EMI -250 ASCE

Università degli Studi di Napoli Federico II

DiSt Department of Structures for Engineering and Architecture

DiSt 2023-2027 Dipartimento di Eccellenza MUR

EMI International Conference 2026

Napoli (Italy), 2-4 September

Congress Centre | University of Napoli Federico II

Via Partenope, 36

Fundamentals in Action: Advancing Engineering Mechanics for the Future

CONFERENCE CO-CHAIRS

Paolo Gardoni, Champaign, USA

Luigi Di Sarno, Napoli, Italy

Andrea Prota, Napoli, Italy

PROGRAM

Welcome Message from the EMI President

Michele (Mike) Barbato
Ph.D., P.E., F.ASCE, F.SEI, F.EMI
University of California, Davis
President, Engineering Mechanics Institute

Dear members of EMI and the broader Engineering Mechanics community,

On behalf of the Engineering Mechanics Institute Board of Governors and the conference organizing committee, it is my great pleasure to welcome you to Naples, Italy, and to the Engineering Mechanics Institute 2026-International Conference (EMI2026-IC). This year's conference, themed "Fundamentals in Action: Advancing Engineering Mechanics for the Future", is jointly hosted by the Università degli Studi di Napoli "Federico II" and the Engineering Mechanics Institute of ASCE.

EMI2026-IC brings together researchers, educators, practitioners, and students from around the world to exchange ideas and present the latest advances in engineering mechanics across the broad spectrum of civil engineering and related disciplines. The technical program reflects both the enduring foundations and the rapidly evolving frontiers of our field. Classical areas such as mechanics of materials, fracture mechanics, computational mechanics, structural mechanics, geomechanics, structural health monitoring, material science, and probabilistic methods, are integrated by emerging topics such as artificial intelligence and machine learning, digital twins, smart materials, and multiscale and multiphysics modeling. Together, these diverse themes illustrate how engineering mechanics continues to evolve while remaining firmly rooted in the fundamental principles that have long defined our discipline.

This year's program includes 22 minisymposia and five keynote sessions delivered by distinguished plenary speakers on topics of great relevance and interest to both researchers and practicing engineers. Beyond its technical program, EMI2026-IC provides an exceptional opportunity to strengthen existing collaborations, establish new international partnerships, and engage in thoughtful discussions about the future of engineering mechanics. As our discipline increasingly intersects with artificial intelligence, advanced manufacturing, sustainability, digital engineering, and resilient infrastructure, the role of engineering mechanics and its fundamentals has never been more important. I am especially pleased to welcome the many students and early-career researchers attending the conference. Their enthusiasm, creativity, and scientific curiosity will continue to drive innovation and ensure the continued vitality of our community.

I would like to express my sincere gratitude to the conference co-chairs, Professors Luigi Di Sarno (University of Liverpool), Andrea Prota (Università degli Studi di Napoli Federico II), and Paolo Gardoni (University of Illinois at Urbana-Champaign), the members of the organizing committee, the minisymposia organizers, as well as the staff, sponsors, volunteers, and all participants whose hard work and dedication have made this event possible.

I encourage you to take full advantage of everything EMI2026-IC has to offer: attend inspiring presentations, engage in lively technical discussions, build new collaborations, reconnect with colleagues and friends, and enjoy the remarkable history, culture, and hospitality of Naples. I am confident that your participation will make this conference both professionally rewarding and personally memorable.

Thank you for joining us, and I wish you an inspiring, productive, and enjoyable conference.

Warm Regards,

Michele Barbato

Michele Barbato
Ph.D., P.E., F.ASCE, F.SEI, F.EMI

Welcome Message from the EMI 2026-IC Co-Chairs

Luigi Di Sarno, PhD, MSc, DIC, FIStructE
Reader, Department of Civil and Environmental Engineering, School of Engineering University of Liverpool, UK and Associate Professor, Department of Structures for Engineering and Architecture, Università degli Studi di Napoli Federico II

Paolo Gardoni, Ph.D., A.M.ASCE. F.EMI
Alfredo H. Ang Family Professor and an Excellence Faculty Scholar
Department of Civil and Environmental Engineering
University of Illinois Urbana-Champaign

Andrea Prota, Ph.D.
Full Professor and Dean of Polytechnic and Basic Sciences School
Università degli Studi di Napoli Federico II

Dear Colleagues,

We are pleased to welcome you to the Engineering Mechanics Institute 2026 International Conference (EMI 2026 IC), the annual international flagship conference on engineering mechanics and probabilistic methods of the American Society of Civil Engineers (ASCE). The Conference is hosted by the Università degli Studi di Napoli Federico II in Naples, Italy.

The conference brings together scholars from around the world to exchange and disseminate the most recent developments in engineering mechanics and probabilistic methods across wide-ranging fields related to the discipline of Civil Engineering, understood in the broadest sense, including industry applications of engineering mechanics. Indicative scientific topics include probabilistic mechanics, data-driven methods, structural health monitoring, computational mechanics, multiscale and multiphysics, geomechanics and geomaterials, biomechanics and bio-inspired engineering, fluid mechanics, damage and fracture mechanics, and mechanics of materials and material science.

We wish you a successful conference and an enjoyable stay in Naples.

Sincerely,
EMI 2026-IC Conference Co-Chairs

EMI Board of Governors

Michele (Mike) Barbato
Ph.D., P.E., F.ASCE, F.SEI, F.EMI
University of California, Davis
President, Engineering Mechanics Institute

Alexandros Taflanidis, Ph.D., M.ASCE
University of Notre Dame
Vice-President

Arif Masud, Ph.D., F.EMI, M.ASCE
University of Illinois Urbana-Champaign
Past-President

Chloé Arson, Ph.D., M.ASCE
Cornell University
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Columbia University

Megan Hart, Ph.D., CCRMP
Willis Re

Michael C Hillman, Ph.D., M.ASCE
Karagozian & Case, Inc.

Pania Newell, Ph.D., M.ASCE
University of Utah

Special Programs


Welcome Reception

Tuesday, September 1, h. 19:30 | 21:00
Venue: Yacht Club Rari Nantes
Address: Via Scogliera Santa Lucia

The venue is located on the seafront at walking distance from the Congress Centre just in front of the Hotel Excelsior and behind the big, white fountain shown on the picture.

Dress code: *smart casual (no shorts and sandals for men, long and short sleeved shirts or t-shirts are allowed)*

Social Dinner (for Full registrations or with ticket)

Thursday, September 3, h. 20:00 | 22:30
Venue: Hotel Royal Continental
Address: Via Partenope, 38
Main restaurant Mezanine Floor
Dress code: *smart casual*

Tickets can be still purchased onsite until September 1 at h. 19.00.
Please contact the Secretariat at the desk.

Keynote Speakers

Armen Der Kiureghian, P.E., NAE, F.EMI, M.ASCE
President Emeritus, American University of Armenia
Taisei Professor of Civil Engineering Emeritus, University of California, Berkeley

Response Spectrum Methods in Earthquake Engineering

The presentation will provide the random vibrations bases for the commonly used response spectrum method in earthquake engineering. The presentation will start with a description of the widely used CQC modal combination rule that is included in most design codes. The assumptions behind this method and its limitations will be described. The presentation will then focus on extensions of the CQC rule to (a) structures with high-frequency modes, (b) estimation of total floor acceleration, (c) multicomponent ground motions, (d) vector-valued responses, (e) multi-support excitations, (f) non-classically damped structures, and (g) generation of floor response spectra. Example applications in each case will be presented.

Mauro Ferrari, Ph.D.
President and CEO
BrYet Pharma US, Inc.

