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Applications of Statistics and Probability in Civil Engineering
Proceedings of the 12th International Conference on
Applications of Statistics and Probability
in Civil Engineering

Edited by

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Table of Contents

GS-1: Probabilistic Models
297, Inter-relationship between Physical-Chemical Processes and Extreme Value Modelling, Melchers
180, Prediction of Water Mains Failure – A Bayesian Approach, Kabir, Tesfamariam, Sadiq
356, Dimension Reduction Methods for Reliability Problems, Breitung
484, Hierarchical Modeling of Systems with Similar Components, Memarzadeh, Pozzi, Kolter
154, Improved Probability Distribution Models for Seismic Fragility Assessment, Qin, Mackie, Stojadinovic
575, Pedestrian Bridges Monitoring Data for Stochastic Modelling of Human-induced Loads, Casciati, Casciati, Faravelli
557, Nanomechanics Based Theory of Size Effect on Strength, Lifetime and Residual Strength Distributions of Quasibrittle Failure: A Review, Salviato, Kirane, Bazant
656, On a Newly Developed Estimator for More Accurate Modeling with an Application to Civil Engineering, Habibullah, Shan-E-Fatima
384, The Role of Fiber Volume Fraction in Tensile Strength of Fibrous Composites, Rypl, Vorechovsky, Chudoba

GS-3: Reliability Methods
536, Application of the Multiplicative Dimensional Reduction Method (M-DRM) to a Probabilistic Fracture Mechanics Problem, Raimbault, Walbridge, Pandey
358, Targeted Random Sampling for Time-invariant Reliability Analysis, Shields, Sundar
389, Estimation of the Failure Probability of a Floating Wind Turbine under Environmental Load, Murangira, Munoz Zuniga, Perdrizet
598, Nonlinear Combination of Multiple Environmental Design Parameters Based on FORM Algorithms, Leira
648, Improved Formulation of Audze-Eglajs Criterion for Space-filling Designs, Vořechovský, Eliáš
453, Importance Sampling in the Evaluation and Optimization of Buffered Failure Probability, Harajli, Rockafellar, Royset

GS-5: System Reliability Analysis
281, Reliability and Controllability of Infrastructure Networks: Do They Match?, Li, Dueñas-Osorio, Chen
314, Reliability Analysis of Systems Based on Survival Signature, Feng, Patelli, Beer
353, Systems Reliability of Flow Control in Dam Safety, Komey, Deng, Baecher, Zielinski, Atkinson
493, Fragility Curves of Restoration Processes for Resilience Analysis, Barberis, Malavisi, Cimellaro, Mahin

GS-7: Uncertainty Analysis
390, Uncertainty Quantification of Heavy Gas Release Over a Barrier, Shoeibi Omrani, O’Mahoney, Mack, Witteveen
622, Influence on Structural Reliability of Uncertainty in Estimated Extreme Values of Load-Effects, Reid, Naess
646, Small-sample Probabilistic Simulation Software Tool FReET, Novak, Vořechovský
GS-8: Probabilistic Finite Element Analysis / GS-9: Sensitivity Analysis
200, Finite Element Reliability Analysis of Structures using the Dimensional Reduction Method, Balomenos, Pandey
133, Stochastic Multi-scale Finite Element Analysis for Laminated Composite Plates, Zhou, Gosling
357, Sensitivity Analysis of Fluid-Structure Interaction using the PFEM, Zhu, Scott
279, Random Field Modelling for the Prediction of Wall Thickness of Nuclear Pipes Considering Data Misalignment, Adegbola, Yuan, Wang

GS-10: Random Vibrations and Stochastic Processes
331, Simulation of Narrowband Non-Gaussian Processes Using Envelope Distribution, Tsuchida, Kimura
437, A Constrained Nonlinear Stochastic Optimal Control for Dynamical Systems, El-Khoury, Shafieezadeh
566, The Moment Equation Closure Method Revisited through the Use of Complex Fractional Moments, Alotta, Buche, Di Matteo, Di Paola, Pirrotta
642, Random Vibration of Arbitrarily Supported Single-span Beams Subject to Random Moving Loads, Caprani

GS-12: Hazard Analysis
323, A Multi Hazard Risk Assessment Methodology Accounting for Cascading Hazard Events, Ni Choine, O’Connor, Gehl, D’Ayala, García-Fernández, Jiménez, Gavin, Van Gelder, Salceda, Power
387, Application of Region of Influence Approach to Estimate Extreme Snow Load for a Northeastern Province in China, Mo, Fan, Hong
440, An Improved Approach for Aftershock Hazard Assessment, Muderrisoğlu, Yazgan
520, Reliability-based Seismic Hazard Analysis, Rahimi, Mahsuli, Bakhshi

