary,* **MS-25-B**
426: Risk Management of Multi-State Multi-Component Bridge Systems Using a Partially Observable Markov Decision Process, *Shafieezadeh*, Fereshtehnejad,* **GS-19**
428: The Continuous Wavelet Transform as a Stochastic Process for Damage Detection, *Balafas*, Rajagopal, Kiremidjian,* **GS-13**
429: Probabilistic Capacity Assessment of a Prestressed Concrete Pile in a Corrosive Marine Environment, *Schmuhl, Shafieezadeh, Hur*,* **MS-15-B**
433: Shake Table Tests of Stochastic Optimal Polynomial Control of Two Span Bridge Equipped with MR Dampers, *El-Khoury*, Kim, Shafieezadeh, Hur, Heo,* **GS-26**
434: Simulation-Based Analysis of Reconfigurable System of System Network Topologies for Resilience Using Bayesian Networks, *Francis*,* **MS-1-B**
435: BN to Quantify Transition Rates in Degradation Modeling: Application to a Set of Steel Bridges in the Netherlands, *Kosgodagan*, Morales-Napoles, Maljaars, Yeung, Castanier,* **MS-1-C**
436: Simulation of Earthquake Ground Motions in The Eastern U.S. Using Physics-based and Stochastic Approaches, *Rezaeian*, Hartzell, Sun, Mendoza,* **MS-20-A**
437: A Constrained Nonlinear Stochastic Optimal Control for Dynamical Systems, *El-Khoury*, Shafieezadeh,* **GS-10**
438: Application of a Scenario-Based Assessment Framework for the Seismic Resilience of Seaports, *Ivey Burden, Shafieezadeh*,* **GS-19**
439: Use of Kriging to Surrogate Finite Element Models of Bonded Double Cantilever Beams, *Sessa*, Valoroso,* **MS-9-D**
440: An Improved Approach for Aftershock Hazard Assessment, *Muderrisoğlu*, Yazgan,* **GS-12**
442: Uncertainty Propagation in Seismic Reliability Evaluation of Aging Transportation Networks, *Rokneddin, Ghosh, Duenas-Osorio, Padgett, (Presented by Kameshwar),* **MS-9-A**
443: Efficient Computational Models for the Optimal Representation of Correlated Regional Hazard, *Christou*, Bocchini,* **MS-25-B**
444: A Bayesian Network Approach to Coastal Storm Impact Modeling, *Jäger*, Heijer, Bolle, Hanea,* **MS-4-B**
445: Sensitivity of Ground Motion Simulation Validation Criteria to Filtering, *Khoshnevis, Taborda*,* **MS-20-B**
450: Seismic Intensity Measures for Probabilistic Demand Modeling of Rocking Rigid Components, *Hur*, Shafieezadeh,* **MS-13-C**
452: Illustrating a Bayesian Approach to Seismic Collapse Risk Assessment, *Gokkaya*, Baker, Deierlein,* **MS-13-A**
453: Importance Sampling in the Evaluation and Optimization of Buffered Failure Probability, *Harajli*, Rockafellar, Royset,* **GS-3**
455: Message-passing Sequential Detection of Multiple Structural Damages, *Liao*, Rajagopal,* **MS-22**
456: Resource Allocation and Uncertainty when Modeling Infrastructure Networks as Socio-technical Systems, *Gómez*, Sánchez-Silva, Dueñas-Osorio,* **MS-24**

458: Addressing Uncertainty in Ensemble Sea-Level Rise Predictions, *Thomas*, Lin,* **MS-28-B**
459: A Random Field Representation Based on Stochastic Harmonic Functions, *Chen*, He, Li,* **MS-16-A**
460: Compression and Inference Algorithms for Bayesian Network Modeling of Infrastructure Systems, *Tien*, Der Kiureghian,* **MS-1-C**
461: Effects of Spatial Soil Heterogeneities on Structural Behavior of a Steel Sheet Pile, *Yáñez-Godoy*, Elachachi,* **MS-15-A**
464: Risk Measures in Engineering Design under Uncertainty, *Rockafellar, Royset*,* **MS-23-B**
465: The SL-AVV Approach to System Level Reliability-Based Design Optimization of Large Uncertain and Stochastic Dynamic Systems, *Spence*,* **MS-23-B**
472: Strategies for Separation of Aleatory and Epistemic Uncertainties, *Koduru*,* **GS-26**
475: Diagnosis of Earth-fill Dams by Synthesized Approach of Sounding and Surface Wave Method, *Nishimura*, Shibata, Shuku,* **MS-15-C**
