

**Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability  
Conference (EMI/PMC 2024) Minisymposia**  
Chicago, Illinois | May 28-31, 2024

**0100 MATERIALS**

- MS 0101: [Plan the future: Innovations in advanced cementitious materials and sustainability](#)  
Linfei Li and Jianqiang Wei
- MS 0102: [Geometries & design: Opportunities for sustainable construction](#)  
Ann Sychterz, Mija Hubler, Jiaolong Zhang, Ali Ghahremani and Yao Wang
- MS 0103: [Mechanics of granular materials: Modeling and characterization](#)  
Dawa Seo, Nitin Daphalapurkar and Darby Jon Luscher
- MS 0104: [Mechanics of wood and wood-based materials](#)  
Markus Lukacevic, Eric Landis, Sebastian Pech and Josef Füssl
- MS 0105: [Mechanics of soft synthetic and biological materials: Theory, simulation, and experiment](#)  
Berkin Dortdivanlioglu and Aditya Kumar
- MS 0106: [Advances in modeling of material damage and fracture](#)  
Lampros Svolos, Aditya Kumar, Mostafa Mobasher, Georgios Moutsanidis, Alessandro Fascetti, Ravindra Duddu and Haim Waisman
- MS 0107: [Multiscale organization, mechanics and physics of layer-like, fibrous materials and related structures](#)  
Pedro Miguel Jesus de Sousa Godinho
- MS 0108: [Using pavement mechanics to develop pavement materials with less environmental impact](#)  
Erdem Coleri and Shane Underwood
- MS 0109: [Modeling of materials with interfaces and scales using physics-based and machine-learning methods](#)  
Xiang Zhang, Pinlei Chen, Timothy Truster, Soheil Soghrati, Ravindra Duddu, Reza Abedi
- MS 0110: [Characterization and modeling of physical processes in porous materials across scales](#)  
Mostafa Mobasher, Pania Newell, Sara Abdei, Manolis Vevakis, Giuseppe Buscarnera, Jean-Michel Pereira and Yanni Chen
- MS 0111: [Cementitious materials: Experiments and modeling across the scales](#)  
Bernhard Pichler, Christian Hellmich, Günther Meschke, Gilles Pijaudier-Cabot and Franz-Josef Ulm
- MS 0112: [Small scale phenomena in sustainable & complex materials](#)  
Nishant Garg and Claire White
- MS 0113: [Advances and applications of elasticity within applied mechanics](#)  
Euclides Mesquita, John Brigham, Dumont Ney, Evgueni Filipov and Sonia Mogilevskaya

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- MS 0114: [Phase change materials \(PCMs\)-based multifunctional architected construction composites](#)  
Qingxu Jin and Hongyan Ma
- MS 0115: [Molecular scale modeling and experimentation](#)  
Dinesh Katti, Sinan Keten, Nima Rahbar, Rouzbeh Shahsavari, Kalpana Katti, Steve Cranford and Wenjie Xia
- MS 0117: [Mechanics and physics of granular materials](#)  
Alessandro F. Rotta Loria, Ryan Hurley and Marcial Gonzalez
- MS 0119: [On the mechanics of road and paving materials in the cold, Nordic, and Arctic Regions](#)  
Augusto Cannone Falchetto, Shane Underwood and Di Wang
- MS 0120: [Architected materials](#)  
Pablo Zavattieri, Josephine Carstensen, Tian "Tim" Chen, Evgueni Filipov, Nilesh Mankame, Reza Moini, Jochen Mueller, Jordan Raney, David Restrepo, Mazdak Tootkaboni, X. Shelly Zhang and Yunlan Zhang
- MS 0121: [Contributions of high-performing lightweight materials to sustainable development and infrastructure resilience of engineering systems](#)  
Fariborz Tehrani
- MS 0122: [Modeling and characterization of brittle and quasibrittle fracture](#)  
Wen Luo, Jia-Liang Le, Marco Salviato and Kedar Kirane
- MS 0123: [Multiscale behavior of damage and healing mechanics](#)  
Oliver Giraldo-Londoño, Poh Leong Hien, Glaucio H. Paulino, George Z. Voyiadjis, Jiann-Wen Ju and Lizhi Sun
- MS 0124: [Physics informed machine learning \(PIML\) for mechanics of porous media](#)  
Dakshina Valiveti, Yanhua Yuan and Xiao-Hui Wu
- MS 0125: [Discrete models for the simulation of infrastructure materials](#)  
Gianluca Cusatis, Giovanni Di Luzio, Mohammed Alnaggar, Madura Pathirage, Jan Elias and Lei Shen
- MS 0126: [Mechanics and modeling of pavement structures and materials](#)  
Ramez Hajj, Shane Underwood and Hao Wang

