



SMAR 2026

8th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures

Daily Overview -- THURSDAY

8:30am				
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9:00am				
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9:00am	KS 02: Keynote lectures Location: POT 81 Chair: Enzo Martinelli Chair: Yvonne Ciupack Speakers: Jürg Röthlisberger and Michael Todd			
10:30am				
-				
11:00am				
11:00am	MS02-1: Innovative bonded solutions for steel structure repair and retrofit Location: BEY E17 Chair: Yvonne Ciupack Chair: Björn Abeln Chair: Matthias Albiez Chair: Angelo Savio Calabrese Chair: Pierluigi Colombi Chair: Elyas Ghafoori 7th Session Chair: Stammen, Elisabeth / TU Braunschweig, DE	MS06-1: Monitoring, assessment and design of lightweight metal façades Location: BEY 245 Chair: Felicitas Rädcl Chair: Zbigniew Pozorski Chair: Markus Kuhnhenne	MS10-3: Advances and applications of vibration-based structural health monitoring Location: POT 112 Chair: Kerstin Speck Chair: Birgit Beckmann	MS13-3: Intelligent digital methods for extending the service life of structures beyond 100 years Location: POT 51 Chair: Chongjie Kang Chair: Steffen Marx
12:30pm				
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11:00am	MS16-1: Carbon-negative compression dominant structures for decarbonized and deconstructable concrete buildings Location: BEY 117 Chair: Saim Raza Chair: Moslem Shahverdi Chair: Stijn Matthys	MS26-3: Retrofitting, strengthening and strategies to extend the service live for concrete and masonry structures Location: BEY 127 Chair: David Sandmann Chair: Flávio de Andrade Silva Chair: Daniel Cardoso Chair: Juliane Wagner Chair: Alois Vorwagner Chair: Jan Berger 7th Session Chair: Preinstorfer, Philipp / TU Wien, AT	MS27-1: Machine learning methodologies for structural health monitoring Location: BEY E40 Chair: Yunus Harmanci Chair: Panagiotis Martakis	
12:30pm				
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2:00pm				
2:00pm	MS02-2: Innovative bonded solutions for steel structure repair and retrofit Location: BEY E17 Chair: Yvonne Ciupack Chair: Björn Abeln Chair: Matthias Albiez Chair: Angelo Savio Calabrese Chair: Pierluigi Colombi Chair: Elyas Ghafoori 7th Session Chair: Stammen, Elisabeth / TU Braunschweig, DE	MS06-2: Monitoring, assessment and design of lightweight metal façades Location: BEY 245 Chair: Felicitas Rädcl Chair: Zbigniew Pozorski Chair: Markus Kuhnhenne	MS12-1: Advanced fatigue assessment and life design of steel structures Location: POT 112 Chair: Helen Bartsch Chair: Antti Ahola	MS16-2: Carbon-negative compression dominant structures for decarbonized and deconstructable concrete buildings Location: BEY 117 Chair: Saim Raza Chair: Moslem Shahverdi Chair: Stijn Matthys
3:30pm				
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4:00pm	MS18/19-1: Advances in monitoring, assessment and rehabilitation of timber structures Location: POT 51 Chair: Robert Jockwer Chair: Mike Sieder Chair: Pedro Palma Chair: Elena Perria Chair: Maria Loebjinski	MS23-1: Considering defects and damage effects on the safety of civil engineering structures Location: BEY 127 Chair: Matthias J. Rebhan Chair: André Arnold Chair: Franz Tschuchnigg Chair: Dirk Schlicke	MS27-2: Machine learning methodologies for structural health monitoring Location: BEY E40 Chair: Yunus Harmanci Chair: Panagiotis Martakis	
3:30pm				
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4:00pm	MS09: Monitoring of structural health, noise and vibration of urban transportation infrastructure, and its assessment planning Location: BEY E17 Chair: Duo Liu	MS12-2: Advanced fatigue assessment and life design of steel structures Location: POT 112 Chair: Helen Bartsch Chair: Antti Ahola	MS18/19-2: Advances in monitoring, assessment and rehabilitation of timber structures Location: POT 51 Chair: Robert Jockwer Chair: Mike Sieder Chair: Pedro Palma Chair: Elena Perria Chair: Maria Loebjinski	MS23-2: Considering defects and damage effects on the safety of civil engineering structures Location: BEY 127 Chair: Matthias J. Rebhan Chair: André Arnold Chair: Franz Tschuchnigg Chair: Dirk Schlicke
5:30pm	MS27-3: Machine learning methodologies for structural health monitoring Location: BEY E40 Chair: Yunus Harmanci Chair: Panagiotis Martakis	MS31: Wave-based monitoring techniques for structural engineering Location: BEY 117 Chair: Kilian Tschoeke Chair: Lars Schubert Chair: Max Fiedler	PS2: Digital methods for structural assessment Location: BEY 245 Chair: Francesca Marsili	