GS-13: Damage and Deterioration
428, The Continuous Wavelet Transform as a Stochastic Process for Damage Detection, Balafas, Rajagopal, Kiremidjian
318, Life-cycle Robustness: Quantification and Challenges, Wendner, Tamparopoulos, Bergmeister
415, A Unified Formalism For Modeling And Reliability Estimation Of Degrading Systems, Riascos-Ochoa, Sánchez-Silva, Klutke
597, Reliability of Corroded Pipelines Accounting for System Effects, Leira, Næss, Brandrud Næss
654, Evaluation of Structural Reliability for Reinforced Concrete Buildings Exposed to Corrosion, Carrillo-Bueno, Ruiz, Tolentino

GS-15: Earthquake Engineering
147, Probabilistic Reliability Assessment of Real-Time Hybrid Simulation of Structures with Degradation, Ryan, Chen, Richardson
250, Development of Stochastic Heterogeneous Slip Distribution Model for Simulation of Earthquake Ground Motion, Abe, Sekimura, Itoi
321, Load Combination of Aftershocks and Tsunami for Tsunami-resistant Design, Choi, Nishida, Itoi, Takada
337, Shaking Table Experiment of Fault-Tolerant Seismic Vibration Control of a Building Based on Sensor Reliability, Tanaka, Kohiyama
492, Probabilistic Analysis of Soil-Structure Interaction, Mirzaie, Mahsuli, Ghannad
### GS-17: Wind Engineering

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>124</td>
<td>Variability of Time Independent Wind Load Components</td>
<td>Botha, Retief, Viljoen</td>
</tr>
<tr>
<td>199</td>
<td>An Agent-based Framework for Modeling the Effectiveness of Hurricane Mitigation Incentives</td>
<td>Pei, Pang, Testik, Ravichandran</td>
</tr>
<tr>
<td>248</td>
<td>Fatigue Reliability of Casted Wind Turbine Components due to Defects</td>
<td>Mirzaei Rafsanjani, Sørensen</td>
</tr>
<tr>
<td>282</td>
<td>System Reliability of Suspension Bridges Considering Static Divergence and Flutter</td>
<td>Øiseth, Rønnquist, Naess</td>
</tr>
<tr>
<td>373</td>
<td>Reducing Wind Turbine Load Simulation Uncertainties by Means of a Constrained Gaussian Turbulence Field</td>
<td>Dimitrov, Lazarov</td>
</tr>
<tr>
<td>525</td>
<td>Application of the Box-Cox Power Transformation in Extreme Value Analysis of Wind Speed</td>
<td>Hong</td>
</tr>
<tr>
<td>636</td>
<td>Reliability Assessment of Wind Turbines</td>
<td>Sørensen</td>
</tr>
<tr>
<td>476</td>
<td>Analytical Damage Quantification Method for Residential Developments Subjected to Hurricane Wind Hazards</td>
<td>Grayson, Pang</td>
</tr>
<tr>
<td>372</td>
<td>Multivariate Modelling of Extreme Load Combinations for Wind Turbines</td>
<td>Dimitrov</td>
</tr>
</tbody>
</table>

### GS-18: Risk-based Optimization / GS-20: Decision-making

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>618</td>
<td>Protocols for Communication and Governance of Risks</td>
<td>Vrouwenvelder, Lind, Faber</td>
</tr>
<tr>
<td>620</td>
<td>On the Regulation of Life Safety Risk</td>
<td>Faber, Sørensen, Vrouwenvelder</td>
</tr>
<tr>
<td>111</td>
<td>A Reliability-Based Optimization Scheme for Maintenance Management in Large-Scale Bridge Networks</td>
<td>Hu, Daganzo, Madanat</td>
</tr>
<tr>
<td>316</td>
<td>Optimization of Future Drinking Water Pipe Renewal under Uncertainty</td>
<td>Large, Tomasian, Elachachi, Le Gat, Renaud, Breysse</td>
</tr>
</tbody>
</table>

### GS-19: Risk Assessment and Management

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>277</td>
<td>Probabilistic Treatment of Storm Rotation and Wind-driven Rain Deposition in a Hurricane Model</td>
<td>Johnson, Pinelli, Cocke</td>
</tr>
<tr>
<td>333</td>
<td>Pushover-Based Loss Estimation of Masonry Buildings with Consideration of Uncertainties</td>
<td>Snoj, Dolšek</td>
</tr>
<tr>
<td>426</td>
<td>Risk Management of Multi-State Multi-Component Bridge Systems Using a Partially Observable Markov Decision Process</td>
<td>Shafieezadeh, Fereshtehnejad</td>
</tr>
<tr>
<td>438</td>
<td>Application of a Scenario-Based Assessment Framework for the Seismic Resilience of Seaports</td>
<td>Ivey Burden, Shafieezadeh</td>
</tr>
</tbody>
</table>

### GS-21: Maintenance and Inspection

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>272</td>
<td>Incorporating Network Considerations into Pavement Management Systems</td>
<td>Medury, Madanat</td>
</tr>
<tr>
<td>332</td>
<td>Probability of Detection of Potential Mapping and its Impact on Service Life Prediction</td>
<td>Kessler, Gehlen</td>
</tr>
<tr>
<td>407</td>
<td>Life-cycle Maintenance, Monitoring, and Inspection Optimization for Ship Structures under Uncertainty</td>
<td>Soliman, Frangopol, Mondoro</td>
</tr>
</tbody>
</table>