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**0200 STRUCTURES AND INFRASTRUCTURE**

- MS 0201: [Failure and function in structural stability applications](#)  
Hayder Rasheed, Stylianos Yiatros, Noël Challamel, C. W. Lim and Ahmer Wadee
- MS 0202: [New challenges in instabilities of shell structures](#)  
Frederic Bumbieler, Hamid Zahrouni and Mohamad Jrad
- MS 0203: [Recent advances in hybrid simulation and real-time hybrid simulation](#)  
Wei Song and Richard Christenson
- MS 0204: [Design and additive manufacturing of engineering structures and materials](#)  
Xiaojia Shelly Zhang, Josephine Carstensen, Emily Sanders and Reza Moini
- MS 0205: [Origami/kirigami inspired structures and metamaterials](#)  
Evgueni Filipov, John Brigham, Rafael Ruiz, Mark Schenk and Martin Walker
- MS 0206: [Biological and biologically inspired materials and structures](#)  
Dinesh Katti and Christian Hellmich
- MS 0207: [Data-driven methods and research for physical testing in structural engineering](#)  
Zhidong Zhang, Hannah Blum, Hyeyoung Koh, Cristopher Moen and Benjamin Schafer
- MS 0208: [Meshfree, peridynamic, and particle methods: Advancements and applications](#)  
Sheng-Wei Chi, Jiun-Shyan Chen, John Foster, Mike Hillman and Pablo Seleson
- MS 0209: [Advanced engineering concepts, designs, and technologies for aerospace and extraterrestrial applications](#)  
Ramesh Malla, Robert Mueller, Kris Zacny and Hongyu (Nick) Zhou
- MS 0210: [Assessing human-infrastructure interactions and their performance](#)  
Fernando Moreu, Haeyoung Noh, Ken Loh and Rodrigo Sarlo
- MS 0211: [Advances on life-cycle of structures and infrastructure systems](#)  
Fabio Biondini and Dan Frangopol
- MS 0212: [Repair and assessment of deteriorating critical infrastructure](#)  
Christine Lozano and Hussam Mahmoud
- MS 0213: [4M \(modeling of multiphysics-multiscale-multifunctional\) engineering materials and structures](#)  
Yong-Rak Kim, Chung Song, Huiming Yin, Qiming Wang, Xiaoyu Song and Congrui Jin
- MS 0214: [Finite element modeling and simulation of train derailments and their role in assessing tank car safety](#)  
Paul Gharzouzi, Leandro Iannacone, Paolo Gardoni, Steven Kirkpatrick, Chen-Yu Lin, Todd Treichel and Christopher Barkan

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**0300 NDE, SHM AND STRUCTURAL CONTROL**

- MS 0301: [Smart IoT sensors and artificial intelligence for civil infrastructure monitoring](#)  
Yuguang Fu and Jian Li
- MS 0302: [Analysis of heritage structures: Tools and methods for assessing unknowns in historic monuments and structures](#)  
Rebecca Napolitano, Linda Seymour, Branko Glisic and Admir Masic
- MS 0303: [Innovations and advances in passive, active, and semi-active structural control](#)  
Nicholas Wierschem and Scott Harvey
- MS 0304: [Advances in bridge health monitoring: Data-driven and machine learning methods, indirect monitoring, crowdsourced mobile sensing](#)  
Debarshi Sen, Basuraj Bhowmik and Shamim Pakzad
- MS 0305: [Structural identification and damage detection](#)  
Eleni Chatzi, Costas Papadimitriou and Babak Moaveni
- MS 0306: [Recent advances in sensing, SHM, and automated inspections for infrastructure condition assessment: Toward actionable solutions](#)  
Mohamad Alipour, Hoon Sohn, Brian Eick and Francisco Peña
- MS 0307: [Recent advances in mechanical energy harvesting and its applications in structural health monitoring and control](#)  
Mohsen Amjadian and Chao Sun
- MS 0308: [Advances in vibration and structural control](#)  
Aly Mousaad Aly
- MS 0309: [Leveraging structural sensing and monitoring for informed decision-making, mitigation, and post-event management](#)  
Milad Roohi, Yashar Eftekhari Azam, Kalil Erazo, Doeun Choe and Eleonora Tronci
- MS 0310: [New trends in vibration control and energy harvesting: Modeling and analysis of innovative materials and structures at micro- and macro-scale](#)  
Francesco Paolo Pinnola, Gioacchino Alotta and Alberto Di Matteo
- MS 0311: [Eco-friendly systems, devices, and metamaterials for structural vibration control](#)  
Konstantinos Kalfas and Nicolo' Vaiana
- MS 0312: [Seismic isolation: Theoretical advancements, experimental insights, and innovative applications](#)  
Dimitrios Konstantinidis and Michalis Vassiliou
- MS 0313: [Complex dynamics and vibration control of infrastructure exposed to single/multiple hazards](#)  
Chao Sun, Mariantonieta Soto and Lin Chen

