

SMAR 2024 - 7th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures

Wednesday 4 September 2024

Parallel sessions: 1- P Structural health monitoring/1 - Plenary Room (14:00 - 16:00)

-Conveners: Matteo Breveglieri; Luigi Petti

time	[id] title	presenter
14:00	[14] Advancing Smart Health Monitoring: A Review of Low-Cost Sensors for Structural Assessment	
14:15	[15] Effective structural health monitoring (SHM) system for bridges: a case study	
14:30	[16] Reliability of closed-form damage quantification for material and measurement uncertainty	
14:45	[4] Long-Term Indirect Monitoring System for Short and Medium Span Bridges	
15:00	[3] Full-scale load test of a PRC bridge beam after 60 years of service life	
15:15	[17] Satellite-derived Digital Surface Models for InSAR Deformation Measurements on Bridges	
15:30	[18] Structural health monitoring of concrete constructions using BIM and non-destructive techniques	

Parallel sessions: 1-D Structural strengthening and repair/1 - Room D (14:00 - 16:00)

-Conveners: Atsushi Sato; Gianvittorio Rizzano

time	[id] title	presenter
14:00	[19] Seismic Retrofitting of a 7-storey Hospital Building	
14:15	[20] An integrated approach for seismic design and modelling of plywood-retrofitted timber floors	
14:30	[21] Design and modelling tools for timber-based seismic retrofitting: from research to practice	
14:45	[22] Seismic retrofitting of an existing hospital with external steel lattice	
15:00	[23] Seismic retrofit strategy for nonconforming existing steel buildings with CBFs	
15:15	[24] Flexural Buckling Strength of Steel Angle with Reinforcement in Electric Transmission Towers	
15:30	[25] Welding under service conditions –Monitoring, repair strategy and rehabilitation	
15:45	[26] Sustainable system with non-intrusive anchors for the preservation of historic steel structures	

Parallel sessions: 1-E MS12 Innovative solutions for fatigue strengthening of existing structures - Room E (14:00 - 16:00)

-Conveners: Pierluigi Colombi; Elyas Ghafoori

time	[id] title	presenter
14:00	[27] Stress recovery behavior of a promising NiTiNb-SMA plate for bonded prestressed strengthening	
14:15	[101] Repair and strengthening of existing structures using FRP composites externallybonded with toughened epoxy adhesives	
14:30	[29] Extension of service life: Novel approaches to repairing fatigue- damaged steel structures	
14:45	[30] Identifiability of the parameters contained in a cyclic cohesive zone model for CFRP-to-steel bonded joints	
15:00	[31] The influence of CFRP fatigue behavior on CFRP-to-steel bonded joints systems	
15:15	[33] Numerical analysis of SCF of CHS T-joints strengthened with prestressed CFRP	
15:30	[34] Numerical study on inelastic cyclic behavior of CFRP wrapped substandard RC columns	
15:45	[32] Failure damage analysis of UHWMPE/PET foam sandwich structures under highvelocity impact	

Parallel sessions: 1-F MS04/1 Intelligent digitalization in structural health monitoring and lifetime maintenance of complex structures - Room F (14:00 - 16:00)

-Conveners: Chongjie Kang; Yuri Petryna

time	[id] title	presenter
14:00	[35] Monitoring heavy vehicle braking events using smartphones to improve the braking force model	
14:15	[36] Interaction between BIM and FE models in structural health monitoring	
14:30	[37] Modifying the dead load safety factor of the Nibelungen Bridge based on 3D measurement	
14:45	[38] A data-driven approach for linking models of large-scale bridges and monitoring data	
15:00	[39] Advances of Digital Twins in Bridge Structures Maintenance	
15:15	[40] Vibration monitoring of structures with indirect load identification and Kalman update	
15:30	[41] System identification and monitoring of bridge structures	
15:45	[42] BIM-oriented approach for the setting up of a Bridge Management ECO-System	

Parallel sessions: 1-G MS06 Innovative Methods in Strengthening of Concrete Bridges using FRP - Room G (14:00 - 16:00)

-Conveners: Riadh Al-Mahaidi; Giovanni Terrasi

time	[id] title	presenter
14:00	[43] Re-use of 25 year old CFRP pultrusions for bridge strengthening via post-tensioning cables	
14:15	[44] Reusing aircraft CFRP fragments to strengthen concrete structures: bond behaviour assessment	

14:30	[45] Fly Ash Geopolymer Paste for NSM CFRP Application Under Elevated Temperatures: Material Development	
14:45	[46] A convolutional autoencoder for damage assessment of FRP strengthened RC beams	
15:00	[47] Flexural strengthening of a bridge deck slab using near surface mounted CFRP rods	
15:15	[50] Comparative Assessment of FRP Composite Materials in Structural Applications under Low-Velocity Impact Loads: A Review	

Parallel sessions: 1-O Performance and damage assessment/1 - Room O (14:00 - 16:00)