### GS-23: Bridge Engineering

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>226</td>
<td>Probabilistic Fatigue Life Prediction for Bridges Using System Reliability Analysis and SHM-based Finite Element Model Updating</td>
<td>Lee, Cho</td>
</tr>
<tr>
<td>239</td>
<td>Estimating Characteristic Bridge Traffic Load Effects Using Bayesian Statistics</td>
<td>Leahy, O'Brien, Enright, Power</td>
</tr>
</tbody>
</table>
298, System Fragility Curves for a Long Multi-Frame Bridge under Differential Support Motions, Jeon, Shafieezadeh, DesRoches
367, Time-Dependent Fatigue Reliability Assessment of Ting Kau Bridge Based on Weigh-In-Motion Data, Zhang, Au

**GS-24: Special Structures**
221, Fragility Assessment of Above Ground Petroleum Storage Tanks under Storm Surge, Kameshwar, Padgett
423, Vulnerability Analysis of Transmission Towers subjected to Unbalanced Ice Loads, Rezaei, Chouinard, Legeron, Langlois
424, Life Cycle Cost-Benefit Evaluation of Self-centering and Conventional Concentrically Braced Frames, Dyanati, Huang, Rokey
633, Stochastic Dynamic Analysis of a Marine Riser using the First-Order Reliability Method, Alibrandi, Koh

**GS-25: Code Calibration**
231, Reliability-based Calibration of Partial Safety Factors for Wave Energy Converters, Ambühl, Kramer, Sørensen
246, Defining a Braking Probability to Estimate Extreme Braking Forces on Road Bridges, Martins, Fénart, Feltrin, Dumont, Beyer
171, On Standardization of the Reliability Basis of Structural Design, Holicky, Retief, Diamantidis, Viljoen
621, Calibration of Partial Safety Factors for Fatigue Design of Steel Bridges, D’Angelo, Faber, Nussbaumer
522, Determination of Target Safety for Structures, Holicky, Diamantidis, Sykora

**GS-26: Applications**
472, Strategies for Separation of Aleatory and Epistemic Uncertainties, Koduru
433, Shake Table Tests of Stochastic Optimal Polynomial Control of Two Span Bridge Equipped with MR Dampers, El-Khoury, Kim, Shafieezadeh, Hur, Heo
655, Evaluation of Decisions to Rehabilitate South African Dams in terms of the ANCOLD ALARP Criterion and SWTP for Human Safety, Viljoen, Reynolds
341, Application of Expert Judgment to the Quantification of a Damage Scale for Reinforced Concrete Buildings Exposed to Fire, Ioannou, Rush, Bisby, Aspinall, Rossetto
361, Characterization of Measurement Uncertainties in Crack Profiles Assessed by In-Line Inspection Tools, Koduru, Lu, Skow

**MS-1: Bayesian Networks and Decision Graphs for Engineering Risk Analysis**
528, Parameter Identification In Chloride Ingress From Accelerated Test Using Bayesian Network, Tran, Bastidas-Arteaga, Bonnet, Schoefs
125, Prediction of Soil Corrosivity Index: A Bayesian Belief Network Approach, Demissie, Tesfamariam, Sadiq
405, Operational Modal Analysis using Variational Bayes, Li, Der Kiureghian
400, Bayesian Networks for Model Updating and Inspection Support of Marine Structures Subject to Fatigue, Groden, Collette
155, Enhanced Bayesian Networks approach to Risk Assessment of Spent Fuel Ponds, Tolo, Patelli, Beer, Broggi
434, Simulation-Based Analysis of Reconfigurable System of System Network Topologies for Resilience Using Bayesian Networks, Francis
491, Probabilistic Modeling of System Deterioration with Inspection and Monitoring Data using Bayesian Networks, Luque, Straub
541, Sensor Network Optimization using Bayesian Networks, Decision Graphs, and Value of Information, Malings, Pozzi
489, A Data Fusion Probabilistic Model for Hurricane-Induced Outages in Electric Power Grids, Mensah, Dueñas-Osorio
207, Risk-based Decision Making for Deterioration Processes Using POMDP, Nielsen, Sørensen
121, The Assessment of the Reliability of Potentially Deteriorated Reinforced Concrete Elements with Bayesian Networks, Hackl, Kohler
269, Bayesian Networks in Levee System Reliability, Roscoe, Hanea
460, Compression and Inference Algorithms for Bayesian Network Modeling of Infrastructure Systems, Tien, Der Kiureghian
313, Discretization of Structural Reliability Problems: An Application to Runway Overrun, Zwiglmaier, Straub
435, Bayesian Networks to Quantify Transition Rates in Degradation Modeling: Application to a Set of Steel Bridges in the Netherlands, Kosgodagan, Morales-Napoles, Maljaars, Yeung, Castanier