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MS 0314: [Advancing infrastructure management through structural health monitoring: A value of information perspective](#)  
Leandro Iannacone, Pier Francesco Giordano, Paolo Gardoni and Maria Pina Limongelli

**0400 DESIGN AND OPTIMIZATION**

MS 0401: [Topology optimization: From algorithmic developments to applications](#)  
Mazdak Tootkaboni, Josephine Carstensen, Jamie Guest and Xiaojia Shelly Zhang

MS 0402: [Emerging topology and shape optimization techniques in computational design of materials and structures](#)  
Ahmad Najafi

**0500 GEOMECHANICS**

MS 0501: [Computational geomechanics](#)  
Qiushi Chen, Craig Foster, Xiaoyu Song, Shabnam Semnani, Fushen Liu and Ronaldo Borja

MS 0502: [Advances in geomechanics and geophysics for modern sub-surface technology and natural hazard](#)  
Ghassan Shahin, John Rudnicki and Giuseppe Buscarnera

MS 0503: [Uncertainty in geomechanical and geochemical processes: their role on prediction of natural and engineered system behavior](#)  
Pouyan Asem

**0600 Fluid Mechanics**

MS 0602: [Computational fluid dynamics \(CFD\) and fluid-structure interaction \(FSI\): Method development and applications](#)  
Jinhui Yan, Georgios Moutsanidis, Dimitrios Kalliontzis, Mostafa Momen, Muhammad Hajj, Barbara Simpson and Jennifer Franck

**0700 HAZARD MODELING**

MS 0701: [Advanced analysis for earthquake engineering: 8th edition](#)  
Kevin Wong, Steven McCabe and Ting Lin

MS 0702: [Understanding and managing the wildfire problem](#)  
Negar Elhami-Khorasani, Hamed Ebrahimian, Hussam Mahmoud and Erica Fischer

MS 0703: [Tropical cyclone induced winds, surge-wave, flooding and impacts on infrastructure systems](#)  
Chao Sun, Grace Yan and Celalettin Ozdemir

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- MS 0704: [Advances in modeling wind and its effects on the built environment](#)  
Catherine Gorle, Marco Giometto and Teng Wu
- MS 0705: [Advancements in wind engineering: From atmospheric boundary-layer processes to resilient built environments](#)  
Aly Mousaad Aly
- MS 0706: [Natural hazard assessment with monitoring, modeling, and uncertainty quantification](#)  
YichuanZhu, Hui Wang and Weibing Gong

**0800 AI, MACHINE LEARNING AND DATA-DRIVEN METHODS**

- MS 0801: [Advances in computer vision, deep learning and artificial intelligence for structural health monitoring and inspections](#)  
Mohammad Jahanshahi and Vedhus Hoskere
- MS 0802: [Machine learning applications in wind engineering](#)  
Pedro Fernández-Cabán, Sungmoon Jung and Haifeng Wang
- MS 0803: [Data-scarce modeling in engineering mechanics: Probabilistic learning, information maximization & transfer learning](#)  
Audrey Olivier, Michael Shields, Hadi Meidani and Lori Graham-Brady
- MS 0804: [Data-driven approaches to engineering mechanics](#)  
Fatemeh Pourahmadian, John Brigham, Alessandro Fascetti, Evgueni Filipov and Tom Seidl
- MS 0805: [Machine learning and its applications in civil and mechanical engineering](#)  
Aly Mousaad Aly
- MS 0807: [Advancements of data-driven methods in computational mechanics](#)  
Nikolaos Napoleon, Jiun-Shyan Chen, Qizhi He and WaiChing Sun
- MS 0808: [A New horizon - Quantum computing and quantum materials \(by invitation only\)](#)  
Caglar Oskay, Suvranu De and Pradeep Sharma

**0900 STOCHASTIC MECHANICS**

- MS 0901: [Computational methods for stochastic engineering dynamics](#)  
Ketson dos Santos, Vasileios Fragkoulis, Ioannis Kougioumtzoglou, Antonina Pirrota and Athanasios Pantelous

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**1000            PROBABILISTIC MODELING: UNCERTAINTY QUANTIFICATION AND PROPAGATION AND  
DIGITAL TWINS**