Engineering the Mechanics of Cancer Therapeutics

Based on the principles and methods of engineering mechanics, we formulated and validated a mathematical framework for the molecular transport phenotype of lung and liver cancers. Since these organs serve a primary function of molecular transport in the body, it is natural that their cancer counterpart is essentially a "hijacked" version of their function in health. It derives its key properties ("phenotypical nodes") from the underlying physiology, largely irrespective of the cancer-associated molecular mutations. A cancer without these transport characteristics cannot proliferate uncontrollably, nor can it further metastasize. Thus, it is no longer a cancer. In conjunction with a broad range of experiments both in laboratories and on preclinical models of cancer, over the years, this mathematical framework ("Transport Oncophysics") served to identify the key phenotypical nodes of molecular mass transport in cancers of the lungs and liver. These nodes span a dimensional range of multiple orders of magnitude, from the centimeter level (microvascular site recognition, vascular trans-endothelial transport) to the millimeter

(microenvironmental migration) to the nanometer (cellular membrane uptake, intracellular traffic, endosomal escape, and nuclear penetration). Concurrently, and again guided by the mathematical findings, we developed multi-component ("composite") therapeutic agents that can act in a prescribed time sequence on all of these nodes – since just targeting an incomplete set of them does not yield the desired therapeutic efficacy. Enabled by a mathematically designed multi-step mechanism of transport, which sequentially targets the key nodes of the molecular transport phenotype of cancer of the lungs and liver, ML-016 was demonstrated to reproducibly yield complete cure rates of 60-80% in multiple preclinical models of metastatic cancer to the lungs and liver. These unprecedented efficacy findings, together with suitable results of regulatory-level safety and toxicity studies, and the development of clinical-grade manufacturing protocols formed the basis for our application for the beginning of clinical studies of Phase I/II in patients with any type of malignancy of the lung and liver, both primary and metastatic from any organ. The authorization to start these clinical trials was granted by the regulatory agencies of Australia in September, 2025. In this presentation, I will review key steps of our 30-year journey from mathematical modelling of cancer to the clinical use of ML-016 and will present our most recent data. The fundamental role of engineering mechanics as guidance in this journey will be highlighted.

Ahsan Kareem, Ph.D., NAE, F.EMI, Dist.M.ASCE
Robert M. Moran Professor of Engineering
Director, NatHaz Modeling Laboratory
University of Notre Dame

Mechanics of Dynamic Wind Effects: Fundamentals to Frontiers

There is a recent trend in the escalation of the extremes of natural hazards around the globe, with an emphasis on meteorological hazards. Over the last several decades, wind engineering, a multi-disciplinary subject involving engineering meteorology, fluid dynamics, structural dynamics, structural engineering, probabilistic methods, and design has addressed the challenges posed by extremes in winds of synoptic and non-synoptic origins. During this period, we have seen extraordinary advances in experimental facilities, instrumentation, and data acquisition and management. These advances have enabled us to build a cadre of civil infrastructure that meets some of the challenges posed by extreme windstorms. Yet there remain several frontiers that still need to be addressed. Fortunately, amidst these challenges, there are new opportunities to complement our existing capabilities as the burgeoning growth in computational hardware/resources and parallel computational advances, coupled with data analytics and AI-based schemes, e.g., machine learning, holds the promise of expanding our modeling, simulation, and analysis capacity far beyond what our current conventional schemes offer. This presentation provides a synopsis of the challenges posed by extremes and expands on new computational opportunities to address emerging challenges in building resilient and sustainable civil infrastructure as we shift from code-based and performance-based to resilience-based design.

Gianluca Cusatis, F.EMI, M.ASCE
Professor of Civil and Environmental Engineering and Mechanical Engineering
Northwestern University

Computational Modeling of Infrastructure Materials in the Era of Artificial Intelligence

This presentation offers a reflection on the status of computational modeling of concrete in a new era of advanced computational technologies readily available to researchers. It will first review the successes and the drawbacks of the last 25 years of high-fidelity computational modeling for concrete at various length scales and it will propose a vision for the future developments of the field. The presentation will discuss various computational approaches, but it will primarily highlight the benefits and superior modeling capabilities of discrete models, such as the Lattice Discrete Particle Model (LDPM). LDPM simulates accurately heterogeneous materials by directly linking the discreteness of the formulation with material heterogeneity at various length scales. In the last few decades, LDPM has been adopted successfully to simulate quasi-brittle failure and fracture under multiaxial loading conditions and dynamic loadings; to capture the multiphysical behavior of concrete and other quasibrittle materials under varying temperature and relative humidity; and to predict the response of reinforced concrete structural elements.

The second part of the presentation will discuss recent work coupling LDPM with Machine Learning (ML) techniques for several applications, including fast parameter identification, fragmentation characterization, and macroscopic constitutive modeling from fine-scale computational data. For parameter identification, the presentation will show results obtained by exploiting ML to obtain metamodels for typical laboratory tests for concrete, namely unconfined compression test, hydrostatic test, and three-point bending test. By using these ML metamodels the computational cost for a typical LDPM parameter optimization task is reduced by several orders of magnitude without sacrificing accuracy in the optimized parameters. The second ML study focuses on predicting and quantifying fragmentation phenomena under high impulsive dynamic loading via an innovative unsupervised learning clustering technique to identify and characterize mass and velocity of fragments. Results show excellent agreement with some available experimental data. A third ML application that will be discussed is relevant to the formulation of a macroscopic tensorial constitutive equation via the ML interpolation of a large database of homogenized LDPM response obtained with randomly generated strain histories featuring complex loading-unloading-reloading histories. The study highlights the limitations of methods that have been proposed in the literature but that have been only applied to relatively simple material behavior such as elasticity and classical plasticity. Finally, the presentation will conclude by discussing some current and, most importantly, potential future work adopting disruptive computational technologies that are expected to transform material modeling research and accelerate new discoveries. We will show the results of an exercise in which we challenged a certain class of ML methods to discover the non-locality of strain-softening response of concrete specimens subject to tensile fracture. This simple exercise demonstrates the superiority and accuracy of ML methods to analyze and interpolate data as well as to discover hidden information in data. At the same, it also highlights the inherent difficulty of providing physical interpretation of ML discoveries and the danger of using ML methods to extrapolate outside the available data.

Antonina Pirrotta, Ph.D., P.E., F.EMI, F.ASCE
Professor of Mechanics of Solids and Structures
Head of Ph.D. School of UNIPA, Engineering Department
Università degli Studi di Palermo

Two Minds, One Question: A Meeting Between Leonardo da Vinci and Feynman in Mechanics

Modeling and simulation are becoming increasingly important enablers for the analysis and design of complex systems. The connection between mathematics and reality is just experimental tests. The latter makes the difference between mathematical method and scientific method, that is experimental tests for validation is an important step of the scientific method. The scientific community generally agrees on the following classification of method components.

- Characterizations
- Hypotheses
- Predictions
- Experiments

The experiments is as important as theoretical formulation. Once predictions are made, they can be sought by experiments.

The purpose of an experiment is to determine whether observations of the real world agree with or conflict with the predictions derived from a hypothesis. If they agree, confidence in the hypothesis increases; otherwise, it decreases.

It is not easy to perform experiments especially for validating theory. Experiments should be designed to minimize possible errors, through the use of appropriate scientific controls. Furthermore, failure of an experiment does not necessarily mean the hypothesis is false. Experiments always depend on several hypotheses, e.g., that the test equipment is working properly, and a failure may be a failure of one of the auxiliary hypotheses.

However, performing experimental tests is time and money consuming then in my opinion one needs a mathematical model consistent with reality in such a way that mathematical model and simulation may can be considered as a virtual test.

In application domains such as structural design, automotive design, mechanical design, vibration control, biomechanics, the notion of a virtual experiment is a valuable tool for checking and optimizing extensively the complex designs before a realization is ever made. This "doing it right the first time" leads to tremendous cost savings and improved quality.

To aim at this, it is compulsory to introduce mathematical formulation binding real behaviour. Once this theoretical formulation is reliable having confirmed experimental tests, then one can realize virtual experimental results. For instance, dealing with vibration control passive systems: Do we have VIRTUAL EXPERIMENTS?