-Conveners: José Sena-Cruz; Lorenzo Macorini

time	[id] title	presenter
14:00	[52] Performance assessment of overhead conductors subjected to combined thermal and wind loads	
14:15	[53] Dynamic Validation and Assessment of an Historical Bell Tower	
14:30	[54] Structural Performance of Buildings affected by Mining Activities: A review	
14:45	[57] Durability of GFRP composites produced by pultrusion under thermal environments	
15:00	[51] Evaluation of concrete frost resistance using concrete drilling powder	
15:15	[56] 3D deep learning for segmentation of masonry tunnel spalling	
15:30	[55] Diaphragm effect of unreinforced historical masonry vaults	

Parallel sessions: 2- P Structural health monitoring/2 - Plenary Room (16:30 - 18:00)

-Conveners: Carmelo Gentile; Fae Azhari

time	[id] title	presenter
16:30	[2] Detection of internal defects in RC structures using GPR and ultrasonic methods	
16:45	[59] Simulation of acoustic emission events in reinforced concrete structures for Structural Monitoring	
17:00	[60] Acoustic Event Detection for Prestressing Wire Breakage Monitoring in Concrete Bridges	
17:15	[61] Experimental study on identification of rebar prestress based on acoustic elastic effect	
17:30	[62] AE-based Health Monitoring of Full-scale RC Beams Strengthened with FRCM Composites	
17:45	[63] Self-Sensing Capacity of Calcium Aluminate Cement-Based Multi-Walled Carbon Nanotube and Nanocarbon Black Composites at Elevated Temperatures	

Parallel sessions: 2-D Structural strengthening and repair/2 - Room D (16:30 - 18:00)

-Conveners: Cristina Barris; Yago Cruz

time	[id] title	presenter
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16:30	[102] Characterization of Interlaminar Durability of Fiber Anchors Used with FRP Strengthening Systems	
16:45	[65] Exploring the Influence of Strain Rate on BTRM Tensile Behaviour	
17:00	[66] Shear strengthening of RC beams with U-wrapped FRCM composites: assessment of current design guidelines	
17:15	[67] Behaviour of Full Scale Shear Critical RC Beams Strengthened with Textile Reinforced Mortar	
17:30	[68] Available measurement methods to evaluate the fiber and matrix bond performance of FRCM composites	
17:45	[69] Experimental investigation of C-FRCM confinement effect on concrete cylinders using micro-fibre reinforced mortar	

Parallel sessions: 2-E MS15/1 Shape Memory Alloys (SMAs) for Engineering Applications - Room E (16:30 - 18:00)

-Conveners: Maryam Mohri; Mehdi Saiid Saiidi

time	[id] title	presenter
16:30	[70] Strengthening of bridges with iron-based shape memory alloy bars embedded in UHPFRC	
16:45	[71] Ni-Ti SMA bars in bridge engineering- research and new development	
17:00	[72] Self-centering capacity of RC columns reinforced by martensitic NiTi SMA bars in plastic hinge region	
17:15	[73] Strengthening of an Existing RC Building with Superelastic SMAs	
17:30	[74] Study of activation parameters in Fe-SMA reinforced concrete structures using multiphysics modelling	
17:45	[75] Practical Applications of Fe-SMA for Punching Shear Strengthening of RC Slabs	

Parallel sessions: 2-F MS05 Smart FRP and steel structures - Room F (16:30 - 18:00)

-Conveners: Elyas Ghafoori; Lingzhen Li

time	[id] title	presenter
16:30	[76] A Graphical Solution to Bond Capacity	
16:45	[78] An Attention-based Detection Method of Displacement Field on Steel Surface	
17:00	[79] Fatigue durability of adhesively bonded joints between steel plates and patch plates	
17:15	[80] Fatigue behaviour of CFRP strengthened ultra-high strength steel	
17:30	[81] Adaptation of the pipeline supporting structure into a footbridge using FRP deck with SHM	
17:45	[77] Bond Behavior of CFRP-Strengthened Steel Structures and Its Environmental Influence Factors: State-of-the-Art Review	

Parallel sessions: 2-G MS03 Digital Manufacturing in Construction - Room G (16:30 - 18:00)

-Conveners: Moslem Shahverdi; Saim Raza

time	[id] title	presenter
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16:30	[83] Energy absorption and dissipation in negative stiffness metallic architected materials	
16:45	[84] Digital Fabrication of Segmental Concrete Columns for Accelerated Bridge Construction	
17:00	[85] Innovations to Improve 3D Concrete Printing of Portland Cement-Steel Slag Blended Mortars	
17:15	[103] Numerical and experimental study on steel members retrofitted by directed energy deposition	
17:30	[104] Digital Fabrication of Ribbed Slabs With Post-Tensioned 3D Printed Concrete Formwork	
17:45	[82] Applications of digital twins in reinforced and prestressed concrete bridge infrastructure	

Parallel sessions: 2-O MS13/1 Natural fibres for eco-compatible solutions in seismic and energy upgrading of masonry structures - Room O (16:30 - 18:00)