- MS 1001:    [Computational statistics for natural hazards engineering: Advances in uncertainty quantification, surrogate modeling, and dimension reduction for performance-based design of structures and systems](#)  
Dimitris Giovanis, Alexandros Taflanidis, Seymour Spense and Michael Shields
- MS 1002:    [Uncertainty characterization and propagation in complex nonlinear structures](#)  
Meng-Ze Lyu, Zhiheng Wang and Jian-Bing Chen
- MS 1003:    [Surrogate modeling for uncertainty quantification, optimization, and statistical inference in engineering applications](#)  
Min Li, Abdollah Shafieezadeh, Gaofeng Jia, Bruno Sudret and Alexandros Taflanidis
- MS 1004:    [Multi-fidelity methods and machine learning for uncertainty propagation, inference, and optimization](#)  
Negin Alemazkoo and Ruda Zhang
- MS 1005:    [Probabilistic, physics-guided, and multi-fidelity generative modeling for uncertainty quantification](#)  
Agnimitra Dasgupta, Roger Ghanem, Sanjay Govindjee and Assad Oberai
- MS 1006:    [Uncertainty quantification and machine learning for design, optimization, and inference in multiscale systems](#)  
Zhiheng Wang, Lizhi Sun, Jiun-Shyan (J.S.) Chen and Roger Ghanem
- MS 1007:    [Integration of physics-based models with data for identification, monitoring, estimation, and uncertainty quantification](#)  
Hamed Ebrahimian, Babak Moaveni, Haeyoung Noh and Yang Wang
- MS 1008:    [Infrastructure assessment automation with robotics, deep learning and digital twins](#)  
Vedhus Hoskere, Mohammad Jahanshahi, Jian Li and Wei Song
- MS 1009:    [Toward data-driven approaches for uncertainty quantification and propagation](#)  
Subhayan De, Patrick Brewick, Kundan Goswami and Alireza Doostan
- MS 1010:    [Addressing uncertainties in infrastructure risk management](#)  
Alessandro Contento, Jessica Boakye, Roberto Guidotti, Leandro Iannacone, Fabrizio Nocera and Aditya Pandei
- MS 1011:    [Probabilistic assessment, data-driven inference and optimization for decision-making under uncertainty](#)  
Charalampos Andriotis, Konstantinos Papakonstantinou, George Deodatis, Mariyam Amir and Pablo Morato
- MS 1012:    [Probabilistic learning, stochastic optimization, and digital twins](#)  
Amir H Gandomi, Christian Soize and Roger Georges Ghanem

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**1100 RISK, RELIABILITY AND RESILIENCE**

- MS 1101: [Towards resilient coastlines: Advancements and new approaches](#)  
Teng Wu, Maria Koliou and Katerina Kyrioti
- MS 1102: [Objective resilience: Harnessing emerging technologies for enhancing infrastructure and community resilience](#)  
Milad Roohi and ZhiQiang Chen
- MS 1104: [Resilience of coastal structures, systems, and community subjected to hazards](#)  
Wei Zhang, Jamie Padgett, Andre Barbosa, Katerina Kyrioti, Claudia Reis and William Hughes
- MS 1105: [Civil infrastructure in a changing climate: From nonstationary risk assessment to developing adaptation strategies](#)  
Eun Jeong Cha, Abdollah Shafieezadeh, Michele Barbato and Alex Taflanidis
- MS 1106: [Objective resilience: Multi-scale resilience measures for electric power networks in climatic hazards](#)  
Alice Alipour, Abdollah Shafieezadeh and Paolo Bocchini
- MS 1107: [Objective resilience: Computational advancements for performance-based engineering and resilience assessment of communities](#)  
Alice Alipour and Paolo Gardoni
- MS 1108: [Towards resilient communities: Improvements in natural hazard risk assessment using data-driven methods](#)  
Jize Zhang and Katerina Kyrioti
- MS 1110: [Advances in resilience analytics and sustainable infrastructure: Bridging theory and practice](#)  
Arghavan Louhghalam, Negin Alemazkoo, Mohammadjavad Abdolhosseini Qomi, Mazdak Tootkaboni and Abdollah Shafieezadeh
- MS 1111: [Reliability analysis and rare event probability estimation](#)  
Kostas Papakonstantinou, Ziqi Wang, Shanyin Tong, Iason Papaioannou and Som Dhulipala
- MS 1112: [Structural reliability, bridges, and truck loads](#)  
Gongkang Fu
- MS 1113: [AI-enhanced probabilistic reliability assessment](#)  
Hrishikesh Sharma
- MS 1114: [Advances in regional hazard modeling and risk assessment](#)  
Sang-ri Yi, Aakash B Satish, Carmine Galasso and Alexandros Taflanidis