MS-3: Taming the Computational Complexity of Structure and Infrastructure Performance Assessment Metrics
178, Local Measures of Disruption for Quantifying Seismic Risk and Reliability of Complex Networks, Baker, Miller, Markhvida
184, Efficient Post-hazard Probabilistic Flow Analysis of Water Pipe Networks, Kang, Lee
497, Network Reliability Analysis for Cluster Connectivity Using AdaBoost, Stern, Song, Work
635, Vulnerability Analysis of Interdependent Infrastructure Systems, Galvan, Agarwal

MS-4: Risk Management of Natural Hazards
122, Assessing and Managing Natural Risks at the Panama Canal, Alfaro, Baecher, Guerra, Patev
161, The Effect of Under-reporting of Non-fatal Involvements in Snow Avalanches on Vulnerability, Jamieson, Jones
263, Quantifying the Effect of Early Warning Systems on Natural Hazard Risk, Sättele, Bründl, Straub
364, Risk-based Optimization of Adaptable Protection Measures against Natural Hazards, Spackova, Dittes, Straub
368, Flood Risk and Economically Optimal Safety Targets for Coastal Flood Defense Systems, Dupuits, Schweckendiek
558, Using Random Simulation of Hurricane Tracks for Risk Analysis, Garrè, Dudek
444, A Bayesian Network Approach to Coastal Storm Impact Modeling, Jäger, Heijer, Bolle, Hanea
616, Cost-Benefit Assessment of Different Storm Mitigation Techniques for Residential Buildings using the PBHE Framework, Unnikrishnan, Barbato
238, Economic Optimization Considerations in South African Dam Rehabilitations, Viljoen, Reynolds

MS-5: Probabilistic Risk Assessment for Rainfall-induced Phenomena
317, Comparing Alternative Flood Mitigation Strategies for Non-engineered Masonry Structures using Demand and Capacity Factored Design, Carozza, Jalayer, De Risi, Manfredi, Mbuya
324, Return Period Determination for Several Extreme Rainfall-induced Events using the IDF Relationship Obtained via Copulas, Bezak, Šraj, Brilly, Mikoš
354, Fragility of Reinforced Concrete Framed Structures to Flow-type Landslides, Parisi, Sabella, Galasso
MS-6: Structural Reliability and Probabilistic Modelling of Timber
363, Joint Earthquake-Snow Hazard Characterization and Fragility Analysis of Wood-frame Structures, Wang, Rosowsky
265, Comparison of Two Reliability Assessment Methods for the Seismic Performance of Timber Steel Hybrid Structures, Lam, Li, He, Li
266, Seismic Reliability Analyses of Timber-Steel-Hybrid System, Zhang, Fairhurst, Tannert
370, Extension of Data Sets for a more Reliable Prediction of the Fire Resistance of Finger Joint Connections, Fink, Klippel, Frangi
580, Optimal Design of New Deteriorating Timber Components under Climate Variations, Bastidas-Arteaga, Aoues, Chateauneuf
210, Numerical Description of Size and Load Configuration Effects in Glulam Structures, Frese, Blass
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
218, Serial Correlation of Withdrawal Properties from Axially-Loaded Self-Tapping Screws, Brandner, Bratulic, Ringhofe
264, Impact of Growth Characteristics on the Fracture Perpendicular to the Grain of Timber, Jockwer, Serrano, Gustafsson, Steiger
349, Aspects of Code-based Design of Timber Structures, Köhler, Fink

MS-9: Surrogate Models for Uncertainty Quantification, Reliability Analysis and Robust Design
501, Data-Driven Polynomial Chaos Basis Estimation, Spiridonakos, Chatzi
187, Polynomial Chaos Expansions for Damped Oscillators, Mai, Sudret
244, Time-Variant Reliability Analysis using Polynomial Chaos Expansion, Hawchar, El-Soueidy, Schoefs
159, Low-rank Tensor Approximations for Reliability Analysis, Konakli, Sudret
442, Uncertainty Propagation in Seismic Reliability Evaluation of Aging Transportation Networks, Rokneddin, Ghosh, Duenas-Osorio, Padgett
209, Compressive Polynomial Chaos Expansion for Multi Dimensional Model Maps, Marelli, Sudret
116, Propagation of Uncertainties Modelled by Parametric p-boxes using Sparse Polynomial Chaos Expansions, Schöbi, Sudret
612, Efficient Stochastic Simulation of Dynamic Brittle Strength Using a Random Perturbation-based Micromechanics Model, Graham-Brady, Liu
220, A Sampling-based RBDO Algorithm with Local Refinement and Efficient Gradient Estimation, Lacaze, Missoum, Brevault, Balesdent
529, Adaptive Kriging Reliability-based Design Optimization of an Automotive Body Structure under Crashworthiness Constraints, Moustapha, Sudret, Bourinet, Guillaume
257, Adaptive Surrogate Model with Active Refinement Combining Kriging and a Trust Region Method, Gaspar, Teixeira, Guedes Soares
152, Performance of Surrogate Modelling Techniques in Structural Reliability, Kroetz, Beck
182, Reproducing Kernel-Based Support Vector Machine for Structural Reliability Analysis, Lu, Li
223, Fusing Simulation Results from Multifidelity Aero-servo-elastic Simulators – Application to Extreme Loads on Wind Turbine, Abdallah, Sudret, Latanitis, Sørensen, Natarajan
573, Building Probability of Detection Curves via Metamodels, Browne, Le Gratiet, Blatman, Cordeiro, Goursaud, Iooss, Maurice
145, Computational Simulation of Hydraulic Fracturing Nonlinear Dynamics using Gaussian Processes Surrogates, Zio, Rochinha
439, Use of Kriging to Surrogate Finite Element Models of Bonded Double Cantilever Beams, Sessa, Valeroso
365, Applications of Dynamic Trees to Sensitivity Analysis, Becker