MS02-1: Innovative bonded solutions for steel structure repair and retrofit

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · Location: BEY E17

Session Chair: Yvonne Ciupack

Session Chair: Björn Abeln

Session Chair: Matthias Albiez

Session Chair: Angelo Savio Calabrese

Session Chair: Pierluigi Colombi

Session Chair: Elyas Ghafoori

Meta-analysis of fatigue performance of centrally notched steel plates strengthened with CFRP

Ciupack, Yvonne¹; Schramm, Clara²; Marx, Steffen²

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Static behavior of damaged steel beams repaired with CFRP plates bonded with toughened adhesives: experimental and analytical study

Calabrese, Angelo Savio; Bocciarelli, Massimiliano; Colombi, Pierluigi

Politecnico di Milano, Italy; angelosavio.calabrese@polimi.it

Numerical investigation of the fatigue behavior of CFRP reinforced cracked steel beams

Bocciarelli, Massimiliano; Calabrese, Angelo Savio; Colombi, Pierluigi

Politecnico di Milano, Italy; pierluigi.colombi@polimi.it

Adhesively bonded steel patches for retrofitting orthotropic bridge decks

Abeln, Björn¹; Geßler, Achim¹; Stammen, Elisabeth²; Feldmann, Markus¹

1: RWTH Aachen University, Germany; 2: TU Braunschweig, Germany; abeln@stb.rwth-aachen.de

Use of fiber optic sensors (FOS) for the monitoring of adhesively bonded steel laminates

Stammen, Elisabeth¹; Grefe, Hinrich¹; Abeln, Björn²; Dilger, Klaus¹

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Influence of physical, creep, humid and coupled ageing on the evolution of the mechanical properties of a steel-to-steel bonded assembly in mode II

FAWAZ, Arij¹; LEPRETRE, Emilie¹; CHAPELEAU, Xavier²; CHATAIGNER, Sylvain¹

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MS06-1: Monitoring, assessment and design of lightweight metal façades

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · *Location:* BEY 245

Session Chair: Felicitas Rädels

Session Chair: Zbigniew Pozorski

Session Chair: Markus Kuhnhenne

The problem of load transfer in multi-layer façades

Pozorski, Zbigniew

Poznan University of Technology, Poland; zbigniew.pozorski@put.poznan.pl

On the use of long, multi-span, thermally loaded sandwich façade panels

Pozorska, Jolanta

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Determination of the shear properties of sandwich core materials

Grimm, Sören

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Mechanical characterization of mineral core layer materials using digital image correlation

Ruppert, Felix; Grzesiak, Szymon; Pahn, Matthias

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Optimization of metal cladding perforation and bending load capacity of sandwich panels

Frackiewicz, Piotr¹; Pozorski, Zbigniew²; Jakimowicz, Marzena¹

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Analysis of heat transfer through imperfect sandwich panel joints

Chuda-Kowalska, Monika; Malendowski, Michał; Pozorski, Zbigniew

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MS10-3: Advances and applications of vibration-based structural health monitoring

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · Location: POT 112
Session Chair: Kerstin Speck
Session Chair: Birgit Beckmann

Smartphone-assisted dynamic identification of infrastructures using scaled vehicles

Masnata, Chiara; Pirrotta, Antonina

University of Palermo, Italy; chiara.masnata@unipa.it

Ambient vibration tests before, during and after rehabilitation – a case study

Aldea, Alexandru¹; **Enache, Ruxandra Gabriela**¹; **Bertrand, Etienne**²; **Nica, George-Bogdan**¹; **Ionica, Georgiana**¹

1: Technical University of Civil Engineering of Bucharest, Romania; 2: Gustave Eiffel University, France; george.nica@utcb.ro

Updating the numerical model of the cable-stayed footbridge over the Wisłok River in Rzeszów

Ziaja, Dominika¹; **Błazik-Borowa, Ewa**²

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Integrated SHM of prestressed concrete bridges: a full-scale experimental campaign

Mariani, Francesco¹; **Ierimonti, Laura**²; **Castellani, Matteo**¹; **García-Macías, Enrique**³; **Casali, Leonardo**⁴; **Boccolini, Manuel**⁴; **Ubertini, Filippo**¹; **Venanzi, Ilaria**¹

1: University of Perugia, Italy; 2: University of Tuscia, Italy; 3: University of Granada, Spain; 4: Manini Prefabbricati s.p.a., Italy; francesco.mariani@dottorandi.unipg.it

Dynamic monitoring of two similar bridges and preliminary results on knowledge transfer

Avramova, Ana; **Gentile, Carmelo**

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A data-driven framework for vibration-based damage detection: application to the openLAB Bridge benchmark