476: Analytical Damage Quantification Method for Residential Developments Subjected to Hurricane Wind Hazards, *Grayson*, Pang,* **GS-17-B**
478: Sparse Bayesian Learning with Gibbs Sampling for Structural Health Monitoring with Noisy Incomplete Modal Data, *Huang*, Beck,* **MS-12-B**
479: Material Parameter Estimation in Distributed Plasticity FE Models Using the Unscented Kalman Filter, *Astroza, Ebrahimian, Conte*,* **MS-12-B**
483: A Time-Dependent Seismic Resilience Analysis Approach for Networked Lifelines, *Paredes*, Dueñas-Osorio,* **MS-11-C**
484: Hierarchical Modeling of Systems with Similar Components, *Memarzadeh, Pozzi*, Kolter,* **GS-1-A**
489: A Data Fusion Probabilistic Model for Hurricane-Induced Outages in Electric Power Grids, *Mensah*, Dueñas-Osorio,* **MS-1-B**
491: Probabilistic Modeling of System Deterioration with Inspection and Monitoring Data using Bayesian Networks, *Luque*, Straub,* **MS-1-B**
492: Probabilistic Analysis of Soil-Structure Interaction, *Mirzaie, Mahsuli, Ghannad*,* **GS-15**
493: Fragility Curves of Restoration Processes for Resilience Analysis, *Barberis, Malavisi, Cimellaro*, Mahin,* **GS-5**
494: A Dynamic Bayesian Network Framework for Risk Assessment of Systems Based on Sensor Measurements, *Tien*, Pozzi, Der Kiureghian,* **MS-12-B**
495: Topology Optimization of Structures under Constraints on First Passage Probability, *Chun*, Song, Paulino,* **MS-23-B**
497: Network Reliability Analysis for Cluster Connectivity Using AdaBoost, *Stern*, Song, Work,* **MS-3**
501: Data-Driven Polynomial Chaos Basis Estimation, *Spiridonakos*, Chatzi,* **MS-9-A**
502: Prediction of Creep and Shrinkage based on Gamma Process Models, *Strauss*, Wendner, Vidovic, Zambon, Frangopol,* **MS-27-B**
504: Reliability-Based Geotechnical Design: Towards a Unified Theory, *Fenton*, Naghibi, Griffiths,* **MS-15-A**
507: Energy-based Seismic Collapse Risk Assessment of Structures, *Deniz, Song*, Hajjar,* **MS-13-A**
513: Fragility Functions for Pipeline in Liquefiable Sand: A Case Study on the Groningen Gas Network, *Miraglia*, Courage, Meijers,* **MS-21**
514: A Stochastic Dynamics Approach for Response Spectrum Analysis of Bilinear Systems using Time-dependent Equivalent Linear Properties, *Giaralis*, Kougioumtzoglou,* **MS-13-B**
517: A View of Seismic Robustness Based on Uncertainty, *Vamvatsikos*,* **MS-13-B**
520: Reliability-based Seismic Hazard Analysis, *Rahimi, Mahsuli*, Bakhshi,* **GS-12**
521: Physically-based Seismic Reliability Evaluation of Water Distribution Networks, *Liu*, Sun, Li,* **MS-16-A**
522: Determination of Target Safety for Structures, *Holicky*, Diamantidis, Sykora,* **GS-25**
525: Application of the Box-Cox Power Transformation in Extreme Value Analysis of Wind Speed, *Hong*,* **GS-17-B**
526: Probabilistic Performance-based Optimum Seismic Design with Application to the California High-Speed Rail Prototype Bridge, *Li, Conte*,* **MS-23-B**
528: Parameter Identification In Chloride Ingress From Accelerated Test Using Bayesian Network, *Tran, Bastidas-Arteaga*, Bonnet, Schoefs,* **MS-1-A**
529: Adaptive Kriging Reliability-based Design Optimization of an Automotive Body Structure under Crashworthiness Constraints, *Moustapha*, Sudret, Bourinet, Guillaume,* **MS-9-C**
530: A Phase Space Reconstruction Method for getting Instantaneous Probability Density Function of Nonlinear Stochastic Systems, *Jiang, Li*,* **MS-16-B**
532: On the Use of Spatially Averaged Shear Strength for the Bearing Capacity of a Shallow Foundation, *Ching*, Hu, Phoon,* **MS-15-A**
533: Response of Buried Pipes Taking into Account Seismic and Soil Spatial Variabilities, *Elachachi*, Yanez-Godoy,* **MS-20-B**