**MS-10: Probabilistic Modeling and Impact Assessment of Cascading Geophysical Hazards**
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
192, Coupled Simulation of Ground Shaking and Tsunami for Mega-thrust Subduction Earthquakes, Goda, De Risi, Rossetto
197, Quantifying and Accounting for Aftershock Hazard in Performance-Based Earthquake Engineering, van de Lindt, Nazari, Li
307, Towards Quantifying the Effect of Aftershocks in Seismic Risk Assessment, Jalayer, Ebrahimian, Manfredi
330, Evaluating Desktop Methods for Assessing Liquefaction-Induced Damage to Infrastructure for the Insurance Sector, Kongar, Rossetto, Giovinazzi

**MS-11: Risk and Resilience Analysis of Infrastructure Systems**
106, Risk, Resilience, and Sustainability Assessment of Infrastructure Systems in a Life-Cycle Context Considering Uncertainties, Dong, Frangopol
163, Vulnerability Importance Measures Toward Resilience-Based Network Design, Barker, Nicholson, Ramirez-Marquez
212, Identifying the Needs and Future Directions of Seismic Hazard for Probabilistic Infrastructure Risk Analysis, Weatherill, Pagani
237, Stochastic Modeling of Recovery from Seismic Shocks, Iervolino, Giorgio
276, Probabilistic Demand and Supply Resilience Model for Electric Power Supply System under Seismic Hazard, Sun, Didier, Delé, Stojadinovic
309, Probabilistic Assessment of Increased Flooding Vulnerability in Christchurch City after the Canterbury 2010-2011 Earthquake Sequence, New Zealand, Cavalieri, Franchin, Ko, Giovinazzi, Hart
343, Integrated Multi-Hazard Framework for the Fragility Analysis of Roadway Bridges, Gehl, D’Ayala
344, Development of Empirical Vulnerability Curves for Electrical Supply Systems Subjected to Wind Hazard, Dunn, Wilkinson, Galasso, Manning, Alderson
388, Probabilistic Risk Assessment of Infrastructure Networks Subjected to Hurricanes, Scherb, Garrè, Straub
483, A Time-Dependent Seismic Resilience Analysis Approach for Networked Lifelines, Paredes, Dueñas-Osorio
638, A Bayesian Network Model to Assess Seismic Risk of Reinforced Concrete Girder Bridges, Franchin, Lupoi, Noto, Tesfamariam

**MS-12: Bayesian Inference in Engineering: New Methods and Algorithms**
103, Seismic Hazard Analysis with the Bayesian Approach, Wang
194, Bayesian Assessment of the Compressive Strength of Structural Masonry, Nagel, Mojsilovic, Sudret
396, Force Identification by Comparing Likelihood Function using Bayesian Filtering Methods, Radhika
420, Uncertainty Management of Safety-Critical Systems: A Solution to the Back-Propagation Problem, de Angelis, Patelli, Beer
478, Sparse Bayesian Learning with Gibbs Sampling for Structural Health Monitoring with Noisy Incomplete Modal Data, Huang, Beck
494, A Dynamic Bayesian Network Framework for Risk Assessment of Systems Based on Sensor Measurements, Tien, Pozzi, Der Kiureghian
576, Probabilistic Damage Identification of the Dowling Hall Footbridge through Hierarchical Bayesian Model Updating, Behmanesh, Moaveni
479, Material Parameter Estimation in Distributed Plasticity FE Models Using the Unscented Kalman Filter, Astroza, Ebrahimian, Conte