Stoura, Charikleia^{1,2}; **Jian, Xudong**¹; **Dertimanis, Vasilis**¹; **Aguzzi, Giulia**³; **Imposa, Giacomo**³; **Chatzi, Eleni**¹

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MS13-3: Intelligent digital methods for extending the service life of structures beyond 100 years

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · Location: POT 51

Session Chair: Chongjie Kang

Session Chair: Steffen Marx

Fatigue life prediction for steel bridges using digital twins and structural health monitoring

Brenner, Christoph; Muggenburg, Marc; Vogts, Stefan; Thiele, Klaus; Unglaub, Julian

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Service life prediction of reinforced concrete structures using 2D-FOS

Wellmann, Till; Becks, Henrik; Classen, Martin

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Monitoring of chloride-induced corrosion in reinforced concrete beams under sustained load using embedded corrosion sensors and distributed fiber optic sensing

Macier, Maurice¹; Leusmann, Thorsten¹; Lowke, Dirk²

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Analysis of German bridge inventory data for systematic recognition of damage patterns

Eisermann, Cedric; Vogt, Jakob; Walker, Maria; Marx, Steffen; Kang, Chongjie

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Assessing the value of monitoring for waterways infrastructure

Marsili, Francesca¹; Iannacone, Leandro²; Croce, Pietro³; Keßler, Sylvia¹

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3: University of Pisa, Largo Lucio Lazzarino 2, 56126 Pisa, Italy; marsilif@hsu-hh.de

Strain distribution in stacked specimens under static and cyclic mechanical loading

Schiewe, Hanna¹; Markert, Martin¹; Birtel, Veit¹; Abubakar Ali, Mohamed²; Haist, Michael²

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MS16-1: Carbon-negative compression dominant structures for decarbonized and deconstructable concrete buildings

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · Location: BEY 117

Session Chair: Saim Raza

Session Chair: Moslem Shahverdi

Session Chair: Stijn Matthys

CARBCOMN: advancing low carbon compression dominant structures

Matthys, Stijn¹; Van Titteboom, Kim¹; Shahverdi, Moslem²; Dell'Endice, Alessandro³; Papanicolaou, Catherine Corina⁴; Ukrainczyk, Neven⁵; Hamaekers, Helen⁶; Megens, Johannes⁷; Martinelli, Enzo⁸; Bhooshan, Vishu⁹; Zillante, Lori¹⁰; Michels, Julien¹¹

1: Ghent University, Belgium; 2: Empa, Switzerland; 3: ETH Zürich, Switzerland; 4: University of Patras, Greece; 5: TU Darmstadt, Germany; 6: Orbix, Belgium; 7: Incremental3d, Austria; 8: TESIS, Italy; 9: Zaha Hadid Architects, UK; 10: Mario Cucinella Architects, Italy; 11: re-fer, Switzerland; stijn.matthys@ugent.be

Carbonatable binders from waste: pathways toward sustainable construction materials

Gkourmelos, Panagiotis; Karlos, Kyriakos; Papanicolaou, Catherine; Triantafillou, Thanasis

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Carbon-negative mortar mixtures produced with fine recycled aggregates: the experience of CARBCOMN project

Lombardi, Rosario^{1,2}; Zohaib, Hassan³; Raza, Saim³; Pepe, Marco^{1,2}; Shahverdi, Moslem²; Martinelli, Enzo^{1,2}

1: TESIS srl, Italy; 2: Department of Civil Engineering, University of Salerno, Italy; 3: EMPA, Switzerland; r.lombardi@tesis-srl.eu

Mechanical behavior of 3D-printed slag-based formulations with methyl hydroxyethyl cellulose

Nguyen, Thinh¹; Lorika, Denis Ayena²; Hamaekers, Helen¹; Van Mechelen, Dirk¹; Zhang, Yi²; Van Tittelboom, Kim²; Matthys, Stijn²

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CO₂ transport in 3D-printed carbonatable slag-based mortars from micro-CT pore networks

Ukrainczyk, Neven¹; Hassan, Zohaib^{2,3}; Parrilli, Annapaola²; Saim, Raza²; Shahverdi, Moslem²; Lorika, Denis, Ayena⁴; Zhang, Yi⁴; Koenders, Eduardus¹

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3D-printed ultra-high-performance concrete with polymer fibers: feasibility study

Markovic, Ivan; Reichlin, Thomas; Khodari, Nassim

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MS26-3: Retrofitting, strengthening and strategies to extend the service live for concrete and masonry structures

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · *Location:* BEY 127

Session Chair: David Sandmann

Session Chair: Flávio de Andrade Silva

Session Chair: Daniel Cardoso

Session Chair: Juliane Wagner

Session Chair: Alois Vorwagner

Session Chair: Jan Berger

Seismic retrofit of RC structures using hybrid SMA-stainless steel jackets

Ntina, Maria

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Self-centering SE-SMA core BRBs for seismic resilience