Under the Auspices of

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Organizing Secretariat

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EVENTI E CONGRESSI

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ph. + 39 081 7611085
email: mcm@mcmcongressi.it
www.mcmcongressi.it

EMI Awards

EMI 2026-IC is proud to present

Armen Der Kiureghian, Ph.D, M.ASCE

with the 2026 Nathan M. Newmark Medal

held jointly with the Structural Engineering Institute of ASCE

for fundamental contributions to earthquake response spectrum analysis, random vibrations, structural reliability, stochastic modeling of ground motions, computational stochastic mechanics and finite-element reliability methods, structural response to spatially varying excitations, and seismic fragility of structural components and systems.

EMI Class of 2026 Fellow

M Ahmer Wadee, Ph.D., M.ASCE

Professor

Imperial College London

General Information

CONFERENCE VENUE

Congress Centre
University of Naples Federico II
Via Partenope, 36 - 80121 Napoli, Italy

REGISTRATION DESK & CONFERENCE SECRETARIAT

Location: Congress Centre, ground floor

Opening times:

- **Tuesday, Sept 1st**: from h. 17.00 to 19.30
- **Wednesday, Sept 2nd**: from h. 08:00 to 18:00
- **Thursday, Sept 3rd:** from h. 08:00 to 18:00
- **Friday, Sept 4th:** from 08:00 to 14:00

REGISTRATIONS

- ASCE/EMI Member (Full Registration): Early € 820 | Regular € 920 | Late € 1.100
- Non-Member (Full Registration): Early € 920 | Regular € 1.020 | Late € 1.200
- Student: Early € 580 | Regular € 680| Late € 880
- Student Banquet (1 per registration): Early € 90 | Regular € 90| Late € 100
- Accompanying Persons (welcome reception and banquet only): Early € 180 | Regular € 180| Late € 200

Member and Non-Member registration fee includes participation in the scientific sessions, coffee breaks and lunches according to the program, Welcome Reception on Sept. 1, Banquet on Sept. 3, conference kit and the Book of Abstracts (Electronic).

Student registration fee includes participation in the scientific sessions, coffee breaks and lunches according to the program, Welcome Reception on Sept. 1, conference kit and the Book of Abstracts (Electronic.)

General Information

NAME BADGES

For identification purpose and admission to the conference venue and to social events, badges are expected to be worn at all times.

CERTIFICATE OF ATTENDANCE

The certificate of attendance will be sent by email to all registered participants at the end of the Conference.

INTERNET WIRELESS

Connection is available at the conference venue. The password will be provided by the Organizing secretariat onsite.

MEALS

Coffee breaks and lunches will be served according to the program schedule at the Congress Centre, first floor.

GUIDELINES FOR ORAL PRESENTATIONS

Presentations should last no longer than 15 minutes to allow 5 minutes for questions and changeover to the next speaker. All screens are in widescreen (16:9) format.

Each speaker is requested to bring along the presentation on a USB pen and to upload the presentation in the room which is assigned to his/her presentation at least 30 minutes before the session starts.

AUDIO-VISUAL EQUIPMENT

Presentation rooms are equipped with projectors for computer-based presentations. Presentations should be prepared in PowerPoint or PDF.

Presenters will be provided with a remote controller, with integrated laser pointer that can be used to advance slides in PowerPoint. Slides with movies (format .MOV or MP4) must be checked for playback on the laptop.

For Mac users: Power Point slides are normally compatible. If you use “Keynote” please take care that the file is converted in PDF.

The use of one’s personal laptop is not permitted.