-Conveners: Flavio Stochino; Antonio Formisano

time	[id] title	presenter
16:30	[88] Performance of Flax Textile-Reinforced Mortar Systems Subjected to Accelerated Ageing	
16:45	[89] A new biocomposite material mixing past and present to look toward the future	
17:00	[90] Use of nanocomposite coatings and chemical treatments to improve mechanical performance of bio-composite materials	
17:15	[91] Hemp-FRCM for seismic retrofitting of masonry structures/Experimental investigations on lime mortars reinforced with hemp braids	
17:30	[105] Natural Fiber Textile Reinforced Mortar (NFTRM) for Integrated Masonry Upgrading	
17:45	[93] Investigating the volume stability Performance of paste with Phragmites Australis (PA) Fibers	

Thursday 5 September 2024

Parallel sessions: 3- P Structural health monitoring/3 - Plenary Room (11:00 - 13:00)

-Conveners: Matteo Breveglieri; Andrey Lapshinov

time	[id] title	presenter
11:00	[5] Structural monitoring, FEM updating and performance assessment of a wind turbine	
11:15	[106] X-ray diffraction application for tensile evaluation of Post Tensioned Cables	
11:30	[107] Research on the Application of Intelligent Steel Strands in Prestressed Concrete Beams	
11:45	[108] Operation modal analysis on prestressed concrete beams with shear or flexural cracks	
12:00	[109] Assessment of the structural integrity of glulam using modal analysis and finite element updating	
12:15	[110] Structural Response of Containment Structure of NPP to Internal Pressure and Thermal Gradients	
12:30	[319] Deep Learning-Based Prediction Model of Temperature-Induced Deflection of a Multi- Span Continuous Box Girder Bridges: Case Study	
12:45	[320] Vibration-based novelty detection using autoencoders: application to KW51 bridge	

Parallel sessions: 3-D MS07 Bio-based composites for rehabilitation and retrofitting of buildings and structures - Room D (11:00 - 13:00)

-Conveners: Eddie Koenders; Marco Pepe

time	[id] title	presenter
11:00	[111] Earth-based materials reinforced with flax fibers: an experimental investigation	
11:15	[112] Tensile behavior of Textile Reinforced Mortars made with Flax fabrics	
11:30	[113] Sisal fiber reinforced mortar for 3D printing applications in construction	
11:45	[114] Bio-based self-modulating thermal and moisture buffer mortars for Architectural applications	
12:00	[115] Jute Fiber Composite Mortars: Sustainable Solutions for Thermo-Mechanical Retrofitting in Construction	
12:15	[116] Shear strengthening of existing concrete beams using Fiber Reinforced Concrete	
12:30	[117] Bamboo bio-concretes: a literature review of 8 years of laboratory researches at NUMATS/UFRJ	
12:45	[118] Experiments on concrete test beams with recycled aggregates and natural fibers	

Parallel sessions: 3-E MS04/2 Intelligent digitalization in structural health monitoring and lifetime maintenance of complex structures - Room E (11:00 - 13:00)

-Conveners: Julian Unglaub; Yuri Petryna

time	[id] title	presenter
11:00	[119] Distributed fiber optic sensing for early-age monitoring of concrete structures	
11:15	[120] Damages Detection combining Modal Analysis and Acoustic Emission in Concrete Structures	
11:30	[121] Detection of strain and crack development in RC under tensile fatigue loading using 2D FOS	
11:45	[122] Influence of the re-anchoring behaviour on the detection of internal tendon rupture by fibre-optic measurements	
12:00	[123] Satellite monitoring of reinforced concrete buildings in areas affected by slow-moving landslides	
12:15	[124] Simulation workflow for fault detection and localization in sandwich structures	
12:30	[125] Development of a Low-Cost IoT-based Sensor for Early-Stage Concrete Monitoring	
12:45	[126] Experiments on mechanical and physical properties of self-sensing concrete	

Parallel sessions: 3-F MS08/1 Advances in the investigation of the bond mechanism of externally bonded composites and FRP bars - Room F (11:00 - 13:00)

-Conveners: Tommaso D'Antino; Francesco Focacci

time	[id] title	presenter
11:00	[127] Experimental slip determination of upper GFRP-reinforcement in double span beam tests	
11:15	[128] Investigations on the ageing of GFRP rebar-concrete bond under sustained load	
11:30	[129] Experimental and theoretical study on flexural behaviour of hybrid bonded CFRP RC beams	
11:45	[130] Shear stress transfer at the SRG-concrete interface: influence of the number of layers	
12:00	[131] Interfacial behaviour of CFRP-to-concrete joints with mechanical fastening	
12:15	[132] Machine learning for analysing concrete cover separation in externally bonded FRP RC beams	
12:30	[133] Complementary Use of CFRP U-Wraps as Supplemental Shear Reinforcement and Anchorage in Reinforced Concrete Beams Strengthened with Flexural Externally Bonded CFRP Sheets	
12:45	[134] Analytical study of FRP debonding in a real-scale concrete strengthened beam	