**MS-13: Stochastic Dynamics and Simulation-based Techniques for Performance-based Earthquake Engineering**
507, Energy-based Seismic Collapse Risk Assessment of Structures, Deniz, Song, Hajjar
452, Illustrating a Bayesian Approach to Seismic Collapse Risk Assessment, Gokkaya, Baker, Deierlein
236, Age- and State-Dependent Seismic Reliability of Structures, Iervolino, Giorgio, Chioccarelli
146, Seismic Optimization of a Novel Tuned Sloshing Damper for the Chilean Region based on Life-cycle Cost Criteria, Ruiz, Taflanidis, Lopez-Garcia
131, Structural System Response and Reliability Analysis under Incomplete Earthquake Records, Comerford, Jensen, Beer, Mayorga, Kougioumtzoglou, Kusanovic
588, Probabilistic Hazard Model of Inelastic Oscillator based on Semi-theoretical Solutions of First Passage Problem, Mori, Tahashima, Kojima, Ozaki
514, A Stochastic Dynamics Approach for Response Spectrum Analysis of Bilinear Systems using Time-dependent Equivalent Linear Properties, Giaralis, Kougioumtzoglou
517, A View of Seismic Robustness Based on Uncertainty, Vamvatsikos
336, A Nonlinear Wavelet Density-based Importance Sampling for Reliability Analysis, Wang, Dai
581, Analytical Seismic Vulnerability Assessment for a Class of Modern Low-Rise Steel Frames, Kazantzii, Vamvatsikos, Porter
639, Performance-Based Seismic Analysis of Light SDoF Secondary Substructures, Kasinos, Palmeri, Lombardo
450, Seismic Intensity Measures for Probabilistic Demand Modeling of Rocking Rigid Components, Hur, Shafieezadeh
577, Topology Optimization for Buildings in Seismic Zones within a PBEE Framework, Bobby, Spence, Kareem

**MS-14: Reliability and Risk Assessment of Pipelines**
160, Estimating Event Probabilities using Zero Failure Data, Breitung, Maes
172, Comparative Studies on Assessment of Corrosion Rates in Pipelines as Semi-Probabilistic and Fully Stochastic Values, Opeyemi, Patelli, Beer, Timashev
653, Time-dependent Reliability Assessment for Corroding Pipelines Based on Imperfect Inspection Data, Zhang, Kariyawasam, Zhou
252, Population-based Approach to Estimate Corrosion Growth in Pipelines, Dann, Maes
251, Bayesian Approach to Estimate Corrosion Growth From a Limited Set of Matched Features, Dann, Huyse

**MS-15: Reliability of Geotechnical Structures**
504, Reliability-Based Geotechnical Design: Towards a Unified Theory, Fenton, Naghibi, Griffiths
461, Effects of Spatial Soil Heterogeneities on Structural Behavior of a Steel Sheet Pile, Yáñez-Godoy, Elachachi
532, On the Use of Spatially Averaged Shear Strength for the Bearing Capacity of a Shallow Foundation, Ching, Hu, Phoon
291, Subset Simulation-based Random Finite Element Method for Slope Reliability Analysis and Risk Assessment, Li, Xiao, Cao, Zhou
143, Determination of Soil Property Characteristic Values from Standard Penetration Tests, Wang, Zhao, Cao
590, Variability of Allowable Bearing Capacity of Soft Soil Stabilized by End-bearing Deep Mixed Columns, Zhang, Chen, Huang
634, Geotechnical Reliability-based Designs and Links with LRFD, Low, Phoon
249, Model Uncertainty for the Capacity of Strip Footings under Negative and General Combined Loading, Phoon, Tang
574, Effect of Correlation Structure Model on Geotechnical Reliability-based Serviceability Limit State Simulations, Huffman, Stuedlein
429, Probabilistic Capacity Assessment of a Prestressed Concrete Pile in a Corrosive Marine Environment, Schmuhl, Shafeezaebeh, Hur
156, Levee Reliability Analysis Considering Different Failure Mechanisms – A Case Study (Gucishan Levee) in Southern Taiwan, Huang, Yu
624, An Efficient Method to Compute the Failure Probability, Gong, Juang, Martin, Zhang
475, Diagnosis of Earth-fill Dams by Synthesized Approach of Sounding and Surface Wave Method, Nishimura, Shibata, Shuku
102, Bayesian Methods and Liquefaction, Christian, Baecher
603, Single vs Multi-drain Probabilistic Analyses of Soil Consolidation via Prefabricated Vertical Drains, Bari, Shahin, Soubra,

**MS-16: Probability Density Evolution Theory and Its Applications**
128, An Approximate Approach for Assessing the Reliability of a Stochastically Excited Softening Duffing Oscillator, Zhang, Kougioumtzoglou
256, A New Probabilistic Model of Fully Non-Stationary Ground Motion and its Application, Liu, Liu, Dan
459, A Random Field Representation Based on Stochastic Harmonic Functions, Chen, He, Li
521, Physically-based Seismic Reliability Evaluation of Water Distribution Networks, Liu, Sun, Li
530, A Phase Space Reconstruction Method for getting Instantaneous Probability Density Function of Nonlinear Stochastic Systems, Jiang, Li
544, A Two-step Density Estimation Method and Its Applications, Tao, Li
578, Stochastic Optimal Control of MR Damped Structures with Uncertain Parameters, Peng, Yang, Li
593, Dynamic Response and Reliability of Tunnel under Earthquakes, Yue, Ang

**MS-17: Communicating Risk Under High Uncertainty: Developing Cross-disciplinary Knowledge**
107, Communicating Risk in Major Incidents: the Public’s Perception, Swan, Waring, Alison, Beer
113, Likelihood of Progressive Collapse of Buildings from Terrorist Attacks, Stewart, Grant
137, A Clustering Approach to Identification of Seismic Building Damage Patterns for Concrete Structures, Elwood, Corotis
190, Learning from Accidents: Analysis and Representation of Human Errors in Multi-attribute Events, Moura, Beer, Lewis, Patelli
565, Risk Perception in Civil Engineering Applications, Micic