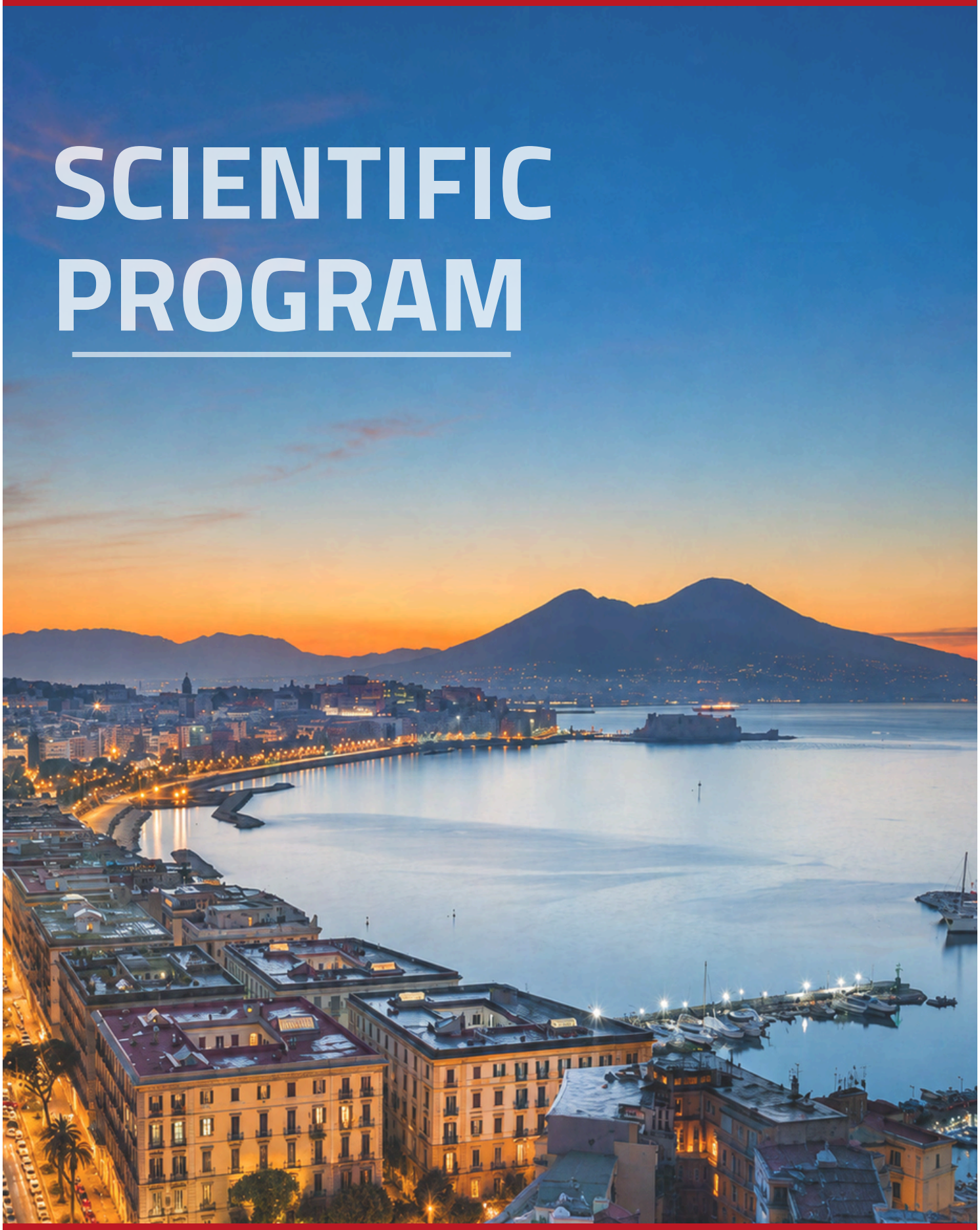
Program outline

	Venue **Congress Centre University "Federico II" - Via Partenope n. 36, Naples (Italy)**			
	September 1			
17:00 - 19:30	Registrations Congress Centre "Federico II"			
19:30 - 21:00	*Welcome Reception* Yacht Club Rari Nantes Via Scogliera Santa Lucia, Napoli			
	September 2			
from 08:00	*Registrations*			
	Main Room			
09:00 - 09:30	*Opening remarks*			
09:30 - 10:30	*Keynote Lecture* "Response Spectrum Methods in Earthquake Engineering" **Armen Der Kiureghian** *Chair:* Alessandro Contento			
10:30 - 11:00	*Coffee Break*			
	Main Room	**Room A**	**Room B**	**Room C**
11:00 - 12:20	**MS1a - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS2 - Modeling and Simulation of Complex Engineering Systems** *Chair:* Paul Gharzouzi	**MS3a - Advances in Structural and Geotechnical Engineering** *Chair:* Alessandro Contento	**MS4a - Advancements in Multiphysics Simulations** *Chair:* Antonio Cibelli
12:30 - 13:30	*Lunch*			
	Main Room			
13:30 - 14:30	*Keynote Lecture* "Engineering the Mechanics of Cancer Therapeutics" **Mauro Ferrari** *Chair:* Lori Graham-Brady			
	Main Room	**Room A**	**Room B**	**Room C**
14:30 - 15:50	**MS1b - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS5a - Mobile Sensing for Intelligent Inspection** *Chair:* Xudong Jian	**MS3b - Advances in Structural and Geotechnical Engineering** *Chair:* Alessandro Contento	**MS4b - Advancements in Multiphysics Simulations** *Chair:* Antonio Cibelli

16:00 - 16:30	*Coffee Break*			
	Main Room	**Room A**	**Room B**	**Room C**
16:30 - 18:10	**MS6 - Hybrid Methods for Computational Solid Mechanics** *Chair:* Panos Pantidis	**MS5b - Mobile Sensing for Intelligent Inspection** *Chair:* Xudong Jian	**MS7 - Wind Engineering** *Chair:* Khaled Faiaz	**MS8 - Latest Advancements on Structural and Infrastructure Robustness** *Chairs:* Leandro Iannacone, Fulvio Parisi
	September 3			
	Main Room	**Room A**	**Room B**	**Room C**
08:30 - 10:00	**MS1c - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS9a - Machine Learning Techniques for Structural Mechanics** *Chair:* Cristoforo Demartino	**MS10a - Structural instabilities: From destructive to constructive** *Chair:* Ahmer Wadee	**MS11a - Advances in Passive, Active and Semi-Active Structural Control** *Chairs:* Nicolò Vaiana, Daniele Losanno
	Main Room			
10:00 - 11:00	*Keynote Lecture* "Mechanics of Dynamic Wind Effects: Fundamentals to Frontiers" **Ahsan Kareem** *Chair:* Leandro Iannacone			
11:00 - 11:10	*Sponsored talk*			
11:10 - 11:30	*Coffee break*			
	Main Room	**Room A**	**Room B**	**Room C**
11:30 - 12:50	**MS1d - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS9b - Machine Learning Techniques for Structural Mechanics** *Chair:* Cristoforo Demartino	**MS10b - Structural instabilities: From destructive to constructive** *Chair:* Ahmer Wadee	**MS11b - Advances in Passive, Active and Semi-Active Structural Control** *Chairs:* Nicolò Vaiana, Daniele Losanno
13:00 - 14:00	*Lunch*			
	Main Room			
14:00 - 15:00	*Keynote Lecture* "Computational Modeling of Infrastructure Materials in the Era of Artificial Intelligence" **Gianluca Cusatis** *Chair:* Paul Gharzouzi			

15:00 - 15:30	*Coffee break*			
	Main Room	**Room A**	**Room B**	**Room C**
15:30 - 17:10	**MS12 - Smart Composite Materials for Structural Health Monitoring in Civil Engineering** *Chair:* Paolino Cassese	**MS9c - Machine Learning Techniques for Structural Mechanics** *Chair:* Cristoforo Demartino	**MS10c - Structural instabilities: From destructive to constructive** *Chair:* Ahmer Wadee	**MS13 - Structural Dynamics and More!** *Chair:* Antonina Pirrotta
16:50 - 17:10		**Room A**	**Room B**	
		MS14 - Masonry and Timber Structures from Heritage to Engineered Systems *Chair:* Leandro Iannacone	**MS15 - Creep Modeling and Design Optimization in Concrete Materials and Structures** *Chair:* Luigi Di Sarno	
16:50 - 17:50				
20:00 - 22:00	*Social Dinner* Hotel Royal Continental - Main Restaurant, Mezanine floor Via Partenope, 38			
	September 4			
	Main Room	**Room A**	**Room B**	**Room C**
08:30 - 10:00	**MS16a - Probing Materials at Small Scales** *Chair:* Luis Zelaya	**MS17 - Machine learning in structural dynamics and earthquake engineering** *Chair:* Alessandro Contento	**MS18 - Perspectives on Structural Dynamics and Vibration Control** *Chairs:* Francesco Paolo Pinnola, Salvatore Sessa	**MS19 - Structural Risk Assessment and Monitoring Warning** *Chair:* Guo Jian
	Main Room			
10:00 - 11:00	*Keynote Lecture* "Two Minds, One Question: A Meeting Between Leonardo da Vinci and Feynman in Mechanics" **Antonina Pirrotta** *Chair:* Longjun Xu			
11:00 - 11:30	*Coffee break*			
	Main Room	**Room A**	**Room B**	**Room C**
11:30 - 13:00	**MS16b - Probing Materials at Small Scales** *Chair:* Luis Zelaya	**MS20 - Mechanistic Digital Twins of Full-Scale Structures: From Data to Models** *Chair:* Rodrigo Sarlo	**MS21 - Single-and Multi-Risk Analysis of Civil Infrastructures** *Chairs:* Andrea Miano, Fulvio Parisi	**MS22 - Visualized Geotechnical Engineering Computational Mechanics** *Chair:* Longjun Xu
	Main Room			
13:00 - 13:15	*Closing*			

SCIENTIFIC PROGRAM



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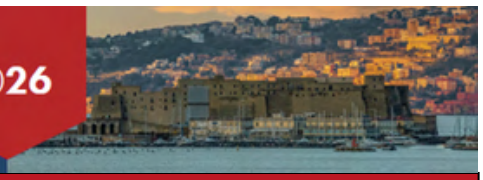
Università degli Studi di Napoli Federico II

DiSt Department of Structures for Engineering and Architecture

DiSt 2023-2027 Dipartimento di Eccellenza MUR



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10:30 - 11:00	*Coffee Break*			
	Main Room	**Room A**	**Room B**	**Room C**
11:00 - 12:20	**MS1a - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS2 - Modeling and Simulation of Complex Engineering Systems** *Chair:* Paul Gharzouzi	**MS3a - Advances in Structural and Geotechnical Engineering** *Chair:* Alessandro Contento	**MS4a - Advancements in Multiphysics Simulations** *Chair:* Antonio Cibelli
11:00 - 11:20	Accurate Stress Intensity Factor Evaluation using Virtual Grid-based Stress Recovery (VGSR) and Interaction Integral *Kyoungsoo Park, Nastaran Movahed, Jong Yeop Kim* (226)	Digital Twin–Enabled Automation of Marshalling Yards for Adaptive and Efficient Single Wagonload Services *Boban Djordjevic, Evelin Krmac* (80)	Seismic Resilience Assessment of Piles Subjected to Liquefaction-Induced Lateral Spreading *Hessam Yazdani, Davide Forcellini, Faramarz Ranjbar, Ali Asgari, Mohsen Bagheri* (124)	A 3D finite element coupled thermo-hygro-mechanical and neutron diffusion model for neutron-induced expansion of concrete at the mesoscale *Abderrahmane Lahmar, Benoît Bary, Tulio Honorio* (50)