Parallel sessions: 3-G MS09/1 Advances in Fiber Optical Sensing Solutions for Infrastructure, Geotechnics and Earth Sciences - Room G (11:00 - 13:00)

-Conveners: Massimo Facchini; Carlo Rabaiotti

time	[id] title	presenter
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11:00	[135] Distributed Optical Fiber-Based Monitoring of Passive Anchors for Soil Stabilization	
11:15	[136] Optical fiber sensing for monitoring chloride ion concentration and pH in concrete structures	
11:30	[137] Monitoring of fracture processes in reinforced concrete beams with DFOS: feasibility study	
11:45	[138] DFOS-based inclinometers: challenges and potentialities in monitoring slow landslides	
12:00	[139] Distributed fiber-optic temperature monitoring in boreholes of a seasonal geothermal energy storage	
12:15	[140] Levee monitoring: DFOS Applications for understanding Levee Seepage	
12:30	[141] Performance of low-cost fibre optic cables as leak detection sensors for water pipelines in unsaturated soil	
12:45	[142] DFOS monitoring system of the longest Polish footbridge made of FRP composites	

Parallel sessions: 3-O Performance and damage assessment/2 - Room O (11:00 - 13:00)

-Conveners: Chao Wang; Joan Ramon Casas

time	[id] title	presenter
11:00	[143] Accuracy of Ground Penetrating Radar (GPR) in locating post-tensioned cables	
11:15	[144] Wave-based fault detection in concrete by the Full Waveform Inversion considering noise	
11:30	[145] Unraveling factors affecting the reversibility of martensitic phase transformation in FeNiCoAlTi	
11:45	[146] The effect of controlled fiber alignment of carbon fibers on the electrical properties of carbon fiber-cement composite under cyclic flexural loading	
12:00	[147] Alternative ULS Assessment Methodology for Existing Freyssinet Concrete Hinges in UK Highway Structures	
12:15	[148] Long-term Corrosion Monitoring for Evaluating the Performance of Repair Measures	
12:30	[149] NDT Technologies for Post Tensioned Concrete: National Highways' 'Structures Moonshot'	
12:45	[150] Nondestructive test for visualization of water movement in concrete using neutron imaging	

Parallel sessions: 4- P Structural health monitoring/4 - Plenary Room (14:30 - 16:00)

-Conveners: Gian Piero Lignola; Luigi Pisani

time	[id] title	presenter
14:30	[9] Machine-learning-driven automatic application of the stochastic subspace identification method	
14:45	[151] Exploiting time-frequency analysis for damage detection using Generative Adversarial Networks	
15:00	[152] Vision-Based Structural Beams for Real-Time Structural Health Monitoring	

15:15	[153] Tension estimation of bridge stay cables using vision-based methods	
15:30	[154] Vibration-based fault Detection of a Hydraulic Pump Using a Convolutional Neural Network	
15:45	[155] Damage Classification Using CNN-Based Model for Multi-Part Strengthening System	

Parallel sessions: 4-D Structural strengthening and repair/3 - Room D (14:30 - 16:00)

-Conveners: John Myers; Michele Mirra

time	[id] title	presenter
14:30	[156] GA-based economic and environmental optimization procedure for seismic upgrading of RC frames	
14:45	[157] Structural assessment and numerical analysis of existing reinforced concrete frame structure	
15:00	[158] Seismic strengthening of existing structures by External steel Exoskeletons	
15:15	[159] Dissipative exoskeletons for seismic rehabilitation of RC buildings	
15:30	[160] Comparative analysis of seismic performance enhancement in irregular RC buildings using friction and fluid viscous dampers	
15:45	[161] Influence of torsional effects in seismic retrofit of RC buildings	

Parallel sessions: 4-E MS15/2 Shape Memory Alloys (SMAs) for Engineering Applications - Room E (14:30 - 16:00)

-Conveners: Antoni Cladera; Christoph Czaderski

time	[id] title	presenter
14:30	[162] Contact Pressure Evolution in Heat-Treated Iron-Based Shape Memory Joints	
14:45	[163] Durability of RC Beams with NSM Fe-SMA after Eight-Year Exposure and Sustained Loading	
15:00	[164] Experimental study on recovery stress behavior of memory-steel patches bonded on cracked steel plates	
15:15	[165] Development and Characterization of Thin Iron-Based Shape Memory Alloy Prestressing Wire	
15:30	[166] Computational Modeling of Concrete Composites with Short Shape Memory Alloys Fibers	
15:45	[167] Self-Centering of RC Columns with Prestressed Fe-SMA Reinforcement	

Parallel sessions: 4-F MS11 Seismic-Fire combined assessment and optimization of interventions for buildings and infrastructures - Room F (14:30 - 16:00)

-Conveners: Emidio Nigro; Donatella de Silva

time	[id] title	presenter
14:30	[168] Post-earthquake fire performance of a steel frame	
14:45	[169] Fire-induced Structural Failure Analysis of an Industrial Warehouse Roof Truss System	