**MS-19: Risk-targeted Response Spectra for Seismic Design**
583, Advances on Risk-targeted Hazard Estimation within the European Context, Silva, Crowley, Bazzurro
584, Investigation of Structural Frailty for Risk-targeted Hazard Assessment, Martins, Silva, Crowley, Bazzurro, Marques
404, Modifications to Risk-Targeted Seismic Design Maps for Subduction and Near-Fault Hazards, Liel, Luco, Raghunandan, Champion
391, Reliability-Based Snow Load Maps for Building Design, DeBock, Liel, Harris, Torrents

**MS-20: Stochastic Earthquake Ground Motion Simulation, Validation, and Engineering Applications**
127, Tuning of Record-based Stochastic Ground Motion Models for Hazard-compatibility and Applications to Seismic Risk Assessment, Vetter, Taflanidis, Mavroeidis
162, A Fully Parametric Non-stationary Spectral-based Stochastic Ground Motion Model, Vlachos, Deodatis, Papakonstantinou
185, Stochastic Ground Motion Simulation for Crustal Earthquakes in Japan, Itoi
436, Simulation of Earthquake Ground Motions in The Eastern U.S. Using Physics-based and Stochastic Approaches, Rezaeian, Hartzell, Sun, Mendoza
402, Validation of the Use of Synthetic Near-Fault Ground Motions to Estimate the Response of a Concrete Building in a Risk Assessment Framework, Dabaghi, Galanis, Der Kiureghian, Moehle
270, Generation of Synthetic Accelerograms Compatible with a Set of Design Specifications, Batou, Soize
445, Sensitivity of Ground Motion Simulation Validation Criteria to Filtering, Khoshnevis, Taborda
533, Response of Buried Pipes Taking into Account Seismic and Soil Spatial Variabilities, Elachachi, Yanez-Godoy
550, Conditional Simulation of Spatially Variable Motions on 2D Grid, Ancheta, Stewart

**MS-21: Advances and Outlooks in Seismic Risk Analysis**
380, Influence of Failure Modes of RC Columns on Simplified Seismic Loss Assessment, De Luca, Galasso
320, Spectral Shape Proxies and Simplified Fragility Analysis of Mid-rise Reinforced Concrete Buildings, Minas, Galasso, Rossetto
258, Building Performance Loss After Damaging Earthquakes: An Investigation Towards Reparability Decisions, Gaetani d’Aragona, Polese, Elwood, Baradaran Shoraka, Prota, Manfredi
513, Fragility Functions for Pipeline in Liquefiable Sand: A Case Study on the Groningen Gas Network, Miraglia, Courage, Meijers

**MS-22:Probabilistic Aspects of System Identification and Health Monitoring**
455, Message-passing Sequential Detection of Multiple Structural Damages, Liao, Rajagopal
202, A Comparison of Unscented and Extended Kalman Filtering for Nonlinear System Identification, Al-Hussein, Haldar
261, Identification Uncertainty of Close Modes in Operational Modal Analysis, Zhu, Au, Jones

**MS-23: Robust, Performance-based and Reliability-based Optimization Under Uncertainty**
134, Design of Floor Isolation Systems Through Multi-objective Criteria for Seismic Risk Performance, Gidaris, Taflanidis, Lopez-Garcia, Mavroeidis
151, Optimization of Non-linear Truss Considering Expected Consequences of Failure, Pedrosa, Beck
215, Risk Optimization of Trusses Using a New Gradient Estimation Method, Gomes
275, Topology Optimization of Linear Structural System Under Stationary Stochastic Excitation, Zhu, Yang, Shields, Guest
359, Approximating Sensitivity of Failure Probability in Reliability-Based Design Optimization, Liu, Paulino, Gardoni
464, Risk Measures in Engineering Design under Uncertainty, Rockafellar, Royset
465, The SL-AVV Approach to System Level Reliability-Based Design Optimization of Large Uncertain and Stochastic Dynamic Systems, Spence
495, Topology Optimization of Structures under Constraints on First Passage Probability, Chun, Song, Paulino
526, Probabilistic Performance-based Optimum Seismic Design with Application to the California High-Speed Rail Prototype Bridge, Li, Conte
537, A Framework for Performance-Based Optimization of Structural Robustness, Marjanishvili, Katz
538, Reliability-based Design of Tuned Mass-Damper-Inerter (TMDI) Equipped Multi-storey Frame Buildings under Seismic Excitation, Giaralis, Taflanidis
594, Efficient Optimal Design-Under-Uncertainty of Passive Structural Control Devices, De, Wojtkiewicz, Johnson
615, Reliability-based Maintenance Optimization of Pipelines Considering Space-variant Corrosion Rate, Sahraoui, Chateauneuf, Khelif