	Main Room	Room A	Room B	Room C
11:20 - 11:40	Rate-Dependent Damage in Polymers: Characterization using a Thermomechanical Viscoelastic Gradient-Extended Model at Finite Strains *Skadi Bögershausen, Jannick Kehls, Stefanie Reese, Tim Brepols* (24)	A State-of-the-Art Finite Element Model for Train Derailments Steven W. Kirkpatrick, *Paul Gharzouzi, Chen-Yu Lin, Christopher P.L. Barkan, Paolo Gardoni* (126)	UHPC for Advancing Structural Resilience of Buildings, Bridges, and Nuclear Infrastructure *Mohamed A. Moustafa* (23)	Implementation Of A Dynamic Particle Packing Concept For Derivation Of Particle-Based Mesoscopic-Discrete Models *Saeid Mehrpay, Jelle Billiet, Daniele Pelessone, Jan Vorel, Roman Wan-Wendner* (66)
11:40 - 12:00	A virtual element formulation based on reduced integration and its perspective regarding damage simulations *Njomza Pacolli, Jannick Kehls, Stefanie Reese, Hagen Holthusen* (56)	Techno-economic feasibility study of district-integrated rooftop urban ice rink: Computational Modeling of District Energy Integration *Reza Chehrazi, Jan-Olof Dalenbäck, Seidpooyan Ghafoori, Anders Strand* (216)	Wind-Induced Torsional Loads on Irregular Low-Rise Buildings *Mahmoud Abdallah, Omar Abdallah, Rani Alsayegh, Zisis Ioannis* (58)	Multiphysics Response of Fiber-Reinforced Concrete Under Extreme Thermal Loading: A Review *Nunzia Gargiulo, Antonio Cibelli, Donatella de Silva, Emidio Nigro* (150)
12:00 - 12:20	Linking hardwood microstructure to stiffness and microstresses around vessels *Jakob Hofegger, Markus Königsberger, Sebastian Pech, Josef Füssl* (69)	Experimental and Numerical Investigation of Flow Separation Phenomena in Dual-Supersonic Nozzles under Over-Expanded Operating Conditions *Hamaidia Walid, Yahiaoui Toufik, Bendine Kouider, Hiber Houssam Eddine Nadir* (217)	Characterization Testing of Friction Pendulum Bearings with Advanced Axial Force Control *Yunbyeong Chae, Chunghyun Lee* (106)	A Discrete Multiphysics Model for Chloride Penetration in Damaged UHPC *Antonio Cibelli, Liberato Ferrara, Giovanni Di Luzio* (153)
12:30 - 13:30	*Lunch*			
	Main Room			
13:30 - 14:30	*Keynote Lecture* "Engineering the Mechanics of Cancer Therapeutics" **Mauro Ferrari** *Chair:* Lori Graham-Brady			

	Main Room	Room A	Room B	Room C
14:30 - 15:50	**MS1b - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS5a - Mobile Sensing for Intelligent Inspection** *Chair:* Xudong Jian	**MS3b - Advances in Structural and Geotechnical Engineering** *Chair:* Alessandro Contento	**MS4b - Advancements in Multiphysics Simulations** *Chair:* Antonio Cibelli
14:30 - 14:50	Constitutive Models for 2D Nanomaterials Subjected to Biaxial Loading *Shahbaz Paramban, John Sellinger, Parker Cain, Jesse Hackmann, Hessam Yazdani* (99)	Acousto-ultrasonic Based Structural Health Monitoring in Corrosion Detection *Goldaran Reza* (14)	Probabilistic DEM Investigation of Rubber–Soil Mixtures for Optimizing Shallow Foundation Performance *Fedor Maksimov, Alessandro Contento, Bruno Briseghella, Pierfrancesco Cacciola* (154)	Multi-Physics Coupling Analysis of Concrete Beams Under Complex Loads and Carbonation *Li Zhu, Jia-Huan Li* (162)
14:50 - 15:10	Numerically Supported Development for Concrete Shear Fatigue Testing under Varying Normal Actions *Carlos Arboleda, Mario Aguilar, Alexander Scholzen, Rostislav Chudoba* (110)	Intelligent Damage Identification of Stay Cables Based on Computer Vision and Multi-Modal Fusion Neural Networks *Li Zhu, Jia-Huan Li, Zhi-Ruo Cui* (161)	Advancing the Modeling of Metallic Foam Claddings for Blast Mitigation: From Shock Front Theory to Discrete Spring-Lumped-Mass Modeling *Wattad Ola, Hezi Y. Grisaro* (125)	Probabilistic Model and Reliability Analysis of Spalling for Concrete Elements in Fire Conditions *Enrico Cardellino, Marco Andreini, Donatella de Silva, Saverio La Mendola, Emidio Nigro* (207)
15:10 - 15:30	A Smeared Joint Model for Extrusion-Based 3D Printed Concrete *Chunpen Qu, Qian Zhang* (121)	Robotic Mobile Sensing for Scalable Walkability Assessment of Urban Pedestrian Walkways – Case Studies from Singapore *Xudong Jian, Kresimir Friganovic, Navrag Singh* (167)	Combinatorial cyber-physical shape optimization for tall buildings using hybrid aerodynamic strategies *Wei-Ting Lu, Brian M. Phillips, Zhaoshuo Jiang* (184)	Robust Calibration of Constitutive Models Based on Full-Field Data *Lennart Linden, Karl Kalin, Jörg Brummund, Brain Riemer, Markus Kästner* (8)
15:30 - 15:50	Modified non-local damage model: Resolving spurious damage evolution *Roshan Philip Saji, Panos Pantidis, Mostafa E. Mobasher* (139)	Adaptive refinement of railway bridge modal parameters from on-board monitoring data *Charikleia Stoura, Eleni Chatzi* (168)	Rolling and impact dynamics of quasi-globular solids for the protection of the Millefiori Vesuvian Cups *Ester Sallicandro, Roberto Serpieri* (112)	Enhanced Fracture Resistance in Aperiodic Monotile Composites with Bio-Inspired Interlocking Interfaces *Hongru Zhang, Yuanpeng Liu, Jiaming Ma, Ngoc San Ha, Yi Min Xie* (160)

16:00 - 16:30	*Coffee Break*			
	Main Room	**Room A**	**Room B**	**Room C**
16:30 - 18:10	**MS6 - Hybrid Methods for Computational Solid Mechanics** *Chair:* Panos Pantidis	**MS5b - Mobile Sensing for Intelligent Inspection** *Chair:* Xudong Jian	**MS7 - Wind Engineering** *Chair:* Khaled Faiaz	**MS8 - Latest Advancements on Structural and Infrastructure Robustness** *Chairs:* Leandro Iannacone, Fulvio Parisi
16:30 - 16:50	Accelerating phase-field fracture simulations with the Integrated Finite Element Neural Network (IFENN) *Panos Pantidis, Fouad Amin, Diab Abueidda, Mostafa E. Mobasher* (49)	Edge-AI-driven mobile sensing platform for real-time pavement distress assessment *Diego Rossini, Leonardo Iacussi, Emanuele Zappa, Alfredo Cigada, Paolo Chiariotti* (175)	Tornado-like Vortices Modeling in Straight-line Simulators: An Alternative Approach *Mohammad Abid Hasan, Faiaz Khaled, Franklin T. Lombardo* (119)	Reliability-based Progressive Collapse Analysis of RC Frame Structures via the Global Factor Method *Luchuan Ding, Fulvio Parisi, Xiaohui Yu, Nian Lin* (37)
16:50 - 17:10	Solving Elasto-Plastic Layered Contacts via Physics-Data Hybrid Neural Network *Shaoqi Huang, Haoyu Gu, Siyang Song, Chongpu Zhai, Minglong Xu* (61)	From Component-level Information to Portfolio-scale Structural Resilience Assessment: A Measurement-Informed BIM2Struct Digital Twin Framework *Huangbin Liang, Kostas Vlachas, Eleni Chatzi* (180)	Numerical modelling of Po Valley tornado-like-vortices using Cloud Model 1: Quantifying tornado genesis mechanisms *Michael David Hope, Alessio Ricci, Djordje Romanic* (220)	Data augmentation framework for black swan structural failure modes under earthquakes *Jungho Kim, Taeyong Kim* (227)
17:10 - 17:30	A Unified Differentiable Computational Mechanics Framework: From Physics-Informed Neural PDE Solvers to Neural-Embedded Material Point Methods *Yuming Zhang, Jiaji Wang, Mingyu Wang, Xiaoge Tian, Si Fu* (65)	Development of Scan-to-BIM Based Technology for Automated Extraction and 3D Visualization of Bridge Surface Damage Information *Gun Mo Kang, Sangyun Song, Gichun Cha, Dongkyu Lim, Seunghee Park* (195)	Advancing Debris Modeling for Tornadoes and Tornado Risk Assessment *Sung Min Moon, Franklin T. Lombardo, David Bodine* (221)	The Value of Information of Robustness under Adversarial Actions *Leandro Iannacone, Alex Sixie Cao* (142)