15:00	[170] Acoustic Emission monitoring of OPC mortars at elevated temperatures in fracture tests	
15:15	[171] Fire behavior of Automated Rack Supported Warehouses	
15:30	[172] Fragility curves derivation under fire actions for different types of bridges	
15:45	[173] Modelling of fire behavior of RC girders strengthened by external prestressing	

Parallel sessions: 4-G MS09/2 Advances in Fiber Optical Sensing Solutions for Infrastructure, Geotechnics and Earth Sciences - Room G (14:30 - 16:00)

-Conveners: Luca Schenato; Carlo Rabaiotti

time	[id] title	presenter
14:30	[174] Diagnostics of post-tensioned bridge girders using distributed fiber optic sensors	
14:45	[175] Distributed Fiber Optic Smart Geosynthetics for Geotechnical Applications in Transportation	
15:00	[176] A ground-breaking distributed fiber-optic pressure sensor for geohydraulic applications	
15:15	[177] Unveiling the persistence of Rayleigh signature in Challenging Distributed Measurements	
15:30	[178] Implementation of an enhanced fiber optic sensing network for structural integrity monitoring at the Brenner Base Tunnel	
15:45	[179] Distributed Fibre Optic Sensors (DFOS) in Measurements of Rail Strain and Displacements	

Parallel sessions: 4-O MS13/2 Natural fibres for eco-compatible solutions in seismic and energy upgrading of masonry structure - Room O (14:30 - 16:00)

-Conveners: Antonio Formisano; Romildo Dias Toledo Filho

time	[id] title	presenter
14:30	[92] Influence of PLA impregnation on the performances of vegetable fibers for lime-based composites	
14:45	[180] FRCM System with natural fibers mesh	
15:00	[181] Masonry structures retrofitting by geopolymer plaster reinforced with natural fibers	
15:15	[182] Strengthening Existing Structures with Post-tensioned Natural Fibre Ropes	
15:30	[183] Experimental study on thermal matrix composite for seismic-energy upgrade of masonry building	
15:45	[184] Structural performance of self-healing concrete by bacillus bacteria with addition of rice husk ash	

Parallel sessions: 5- P Structural health monitoring/5 - Plenary Room (16:30 - 18:00)

-Conveners: Serdar Soyöz; Piotr Omenzetter

time	[id] title	presenter
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16:30	[185] Application of Digital Image Correlation to Field Monitoring of Masonry Arch Bridges	
16:45	[186] Preliminary ranges of critical vertical settlements of Italian masonry building stock for SHM applications	
17:00	[100] The A3 Highway Monitoring Model for Bridges Surveillance – Results and Considerations	
17:15	[292] Assessing the Evolution of Structural Health Monitoring through Smart Sensor Integration	
17:30	[189] Monitoring of historical monuments: 5 years dynamic monitoring of the Milan Cathedral	
17:45	[190] Best practices for SHM in conservation: the case study of a Saint John, NB cathedral	

Parallel sessions: 5-D Structural strengthening and repair/4 - Room D (16:30 - 18:00)

-Conveners: Marco Bressan; Massimo Latour

time	[id] title	presenter
16:30	[191] 3D-printing technology for integrating the monitoring and rehabilitation of civil structures	
16:45	[192] Static strength in adhesive joints with different patch plate end subjected to bending force	
17:00	[193] Open issues on the use of composite bars as prestressed reinforcement of concrete members	
17:15	[194] How much code-based shear models affect seismic assessment of pre-code RC buildings?	
17:30	[195] Preliminary results of three-point bending tests of concrete notched beams with different content of PVA fibers	
17:45	[196] Simulation of Two-way Slabs Strengthened in Punching with CFRP Strips	

Parallel sessions: 5-E Shape memory alloys in civil structures/1 - Room E (16:30 - 18:00)

-Conveners: Christoph Czaderski; Philipp Krooß

time	[id] title	presenter
16:30	[197] Slenderness effect on failure modes in RC beam strengthening with unbonded Fe-SMA strips	
16:45	[198] Innovative hybrid CFRP composite and Fe-SMA bonded systems for structural glass flexural strengthening	
17:00	[199] Potential of Fe-Mn-Al-Ni shape memory alloys for prestressing applications in civil engineering	
17:15	[200] Effects of semi-cyclic loading on the recovery stresses of iron-based shape-memory alloy bars	
17:30	[201] Complementary in situ characterization of Fe-Mn-Al-Ni-Ti shape memory alloys	
17:45	[202] Activation strategies for Fe-SMA bonded to glass substrates	

Parallel sessions: 5-F MS17/1 Advancements in Object Digitization and Analysis: A Mini-Symposium on Innovative Tools and Methods - Room F (16:30 - 18:00)