536: Application of the Multiplicative Dimensional Reduction Method (M-DRM) to a Probabilistic Fracture Mechanics Problem, *Raimbault*, Walbridge, Pandey,* **GS-3**
537: A Framework for Performance-Based Optimization of Structural Robustness, *Marjanishvili*, Katz,* **MS-23-C**
538: Reliability-based Design of Tuned Mass-Damper-Inerter (TMDI) Equipped Multi-storey Frame Buildings under Seismic Excitation, *Giaralis*, Taflanidis,* **MS-23-C**
541: Sensor Network Optimization using Bayesian Networks, Decision Graphs, and Value of Information, *Malings*, Pozzi,* **MS-1-B**
544: A Two-step Density Estimation Method and Its Applications, *Tao*, Li,* **MS-16-B**
550: Conditional Simulation of Spatially Variable Motions on 2D Grid, *Ancheta*, Stewart,* **MS-20-B**
557: Nanomechanics Based Theory of Size Effect on Strength, Lifetime and Residual Strength Distributions of Quasibrittle Failure: A Review, *Salviato*, Kirane, Bazant,* **GS-1-B**
558: Using Random Simulation of Hurricane Tracks for Risk Analysis, *Garrè*, Dudek,* **MS-4-B**
565: Risk Perception in Civil Engineering Applications, *Micic,* **MS-17**
566: The Moment Equation Closure Method Revisited through the Use of Complex Fractional Moments, *Alotta, Bucher, Di Matteo, Di Paola, Pirrotta*,* **GS-10**
573: Building Probability of Detection Curves via Metamodels, *Browne*, Le Gratiet, Blatman, Cordeiro, Goursaud, Iooss, Maurice,* **MS-9-D**
574: Effect of Correlation Structure Model on Geotechnical Reliability-based Serviceability Limit State Simulations, *Huffman, Stuedlein*,* **MS-15-B**
575: Pedestrian Bridges Monitoring Data for Stochastic Modelling of Human-induced Loads, *Casciati, Casciati, Faravelli*,* **GS-1-B**

576: Probabilistic Damage Identification of the Dowling Hall Footbridge through Hierarchical Bayesian Model Updating, *Behmanesh, Moaveni*,* **MS-12-B**
577: Topology Optimization for Buildings in Seismic Zones within a PBEE Framework, *Bobby, Spence*, Kareem,* **MS-13-C**
578: Stochastic Optimal Control of MR Damped Structures with Uncertain Parameters, *Peng*, Yang, Li,* **MS-16-B**
579: A Probabilistic Approach in Estimating Optimal Evacuation Scenarios for Seismic Emergency Management, *Zanini*, Pellegrino, Rossi, Gastaldi, Modena,* **MS-11-C**
580: Optimal Design of New Deteriorating Timber Components under Climate Variations, *Bastidas-Arteaga, Aoues*, Chateauneuf,* **MS-6-A**
581: Analytical Seismic Vulnerability Assessment for a Class of Modern Low-Rise Steel Frames, *Kazantzi, Vamvatsikos*, Porter,* **MS-13-C**
583: Advances on Risk-targeted Hazard Estimation within the European Context, *Silva*, Crowley, Bazzurro,* **MS-19**
584: Investigation of Structural Fragility for Risk-targeted Hazard Assessment, *Martins*, Silva, Crowley, Bazzurro, Marques,* **MS-19**
588: Probabilistic Hazard Model of Inelastic Oscillator based on Semi-theoretical Solutions of First Passage Problem, *Mori*, Tahashima, Kojima, Ozaki,* **MS-13-B**
590: Variability of Allowable Bearing Capacity of Soft Soil Stabilized by End-bearing Deep Mixed Columns, *Zhang, Chen*, Huang,* **MS-15-B**
593: Dynamic Response and Reliability of Tunnel under Earthquakes, *Yue*, Ang,* **MS-16-B**
594: Efficient Optimal Design-Under-Uncertainty of Passive Structural Control Devices, *De, Wojtkiewicz*, Johnson,* **MS-23-C**
597: Reliability of Corroded Pipelines Accounting for System Effects, *Leira*, Næss, Brandrud Næss,* **GS-13**
598: Nonlinear Combination of Multiple Environmental Design Parameters Based on FORM Algorithms, *Leira*,* **GS-3**
603: Single vs Multi-drain Probabilistic Analyses of Soil Consolidation via Prefabricated Vertical Drains, *Bari, Shahin, Soubra, (Presenter absent),* **MS-15-C**