	Main Room	Room A	Room B	Room C
17:30 - 17:50	Exact Boundary Conditions Physics-informed Solver for Elastodynamics *Xiaoge Tian, Jiaji Wang, Yuming Zhang, Si Fu, Mingyu Wang* (83)	LiDAR–Vision Fusion for Automated Digital Twin Updating of 3D Defects *Dongyoung Ko, PaPa Win Aung, Khoa Tran Dang Vo, Changjun Lee, Seunghee Park* (196)	Towards fragility curves for buildings subjected to non-synoptic like winds generated through an active-controlled multi-blade flow device *Rigoberto Morales Hernández, Stefano Brusco, Alessio Ricci, Maria Pia Repetto* (223)	Probabilistic Robustness Assessment of Existing RC Buildings Subjected to Debris-Flow Impact *Federica Rauseo, Ludovico Alberico Grieco, Fulvio Parisi* (181)
17:50 - 18:10	Integrated Finite Element Neural Networks (I-FENN) for Efficient Multiphysics Simulation *Mostafa E. Mobasher, Panos Pantidis, Diab W. Abueidda, Habiba Eldababy, Fouad Amin* (140)	Wavelet-Based Crack Detection Using Improved Phase-Based Optical Flow *Sung-min Eom, Dong-heon Yang, Sang-heon Lee, Kyung Ho Sun, Yun-ho Shin* (201)	Turbulent Boundary Layer Height Scales in Hurricanes *Kishore R. Sathia, Marco G. Giometto* (224)	Experimental Investigation of External Near-Surface Mounted Steel Wire Wrapping for Shear Strengthening of Reinforced Concrete Beams *Mohamed Ghala, Galal Elsamak, Rania Sira, Ashraf Ashour* (225)
	September 3			
	Main Room	**Room A**	**Room B**	**Room C**
08:30 - 10:00	**MS1c - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS9a - Machine Learning Techniques for Structural Mechanics** *Chair:* Cristoforo Demartino	**MS10a - Structural instabilities: From destructive to constructive** *Chair:* Ahmer Wadee	**MS11a - Advances in Passive, Active and Semi-Active Structural Control** *Chairs:* Nicolò Vaiana, Daniele Losanno
08:30 - 08:50	Comparison of Begley–Landes (1972) and ASTM D8044 Multiple Specimen Methods for Determining the Critical J-Integral of Asphalt Concrete *Abhilash Vyas, Ramez Hajj* (156)	Reduced-Dataset Machine Learning for Blast Damage Assessment of RC Columns: A Multi-Step Combination Method *Yeeun Kim, Subin Kim, Jiuk Shin* (39)	Bifurcations in the lateral thermal buckling of subsea pipelines *D. Liu, Gert Van der Heijden* (46)	Dynamic Behavior of Hysteretic Mechanical Systems Subjected to External Pulse Forces *Nicolò Vaiana, Raffaele Capuano* (10)

	Main Room	Room A	Room B	Room C
08:50 - 09:10	A Data-driven multiscale Lattice Discrete Particle Model (LDPM) for digital twin modeling of concrete structures *Baixi Chen, Alessandro Fascetti* (159)	Blast Performance Evaluation of Reinforced Concrete Columns Using Conditional Generative Adversarial Networks *Haewon Kang, Eunbin Son, Jiuk Shin* (40)	Localisation of Deformation in Metallic Kirigami *Amanpreet Singh, Marcelo A. Dias, Martin G. Walker* (51)	A 3d Printed Meta-Basement for Vibration Control: Preliminary Analytical, Numerical, and Experimental Results *Salvatore Vecchiè, Raffaele Capuano, Fabrizia Cilento, Daniele Losanno, Nicolò Vaiana* (11)
09:10 - 09:30	Variance propagation in a mesoscale discrete model of concrete fatigue *Miroslav Vořechovský, Adam Sklenář* (179)	Generative Model for Predicting Nonlinear Backbone curves of Reinforced Concrete Columns *Youngmin Song, Taehyeon Kim, Jiuk Shin* (41)	Tailored Lattices for Energy Absorption *Yuhang Liu, Anton Köllner, Andrew T. M. Phillips, M. Ahmer Wadee* (54)	On the Influence of the Hysteresis Loop Shape on the Dynamics of Rocking Systems *Raffaele Capuano, Nicolò Vaiana, Luciano Rosati* (12)
09:30 - 09:50	Comparative Analysis of Crack Driving Force for Quasi-Brittle Material Using Phase Field Model *Naqibullah Mehri, Hemam Amarjit Singh, Rimen Jamatia, Surendra Beniwal* (171)		Estimating Imperfection Sensitivity *Simon D. Guest* (57)	Achieving mechanical nonreciprocity through gap-based design *Xiang Chen, Vahid Shobeiri, Yi Min Xie* (31)
	Main Room			
10:00 - 11:00	*Keynote Lecture* "Mechanics of Dynamic Wind Effects: Fundamentals to Frontiers" **Ahsan Kareem** *Chair:* Leandro Iannacone			
11:00 - 11:10	*Sponsored talk*			
11:10 - 11:30	*Coffee break*			

	Main Room	Room A	Room B	Room C
11:30 - 12:50	**MS1d - Advances in Modeling of Material Damage and Fracture** *Chair:* Lampros Svolos	**MS9b - Machine Learning Techniques for Structural Mechanics** *Chair:* Cristoforo Demartino	**MS10b - Structural instabilities: From destructive to constructive** *Chair:* Ahmer Wadee	**MS11b - Advances in Passive, Active and Semi-Active Structural Control** *Chairs:* Nicolò Vaiana, Daniele Losanno
11:30 - 11:50	Monolithic, Partially Staggered, and Fully Staggered Schemes for Thermomechanically Coupled Phase-Field Fracture Simulations *Lampros Svolos, Tao Jin* (183)	Machine Learning Surrogate Models for Stochastic Structural Mechanics with Spatially Random Material Properties *Neander Mendes, Lineu Pedroso* (47)	Nonlinear Struts Under Parametric Excitation: Resonance Characterization *Yu Cheng, M. Ahmer Wadee, Christian Malaga-Chuquitaype* (79)	Experimental validation of Fiber Reinforced Elastimeric Isolators for seismic isolation of bridges with non-linear viscous dampers *Daniele Losanno, Pio Medaglia, Shiv Prakash, Giorgio Serino* (74)
11:50 - 12:10	Total Lagrangian Material Point Method for dynamic ductile fracture *Borys Zyto, Lampros Svolos, Emmanouil Kakouris* (197)	Bayesian-Driven Optimization of Recoverable Strain in Compliant Auxetic Cementitious Composites for Energy Harvesting Applications *Jinbao Xie, Branko Šavija* (77)	Testing and modelling of collapse mechanisms in cellular aluminium foams *Finian McCann, Gabrielle Marshall, Gbolahan Salako* (84)	Seismic Vulnerability Control of Steel Moment-Resisting Frames Using Optimum Multiple Friction Tuned Mass Dampers Mohsen Khatibinia, *Hessam Yazdani, Fatemehsadat Moosavinezhad, Sadjad Gharehbaghi* (98)
12:10 - 12:30	A Two-scale Framework for Multiscale Phase Field Fracture *Yangzi He, Shabnam J. Semnani* (208)	A regression model for regional-scale anomaly characterization in masonry bridges based on spaceborne radar measurements *Wael Alahmad, Said Quqa, Cristina Gentilini* (135)	Analytical investigation of the buckling behavior of sandwich structures with anisotropic/thin-walled cores *Robin Turlin, Philippe Le Grognec* (85)	Safe Reinforcement Learning for Active Train Vibration Control under Train-Bridge Interaction *Li Zhu, Yufeng Gu* (163)
12:30 - 12:50	Numerical Modelling of Post Installed Concrete Bridge Railings subjected to high loading rates *Prathyusha Malladi, Gaurav Chobe, Dheeraj Waghmare, Akanshu Sharma* (213)	Multi-Scale Structural Graph Neural Networks for Efficient Prediction of Structural Responses *Qilin Li, Yanda Shao, Ling Li, Hong Hao* (164)	An Analytical Approach to the Stability Design of Struts with Nonlinear Materials *M. Ahmer Wadee, Anton Köllner, Leroy Gardner* (87)	Seismic Control Performance of Structures Equipped with Active Variable Inerter-Based Tuned Mass Dampers *Chang-Ching Chang, Jer-Fu Wang* (215)