-Conveners: **Lukasz Scisło; Nicola Nisticò**

time	[id] title	presenter
16:30	[203] Innovative tools and methods for digitizing both visible and non-visible attributes of cultural heritage items. Part I: needed tools and strategies	
16:45	[204] Innovative tools and methods for digitizing both visible and non-visible attributes of cultural heritage items. Part II: a multi scale approach	
17:00	[205] Enhancing Heritage Building Preservation with MCDM and HBIM: A Research Proposal	
17:15	[206] IoT and Digital Twin: a new perspective for Cultural Heritage predictive maintenance	
17:30	[207] Digital models for the knowledge, protection and enhancement of historic bridges. Definition of an operational protocol	
17:45	[208] Monitoring of the polychrome of the historic vaulting in the main presbytery of St. Mary's Basilica in Krakow using advanced 3D techniques	

Parallel sessions: 5-G MS02 R&D of Iron-based Shape Memory alloys and their engineering application technology in China - Room G (16:30 - 18:00)

-Conveners: **Zhiqiang Dong; Jianghao Ji**

time	[id] title	presenter
16:30	[227] Experimental investigation on load carrying capacity of UHPC shell reinforced with ironbased shape memory alloys (Fe-SMA)	
16:45	[228] Improving the fire performance of concrete beams with iron-based shape memory alloys	
17:00	[229] Monitoring and Strengthening of PCCP utilizing distributed acoustic sensing and ironbased shape memory alloy	
17:15	[230] Compression performance of FRP externally wrapped Fe-SMA strips confined concrete columns under large load eccentricity	
17:30	[231] Study on the flexural behaviour of T-shaped RC beams strengthened with NSM Fe-SMA bars	
17:45	[232] Study on the shear properties of I-shaped concrete beams reinforced with Fe-SMA rebar	

Parallel sessions: 5-O MS14 Advancements in Risk and Reliability Assessment of Existing Structures - Room O (16:30 - 18:00)

-Conveners: **Fadi Oudah; Vincenzo Piluso**

time	[id] title	presenter
16:30	[233] Test and Evaluation Concepts for Building Materials with Time Dependent Properties	
16:45	[234] NLFEA damage assessment of RC framed buildings subjected to column settlements	
17:00	[235] Robustness versus redundancy of existing structures: critical review and application	

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17:15	[236] Random finite element reliability assessment of existing concrete structures – case studies and research direction	
17:30	[237] Novel reliability evaluation of existing structures using digital image processing and random finite element simulation	
17:45	[238] Multi-scale and multi-refinement framework for seismic risk assessment of urban areas	

Friday 6 September 2024

Parallel sessions: 6- P Structural health monitoring/6 - Plenary Room (11:00 - 13:00)

-Conveners: Emmanuel Ferrier; Susan Taylor

time	[id] title	presenter
11:00	[8] Drive-by modal identification of high-speed railway bridge via CP response identification	
11:15	[239] FEA for improved implementation of IRT for monitoring of concrete bridges	
11:30	[187] A sustainable monitoring approach to manage archaeological complex sites – The example of Pompeii	
11:45	[240] Wavelet analysis to detect nonstationary and nonlinear behaviours in railway bridge	
12:00	[241] Hybrid vibration testing for bridge modal system identification	
12:15	[242] Multidisciplinary monitoring in continuous of the Cannavino bridge	
12:30	[243] Virtual Sensing in Steel Bridges: Time Series Deep Learning for Stress Prediction	
12:45	[244] Modal identification of existing concrete half-joint bridges through free vibration tests	

Parallel sessions: 6-D MS16 Systems and methods for transport infrastructure surveillance and monitoring - Room D (11:00 - 13:00)

-Conveners: Antonio Bilotta; Francesca da Porto

time	[id] title	presenter
11:00	[245] Real-Time evaluation of bridge girder deflection under heavy vehicles	
11:15	[246] Structural health monitoring design for the A3 bridges in Naples	
11:30	[247] Vibration-based Bayesian FE-model updating of a curved approaching span of the Indiano Bridge	
11:45	[248] Experimental correlations between crack opening and corrosion measurements in PC beams	
12:00	[249] Safety assessment of a CFRP retrofitted bridge	
12:15	[250] Assessment of Environmental-induced Degradation on Reinforced Concrete Tie Rods in a 70-Year-Old Arch Bridge	
12:30	[251] Integrating Structural Health Monitoring for Safety Assessment and Restoration Planning	
12:45	[252] Large scale implementation of SHM and control rooms for the remote control of bridges	

Parallel sessions: 6-E Shape memory alloys in civil structures/2 - Room E (11:00 - 13:00)

-Conveners: Mohammad AlHamaydeh; Antoni Cladera

time	[id] title	presenter
11:00	[253] Experimental study on semi-cyclic loading effects on Fe-SMA reinforced concrete structures	