**MS-24: Advanced Simulation Methods for Probabilistic Analysis of Complex Engineering Problems**
139, Simulation of Strongly Non-Gaussian and Non-stationary Stochastic Processes by Karhunen-Loeve Expansion, Kim, Shields
245, Efficient Monte Carlo Algorithm for Rare Failure Event Simulation, Patelli, Au
255, Rare Event Simulation: A Point Process Interpretation with Application in Probability and Quantile Estimation, Walter, Defaux
456, Resource Allocation and Uncertainty when Modeling Infrastructure Networks as Socio-technical Systems, Gómez, Sánchez-Silva, Dueñas-Osorio

**MS-25: Recent Developments in Reliability and Cost Prediction of Building Inventories and Civil Infrastructure Systems**
651, A Framework to Develop Community Resilience Performance Goals and Assessment Metrics for Decision Making, McAllister
142, Preliminary Extension of First Order Reliability Methods for Combined Seismic and Wind Hazard Loss Estimation for a Portfolio of Buildings, Corotis, Bonstrom
179, Multi-Objective Community-Level Seismic Retrofit Optimization for Resiliency using Engineering and Socioeconomic Variables, Jennings, van de Lindt, Peek
225, Disaggregating Community Resilience Objectives to Achieve building Performance Goals, Wang, Ellingwood
274, Quantification of Resilience improvements for Critical Facilities through Advanced Technologies, Cimellaro, Terzie, Mahin
399, A Case-study on Scenario-based Probabilistic Seismic Loss Assessment for a Portfolio of Bridges, Miano, Jalayer, De Risi, Prota, Manfredi
425, Integrated Spatial Community Resilience Decision Tool Unifying Social Vulnerability Indices and Relative Sea-Level Rise Predictions, Francis, Esfandiary
443, Efficient Computational Models for the Optimal Representation of Correlated Regional Hazard, Christou, Bocchini
119, Reliability-Based Progressive Collapse and Redundancy Analysis of Suspension Bridges, Yang, Ghosn

**MS-26: Value of Information in Civil Engineering**
135, Pre-posterior Optimization of Sequence of Measurement and Intervention Actions under Structural Reliability Constraint, Goulet, Der Kiureghian, Li
188, Parameter Study on Optimal Sampling Planning based on Value of Information, Yoshida
224, A Bayesian Change Point Model to Detect Changes in Event Occurrence Rates, with Application to Induced Seismicity, Gupta, Baker
243, Value of Information in Retrofitting of Flood Defenses, Schweekendiek, Vrouwenvelder
273, Value of Information on the Risk/Benefit of Infrastructure under Strong Winds in Mexico, De Leon, Lopez, Esteva
605, Quantification of the Value of Structural Health Monitoring Information for Fatigue Deteriorating Structural Systems, Thöns, Schneider, Faber
617, On the Value of SHM in the Context of Service Life Integrity Management, Qin, Thöns, Faber

**MS-27: Life Cycle Based Design and Optimization of Structural Systems under Uncertainty**
214, Bayesian Updated Time-Dependent Chloride-Induced Corrosion Assessment Using Redundancy Factors, Botte, Caspeele, Taerwe
108, Role of Uncertainty in Life-Cycle Design of Concrete Structures, Biondini, Frangopol
205, Ethical Discounting for Intergenerational Life-cycle Risk Assessment, Lee, Ellingwood
123, Life-cycle System Performance of Bridges: A Robustness-based Approach, Cavaco, Casas, Neves
259, Optimization of Inspection Plans for Structures Submitted to Non-stationary Stochastic Degradation Processes, Decatoire, Elachachi, Yalamas, Schoefs
230, Travel Time Reliability Based Bridge Network Maintenance Optimization under Budget Constraint, Zhang, Cao, Wang
502, Prediction of Creep and Shrinkage based on Gamma Process Models, Strauss, Wendner, Vidovic, Zambon, Frangopol
394, Probabilistic Model for Ageing Masonry Walls, Micic, Asenov

**MS-28: Predicting and Adapting to Climate Change**
271, Implications of Hurricane-Sea Surface Temperature Relationship, Mudd, Letchford, Rosowsky
408, Statistical Investigation of Extreme Weather Conditions, Proske
254, Reliability of Extreme Wave Prediction Methods, Barker, Murphy, Pakrashi
114, Cost-Effective Design and Maintenance of Timber Power Distribution Poles in a Changing Climate, Ryan, Stewart, Spencer
458, Addressing Uncertainty in Ensemble Sea-Level Rise Predictions, Thomas, Lin
606, Reliability Based Design Optimization of Insulation Systems Considering Climate Change and Workmanship Uncertainties, Aïssani, Chateauneuf, Fontaine
158, Dynamic Restricted Equilibrium Model to Determine Statistically the Resilience of a Traffic Network to Extreme Weather Events, Nogal, Martinez-Pastor, O’Connor, Caulfield
338, Quantifying the Impact of Critical Infrastructure Failure due to Extreme Weather Events, OBrien, Hajializadeh, Power