13:00 - 14:00	*Lunch*			
	Main Room			
14:00 - 15:00	*Keynote Lecture* "Computational Modeling of Infrastructure Materials in the Era of Artificial Intelligence" **Gianluca Cusatis** *Chair:* Paul Gharzouzi			
15:00 - 15:30	*Coffee break*			
	Main Room	**Room A**	**Room B**	**Room C**
15:30 - 17:10	**MS12 - Smart Composite Materials for Structural Health Monitoring in Civil Engineering** *Chair:* Paolino Cassese	**MS9c - Machine Learning Techniques for Structural Mechanics** *Chair:* Cristoforo Demartino	**MS10c - Structural instabilities: From destructive to constructive** *Chair:* Ahmer Wadee	**MS13 - Structural Dynamics and More!** *Chair:* Antonina Pirrotta
15:30 - 15:50	Electromechanical Response of Self-Sensing Cement-Based Composites under Cyclic Loading and AC Excitation *Paolino Cassese, Luigi Cieri, Carlo Luca Schiavi, Antonio Bonati, Carlo Rainieri* (86)	Explainable Machine Learning for Corrosion Degradation Assessment of Steel Port Structures Using Atmospheric Sensor Data *Mohamed El Amine Ben Seghier, Enobong Felix Daniel, Haijie Tong, Yan Miao, Daniel Höche* (166)	Structural stability analyses with path-following techniques for semi-analytical modelling *Anton Köllner* (93)	Extended Classification and Generalized Vaiana-Rosati Model Accounting for Rate-Independent Hysteresis Loops with Evolving Shape *Nicolò Vaiana, Luciano Rosati* (15)
15:50 - 16:10	Smart Piezoelectric Bearings for Bridge-Based Vehicle Identification *Alessandro Guarnieri, Caterina Levati, Francesco Petrini* (111)	Insights on AI-driven algorithms for automated clustering of persistent scatterer-based interferometry *Sandropio Scoccola, Tony Fierro, Antonio Sandoli* (191)	Masonry structures and second-order effects *Maria Girardi, Cristina Padovani, Daniele Pellegrini* (170)	Development of Industry 4.0–Compliant IoT Gear Motors *István Gábor Gyurika* (70)
16:10 - 16:30	Piezoelectric Bearings (PiBs) for Sustainable Structural Health Monitoring of bridges *Alessandro Guarnieri, Francesco Petrini* (113)	ML-enabled forward models of complex materials applications *Lori Graham-Brady, Ashwini Gupta, Indrashish Saha* (198)	Assessing the viability of scaled 3D-printed models to represent the behaviour of stability-sensitive structures *Luke Lapira, Megan Quinn* (177)	Dynamic Response and Scaling Constraint Mitigation for Discrete Flexible Structures in Full-Scale Rockfall Testing *Shr-Fan Yang, Tomonori Tajima, Masakazu Namba, Koichi Arakawa, Louis Ge* (72)

	Main Room	Room A	Room B	Room C
16:30 - 16:50	Sensor-Enabled Geosynthetics for Stabilization and Instrumentation of Earth Systems: Development, Testing, and Multiscale Simulations *Hessam Yazdani, Kianoosh Hatami* (122)	Real-Time Reconstruction of Urban Flows via GAVI and SHRED *Josep Maria Duró, Arnau Miró, Benet Eiximeno, J. Nathan Kutz, Oriol Lehmkuhl, Ivette Rodríguez* (194)	Sandwich Beams Destabilizing Effect of the Load *Avi Wurf, Yeoshua Frostig, Oded Rabinovitch* (193)	Probability distribution of highly-non-Gaussian wind pressure peak factors on hyperbolic paraboloid roofs *Michele Barbato* (92)
16:50 - 17:10	Towards Self-Sensing Masonry: Development of Hybrid Carbon-Doped Conductive Mortars *Ryan Araujo de Matos, Antonella D'Alessandro, Israel Nilton Lopes Sousa, Filippo Ubertini* (211)	Mechanically Admissible Quantum and Classical Kernel Surrogates for Structural Capacity Domains *Salvatore Sessa, Luciano Rosati* (16)		Contact Evolution and Multi-Directional Load Generation in Heavy-Haul Railway Couplers *Yazhao Wang, Wei Zhou* (157)

		Room A	Room B	
16:50 - 17:50		**MS14 - Masonry and Timber Structures from Heritage to Engineered Systems** *Chair:* Leandro Iannacone	**MS15 - Creep Modeling and Design Optimization in Concrete Materials and Structures** *Chair:* Luigi Di Sarno	
16:50 - 17:10		Timber pegged joints: reading in key new Eurocode 8 *Antonio Sandoli, Carla Ceraldi* (33)	Applicability of Traditional Concrete Creep Model in Modern Concrete *Qing Wang, Xingyue Li* (53)	
17:10 - 17:30		Experimental assessment and modelling of creep in Laminated Veneer Lumber (LVL) *Mohsen Naghdinasab, Jan T. Benthien, Sabrina Heldner, Martin Nopens, Philippe Grönquist* (78)	Linking particle micromechanics to multiscale morphologies during granular creep via In-Situ X-Ray CT *Jianwei Cheng, Zhengjin Wang, Shaoqi Huang, Chongpu Zhai, Minglong Xu* (219)	
17:30 - 17:50		Deployable Timber–Cable Roof Structures for Solar-Active Stadiums *Rana Nazifi Charandabi, Gerardo Carpentieri, Ada Amendola, Fernando Fraternali* (169)	Application of Genetic Algorithms to the Biaxial Design Optimization of T-Shaped Reinforced Concrete Walls *Felipe Yáñez, Fabián Rojas, Leonardo Massone* (89)	
20:00 - 22:00	*Social Dinner* Hotel Royal Continental - Main Restaurant, Mezanine floor Via Partenope, 38			