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11:15	[254] Mixed-Mode Cohesive Failure of CFRP to Steel and Fe-SMA to Steel bonded Joints	
11:30	[255] Recent Trends in Novel Fe-based Shape Memory Alloys	
11:45	[256] Susceptibility of a Fe-Mn-Al-Ni-Cr shape memory alloy to stress corrosion cracking	
12:00	[257] Modelling of Hybrid Steel-SMA Shear Walls with Local Stress and Reinforcement Considerations	
12:15	[258] Effect of thermomechanical training on recovery stress of Fe-based shape memory alloy	
12:30	[259] Improving the Structural Performance of RC Beams with Openings Using Iron-based Shape Memory Alloy (Fe-SMA) Reinforcement	
12:45	[260] RC beams externally strengthened by steel plates: Experimental database and preliminary analysis	

Parallel sessions: 6-F MS08/2 Advances in the investigation of the bond mechanism of externally bonded composites and FRP bars - Room F (11:00 - 13:00)

-Conveners: Francesco Focacci; Tommaso D'Antino

time [id]	title	presenter
11:00	[261] Bond behaviour of FRCM-masonry joints after high temperature exposure	
11:15	[262] Bond and tensile behavior of Textile Reinforced Mortars with traditional and alternative matrices	
11:30	[263] Numerical modeling of the bond behaviour of PBO FRCM-concrete joints at elevated temperature	
11:45	[264] Influence of glass-fiber epoxy coating on bond and tensile behavior of FRCM systems	
12:00	[265] Bond behavior between metallic and non-metallic bars and sustainable concrete: preliminary study	
12:15	[266] Experimental and numerical bond behavior of PBO FRCM tested using a pull-out set-up	
12:30	[267] An investigation on the bond behavior of basalt fiber reinforced polymer (BFRP) rebars embedded in conventional concrete	
12:45	[268] Bond behavior of magnesium potassium phosphate cement (MKPC) coating for steel reinforcement in conventional concrete and related repair materials	

Parallel sessions: 6-G MS10 Economic assessment and Life-Cycle performance in building and civil engineering works - Room G (11:00 - 13:00)

-Conveners: Antonio Nesticò; Renato Passaro

time [id]	title	presenter
11:00	[269] Evaluation of technical, environmental and social performances and impacts of biobased products for a more sustainable building sector	
11:15	[270] Cultural heritage and seismic disasters: Assessment methods and damage types / A Cost-Based programming model for reduction of seismic vulnerability in Neapolitan metropolitan area	

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11:30	[271] The irreversible depreciation of a building and the threshold for demolition	
11:45	[272] Building upcycling vs. building reconstruction investment decisions: a life cycle methodology simulation / Building upcycling vs. building reconstruction investment decisions: a focus on the discount rate	
12:00	[273] Sustainable structural retrofitting for historic buildings: a long-term decision analysis approach	
12:15	[274] Life Cycle Costing for Structural Analysis and Design	
12:30	[275] Life Cycle Sustainability Assessment of Industrial Flooring	
12:45	[276] Recovery of historic real estate: Life Cycle Costing and economic feasibility	

Parallel sessions: 6-O Practical applications and case studies/1 - Room O (11:00 - 13:00)

-Conveners: André Weber

time	[id] title	presenter
11:00	[277] Seismic vulnerability evaluations of a masonry tower by considering creep effects	
11:15	[278] Implementation of the Non-destructive Testing for Damage Analysis in Structural Engineering	
11:30	[279] Assessing Asphalt Pavement Pre-Compaction with Paver Screed Frequency Measurements	
11:45	[280] Rebar detection: Comparison of stepped frequency continuous wave and pulsed GPR	
12:00	[282] The role of in situ dynamic tests on model updating of existing R.C. infilled structures	
12:15	[283] Case study: Câmara Municipal de Guimarães. HBIM modeling from non-destructive techniques	
12:30	[284] Stability-Based Optimum Design of Tuned Mass Damper using Chaos Game Optimization in Pole Placement Scheme	

Parallel sessions: 7- P Structural health monitoring/7 - Plenary Room (14:15 - 16:30)

-Conveners: Dario De Domenico; João Conde Silva

time	[id] title	presenter
14:15	[285] Smart monitoring of RC T beams strengthened by external bonded FRP	
14:30	[286] Cointegration technique to account for environmental variability in a concrete dam	
14:45	[287] Monitoring internal swelling reactions in concrete dams	
15:00	[288] Development of generic AI models to predict the movement of vehicles on bridges	
15:15	[7] Vehicle Classification using BiLSTM for Predictive Maintenance and Digital Twins	
15:30	[289] Bus Network Based Fleet Monitoring Towards Net Zero Transport	
15:45	[290] Structural health monitoring of bridge under road traffic: data-driven approach	

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16:00	[291] Structural Health Monitoring of Cable Stays in Power Distribution Networks	
16:15	[188] An Innovative Monitoring Strategy of Ancient Temples made of Rigid-Block Structures	

Parallel sessions: 7-D Structural strengthening and repair/5 - Room D (14:15 - 16:30)