605: Quantification of the Value of Structural Health Monitoring Information for Fatigue Deteriorating Structural Systems, *Thöns*, Schneider, Faber,* **MS-26-B**
606: Reliability Based Design Optimization of Insulation Systems Considering Climate Change and Workmanship Uncertainties, *Aïssani*, Chateauneuf, Fontaine,* **MS-28-B**
612: Efficient Stochastic Simulation of Dynamic Brittle Strength Using a Random Perturbation-based Micromechanics Model, *Graham-Brady*, Liu,* **MS-9-B**
615: Reliability-based Maintenance Optimization of Pipelines Considering Space-variant Corrosion Rate, *Sahraoui, Chateauneuf*, Khelif,* **MS-23-C**
616: Cost-Benefit Assessment of Different Storm Mitigation Techniques for Residential Buildings using the PBHE Framework, *Unnikrishnan, Barbato*,* **MS-4-B**
617: On the Value of SHM in the Context of Service Life Integrity Management, *Qin*, Thöns, Faber,* **MS-26-B**
618: Protocols for Communication and Governance of Risks, *Vrouwenvelder*, Lind, Faber,* **GS-18/GS-20**
620: On the Regulation of Life Safety Risk, *Faber*, Sørensen, Vrouwenvelder,* **GS-18/GS-20**
621: Calibration of Partial Safety Factors for Fatigue Design of Steel Bridges, *D'Angelo*, Faber, Nussbaumer,* **GS-25**
622: Influence on Structural Reliability of Uncertainty in Estimated Extreme Values of Load-Effects, *Reid*, Naess,* **GS-7**
624: An Efficient Method to Compute the Failure Probability, *Gong*, Juang, Martin, Zhang,* **MS-15-C**
633: Stochastic Dynamic Analysis of a Marine Riser using the First-Order Reliability Method, *Alibrandi*, Koh,* **GS-24**
634: Geotechnical Reliability-based Designs and Links with LRFD, *Low*, Phoon,* **MS-15-B**
635: Vulnerability Analysis of Interdependent Infrastructure Systems, *Galvan*, Agarwal,* **MS-3**
636: Reliability Assessment of Wind Turbines, *Sørensen*,* **GS-17-B**
637: Development of Earthquake Risk-Targeted Ground Motions for Indonesian Earthquake Resistance Building Code SNI 1726-2012, *Sengara*, Irsyam, Sidi, Mulia, Asrurifak, Hutabarat,* **MS-19**
638: A Bayesian Network Model to Assess Seismic Risk of Reinforced Concrete Girder Bridges, *Franchin*, Lupoi, Noto, Tesfamariam,* **MS-11-C**
639: Performance-Based Seismic Analysis of Light SDoF Secondary Substructures, *Kasinos*, Palmeri, Lombardo,* **MS-13-C**
642: Random Vibration of Arbitrarily Supported Single-span Beams Subject to Random Moving Loads, *Caprani*,* **GS-10**
646: Small-sample Probabilistic Simulation Software Tool FReET, *Novak*, Vořechovský,* **GS-7**
648: Improved Formulation of Audze-Eglajs Criterion for Space-filling Designs, *Vořechovský*, Eliáš,* **GS-3**
650: Stochastic Renewal Process Models for Life Cycle Cost and Utility Analysis, *Pandey*, Cheng, Wang,* **MS-25-B**
651: A Framework to Develop Community Resilience Performance Goals and Assessment Metrics for Decision Making, *McAllister*,* **MS-25-A**
653: Time-dependent Reliability Assessment for Corroding Pipelines Based on Imperfect Inspection Data, *Zhang*, Kariyawasam, Zhou,* **MS-14**
654: Evaluation of Structural Reliability for Reinforced Concrete Buildings Exposed to Corrosion, *Carrillo-Bueno*, Ruiz, Tolentino,* **GS-13**
655: Evaluation of Decisions to Rehabilitate South African Dams in terms of the ANCOLD ALARP Criterion and SWTP for Human Safety, *Viljoen, Reynolds, (Presented by Botha),* **GS-26**
656: On a Newly Developed Estimator for More Accurate Modeling with an Application to Civil Engineering, *Habibullah*, Shan-E-Fatima,* **GS-1-B**

Map Around the Conference Venue

See the activities page at the conference website for additional information



Background: Google Maps