	September 4			
	Main Room	**Room A**	**Room B**	**Room C**
08:30 - 10:00	**MS16a - Probing Materials at Small Scales** *Chair:* Luis Zelaya	**MS17 - Machine learning in structural dynamics and earthquake engineering** *Chair:* Alessandro Contento	**MS18 - Perspectives on Structural Dynamics and Vibration Control** *Chairs:* Francesco Paolo Pinnola, Salvatore Sessa	**MS19 - Structural Risk Assessment and Monitoring Warning** *Chair:* Guo Jian
08:30 - 08:50	In-situ X-ray Computed Tomography Characterization of Auxetic Cementitious Composites *Zhaozheng Meng, Branko Šavija* (59)	Improving Physics-Informed Neural Networks for Structural Dynamics via Mixed Lagrangian Formalism *Yixuan Zhang, Haolin Li, Christian Málaga-Chuquitaype* (25)	Structural Health Monitoring of Buildings in the Phlegraean area under volcanic Seismic Excitations *Daniela De Gregorio, Domenico Patanè, Claudio Martino, Francesca L. Perelli, Salvatore Sessa* (17)	Unsteady Flow Numerical Study of Local Scour around Pile Groups *Jian Guo, Chenyu Hu, Tong Wang* (62)
08:50 - 09:10	"Bio-metals" – ancient biological materials with nano-indentation size effects: Experiments and elements of manifold micromechanics *Luis Zelaya-Lainez, Friedrich S. Schuster, Stefan Manhartseder, Maximilian Landegger, Kyojiro N. Ikeda, Florian Raible, Olaf Lahayne, Stefan Scheiner, Christian Hellmich* (67)	Rapid Seismic Wave Propagation using Deep Learning Surrogates based on Tensorized Fourier Neural Operator (T-FNO) *Marco Migliavacca, Luca Brambilla, Luca Rosafalco, Chiara Smerzini, Attilio Frangi* (71)	Eigenanalysis of stress-driven nonlocal axially vibrating Bishop rods *Francesco Paolo Pinnola, Francesco Marotti de Sciarra* (95)	Vortex-Induced Vibration Early Warning and Identification of Sea-crossing Bridge Based on Deep Learning *Yufeng Shen, Jian Guo* (109)
09:10 - 09:30	Time-Resolved Neutron Tomography of Biochar-Internal Curing in Cement Paste *Liang Chen, Kemal Celik* (68)	Interpretable Physics-Informed Deep Learning for the Seismic Assessment of Rigid Rocking Response *Shirley Shen, Christian Málaga-Chuquitaype* (96)	Generalizing Motion-Based Hybrid Strategies for Seismic Control Beyond Buildings *Diana Faiella, Luigi Di Sarno, Andrea Prota, Elena Mele* (143)	Reliability-based calibration of Eurocode 3 partial safety factors for DED-Arc steel sections considering geometric and material variability *Wenxuan Hong, Athina Spinasa, Leroy Gardner* (202)

	Main Room		Room B	Room C
09:30 - 09:50	Multiscale modeling of basic creep of mature slag-based CEM II concrete *Maximilian Sorgner, Rodrigo Díaz Flores, Bernhard Pichler, Thomas Pilgerstorfer, Bernd Moritz, Christian Hellmich* (73)		Dispersive waves in cubic lattices: a reappraisal of Goursat surfaces *Giuseppe Ruta, Noël Challamel, Phu Huu Nguyen, Chien-Min Wang* (209)	A Benchmark RC Building for Uncertainty Quantification and System-Level Multi-Scale Numerical Validation of Infills and Beam-Column Joints Interaction *Marco Faggella, Annalisa Napoli, Jose Melo, Roberto Realfonzo, Michele D'Amato, Domenico Liberatore, Humberto Varum, Rosario Gigliotti* (228)
	Main Room			
10:00 - 11:00	*Keynote Lecture* "Two Minds, One Question: A Meeting Between Leonardo da Vinci and Feynman in Mechanics" **Antonina Pirrotta** *Chair:* Longjun Xu			
11:00 - 11:30	*Coffee break*			
	Main Room	**Room A**	**Room B**	**Room C**
11:30 - 13:00	**MS16b - Probing Materials at Small Scales** *Chair:* Luis Zelaya	**MS20 - Mechanistic Digital Twins of Full-Scale Structures: From Data to Models** *Chair:* Rodrigo Sarlo	**MS21 - Single-and Multi-Risk Analysis of Civil Infrastructures** *Chairs:* Andrea Miano, Fulvio Parisi	**MS22 - Visualized Geotechnical Engineering Computational Mechanics** *Chair:* Longjun Xu
11:30 - 11:50	Testing mechanical and transport properties of ITZ in Concrete *Erik Schlangen, Shan He, Magdalena Rajczakowska, Kangtai Yan, Arpan Adhikari, Branko Savija* (82)	Hyper-reduced order modeling of inelastic arbitrary Lagrangian Eulerian simulations for a digital twin of the road *Jannick Kehls, Stephan Ritzert, Stefanie Reese, Tim Brepols* (55)	Efficiency Assessment of Urban Road Networks Connecting Critical Nodes under Seismic Hazard *Andrea Miano, Marco Civera, Valerio De Biagi, Fulvio Parisi* (34)	Visualization of Disaster Mechanisms in Tunnel Structures Crossing Faults *Longjun Xu, Heng Zhang, Jie Wang* (32)

	Main Room	Room A	Room B	Room C
11:50 - 12:10	Image-Guided Identification of Phase-Intrinsic Nanoindentation Properties in Alkali-Activated Slag–Fly Ash Binders *Markus Königsberger, Luis Zelaya-Lainez, Olaf Lahayne, Bernhard L. A. Pichler, Christian Hellmich* (97)	A Data-driven multiscale Lattice Discrete Particle Model (LDPM) for digital twin modeling of concrete structures *Baixi Chen, Alessandro Fascetti* (158)	A Probabilistic Framework for Multi-Hazard Bridge Assessment with Operational Downtime Estimation *Enrico Cianci, Marco Civera, Valerio De Biagi, Bernardino Chiaia* (42)	A visualized computational framework for irregular granular geomaterials combining generative modeling, neural shape representation, and multiscale CFD-DEM simulation *Chenghao Li, Zhengshou Lai, Shuai Huang, Linchong Huang* (210)
12:10 - 12:30	Distance-guided nanoindentation reveals mechanical changes of cell wall layers in native, infiltrated, and trans- parent wood *Johanna Schindler, Markus Königsberger, Luis Zelaya-Lainez, Josef Füssl* (107)	Domain-Guided Probabilistic Graphical Model for Structurally Context-Aware Component Classification *Rodrigo Sarlo, Yunus Kantekin* (176)	Bayesian Diagnostic Reliability of Dual-Source Dam-Springs Water Infrastructure under Non-Stationary Climate and Regulatory Constraints *Marco Faggella, Giampiero D'Ecclesiis, Andre R. Barbosa* (94)	Investigating the Dynamic Behavior of Metaconcrete with Stabilized Soil Aggregates *Giuseppina Di Chiara, Marco Miniaci, Ilenia Farina, Antonella Petrillo, Raimondo Luciano, Fernando Fraternali* (173)
12:30 - 12:50	Effect of Precipitation Agent on Hydrated Magnesium Carbonate Formation and Strength Development in Brine-Derived Brucite *Inderjeet Singh, Xiangyu Wang, Padmaja Krishnan, Ribal Jabbour, Asif Equbal, Kemal Celik* (185)	Structural Health Monitoring (SHM) of heritage structures through leveraging advanced non-contact assets and optimisation of unsupervised computation and supervised machine learning: A case study of the Panmen Wall Gate in Suzhou, China *Zamwa Ahmed, Jun Xia, Luigi Di Sarno, Cheng Zhang* (165)	Optimizing Resilience of Ground-Mounted PV Support Structures under Extreme Flood Hazards *Wenzhu Li, Ashraf Osman, Hailiang Du, Mahmoud Shahbazi, Peter Matthews, Hongjian Sun* (174)	Homogenization Techniques for Granular Materials: A Critical Review *Aditya Roy Chowdhury, Mousumi Mukherjee, Arindam Dey* (178)
	Main Room			
13:00 - 13:15	*Closing*			