-Conveners: Alper Ilki; Elide Nistri

time	[id] title	presenter
14:15	[293] Experimental assessment of the flexural/shear strengthening effectiveness of new CFRP bars	
14:30	[294] Structural Rehabilitation using C-FRP: A Two-Decade Evaluation of Durability and Guidelines	
14:45	[295] Effectiveness of FRP bar anchors for prestressed concrete members	
15:00	[296] Comparative Study of Design Models for Shear Strengthening of RC Beams with NSM FRP	
15:15	[64] Accuracy of fib Bulletin 90 formulations for the bending capacity of FRP-strengthened RC beams	
15:30	[297] Seismic Performance of Damaged RC Column Repaired with Structural Mortar	
15:45	[298] Numerical characterisation of FRP curved reinforcement produced by filament winding	
16:00	[299] New bonding agents for the NSM FRP strengthening system for concrete structures	
16:15	[300] Use of equivalent interface samples during fracture mechanics investigations	

Parallel sessions: 7-E MS01 Multifunctional materials for sustainable constructions: integrated thermal, structural and sensing systems - Room E (14:15 - 16:30)

-Conveners: Antonio Caggiano; Antonella D'Alessandro

time	[id] title	presenter
14:15	[301] Multifunctional prefabricated textile capillary tube panels for integrated renovation of buildings	
14:30	[302] Bond performance of a multifunctional strengthening system for concrete structures	
14:45	[303] Eco-friendly alternative to autoclaved aerated concrete with heat storage/release function	
15:00	[304] Geopolymers as adhesive for sustainable NSM CFRP strengthening of RC structures	
15:15	[305] A novel structural and energy cementitious materials for nearly-zero energy buildings	
15:30	[306] The First Attempt at Utilizing Mineral-Impregnated Carbon Fibre Reinforcements as Load Sensors for Structural Health Monitoring	
15:45	[307] Multifunctional sensing mortar for masonry structures: first development and characterization	

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16:00	[308] Dynamic and static thermal performance of foam concrete with phase change materials via Hot Box	
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Parallel sessions: 7-F MS17/2 Advancements in Object Digitization and Analysis: A Mini-Symposium on Innovative Tools and Methods - Room F (14:15 - 16:30)

-Conveners: Nicola Nisticò; Francesco Colace

time	[id] title	presenter
14:15	[309] 3D vibration measurements with optical systems: selected methods for measurement enhancements	
14:30	[310] A Deep Active Learning Framework for Crack Detection in Digital Images of Paintings	
14:45	[311] Optimized Supporting Structures for Small Artefacts: Generative Designed prototypes	
15:00	[312] Manini Connect: IoT for integrated building monitoring	
15:15	[313] The Helmallery multy-storey building: an example of metaverse museum for cultural heritage dissemination	
15:30	[314] Metaverse and Museum: a Case Study	
15:45	[315] A workflow for rigorous tunnel deformation analysis of MLS data	
16:00	[316] Field monitoring, BIM representation and FEM analysis of preheater towers in cement plants	
16:15	[317] Application of 3D laser scanning technique in precise identification of falling-off hazards of external walls	

Parallel sessions: 7-G Durability issues as related to harsh environments - Room G (14:15 - 16:30)

-Conveners: Parinaz Panjehbashi Aghdam; Antonio Cibelli

time	[id] title	presenter
14:15	[217] Theoretical effects of corrosion on lateral stress along reinforcement bars in concrete	
14:30	[218] Degree of composite action of steel beams with precast concrete hollow core slabs	
14:45	[219] Live Load Design and Safety Concept for Building Materials with Time Dependent Properties	
15:00	[220] Multiphysics-Lattice Discrete Particle Model: possible strategies for upscaling	
15:15	[221] Development and validation of a creep frame adapted for ELS (End Load Split) test	
15:30	[222] Durability of concrete assessed via different unsaturated and steady-flow methods	
15:45	[223] Experimental Response of Headed Stud Shear Connectors in Steel-UHPC Composite Slabs	
16:00	[224] On the assessment of the in-place concrete quality: Rebound hammer and Pull-off tests reliability	

Parallel sessions: 7-O Practical applications and case studies/2 - Room O (14:15 - 16:30)**-Conveners: Annalisa Napoli; Petr Tej**

time	[id] title	presenter
14:15	[209] Load-Bearing Capacity Assessment of Traffic Superstructures for Roads and Tramways	
14:30	[318] Preliminary bridge damage assessment through machine learning	
14:45	[211] Structural Monitoring and Rehabilitation of a Gerber Bridge	
15:00	[212] Combined strain, vibration, and acoustic monitoring of the Jules Verne viaduct	
15:15	[213] A framework for the assessment of road network resilience: application to different urban contexts	
15:30	[214] The dynamic analysis of the Troja footbridge – the analysis of the possibility of the early warning before the collapse	
15:45	[215] In-situ testing and modeling of a masonry bridge in Surrey (UK): Waverley Mill bridge	
16:00	[226] Possible Approaches to the Reconstruction of the Vyšehrad Bridge in Pragu	
16:15	[216] Global Perspectives on Recycled Concrete Aggregates (RCA): A Comprehensive Review of Worldwide Applications and Best Practices	