Guimaraes Rocha, Pedro; Palermo, Dan

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Effect of masonry infills on seismic retrofitting of existing RC frames with steel exoskeletons

Nigro, Francesco¹; Della Corte, Gaetano²; Martinelli, Enzo¹

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Optimal design of retrofit interventions for existing RC frames through genetic algorithm

Nigro, Francesco; Martinelli, Enzo

University of Salerno, Italy; fnigro@unisa.it

Fatigue tests on large-scale prestressed concrete beams with a dry ground joint

Shmorgun, Aleksei¹; Schramm, Clara¹; Birkner, Dennis²; Marx, Steffen¹; Kang, Chongjie¹

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Numerical investigation of a cushion-protected bridge girder subjected to hard-body impact

Mraih, Haider; Hashemi, Javad; Kalfat, Robin; AL-Mahaidi, Riadh

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MS27-1: Machine learning methodologies for structural health monitoring

Time: Thursday, 27/Aug/2026: 11:00am - 12:30pm · Location: BEY E40

Session Chair: Yunus Harmanci

Session Chair: Panagiotis Martakis

Uncertainty-aware prognosis using polynomial chaos expansion: insights from case studies

Georgijev, Viktor¹; **Bogoevska, Simona²**

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Residual PCA similarity for robust missing sensor prediction in Schwindegg Bridge

Mediel-Cuadra, Diego; **Wimmer, Johannes**; **Küttenbaum, Stefan**; **Braml, Thomas**

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Machine learning-aided seasonal normalization of modal frequencies in timber buildings

Entezami, Alireza¹; **Amaddeo, Carmen²**; **Dorn, Michael²**; **Martinelli, Luca¹**; **Limongelli, Maria Pina¹**

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Machine learning-based prediction of wind-induced bridge acceleration using long-term structural health monitoring data

Ramasetti, Eshwar Kumar; **Neubauer, Alexander**; **Kähler, Phillip**

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Leveraging transfer learning for SHM: domain adaptation across Italian real bridges

De Cicco, Benito; **Longo, Monica**; **Darò, Paola**; **Mancini, Giuseppe**

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Two-stage deep learning framework for bridge traffic characterization using DAS

Wu, Chao-sheng; **Fratta, Dante**; **Blum, Hannah**; **Hampton, Jesse**

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MS02-2: Innovative bonded solutions for steel structure repair and retrofit

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · Location: BEY E17

Session Chair: Yvonne Ciupack

Session Chair: Björn Abeln

Session Chair: Matthias Albiez

Session Chair: Angelo Savio Calabrese

Session Chair: Pierluigi Colombi

Session Chair: Elyas Ghafoori

TFC Booster – accelerated controlled CFRP curing process for rapid return to service

MERCIER, Julien; HUYNH, Alain; LUCAS, Jean-Roch; SABIR, Najeeb

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Experimental development of a self-sensing steel reinforced polymer system with fibre Bragg grating sensors

De Santis, Stefano¹; Ricci, Maurizio¹; Vezzari, Valerio²

1: Roma Tre University, Italy; 2: Global Sensing Srl, Italy; stefano.desantis@uniroma3.it

Memory-steel for fatigue strengthening of a steel bridge in Germany

Jübner, Paul¹; Weiser, Robby²; Li, Lingzhen³; Wang, Sizhe⁴; Unglaub, Julian²; Thiele, Klaus²; Ghafoori, Elyas¹

1: Leibniz University Hannover, Germany; 2: Technische Universität Braunschweig, Germany; 3: The Hong Kong Polytechnic University, Hong Kong, China; 4: Nanyang Technological University, Singapore; juebner@stahl.uni-hannover.de

Shear performance of timber-steel hybrid beams: experimental investigation

Haase, Peter¹; Aurand, Simon²; Boretzki, Jakob¹; Sandhaas, Carmen²; Albiez, Matthias¹; Dietsch, Philipp²; Ummenhofer, Thomas¹

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Strengthening cross-laminated timber with CFRP for structural reuse

Darvish, Hesameddin^{1,2}; Botte, Wouter²; Wan-Wendner, Lin¹

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Effect of mineral-bonded protective layers under impact loading

Leicht, Lena; Unger, Nicholas; Schubert, Thomas; Beckmann, Birgit

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MS06-2: Monitoring, assessment and design of lightweight metal façades

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · Location: BEY 245

Session Chair: Felicitas Rädels

Session Chair: Zbigniew Pozorski

Session Chair: Markus Kuhnhenne

Monitoring-based hygrothermal evaluation of a hybrid timber-sandwich facade

Schardt, Annalena; Rädels, Felicitas; Schmidt, Lilli; Ciupack, Yvonne

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In-situ analysis of airtightness and hygrothermal properties for metal building envelopes

Karbig, Nico; Kuhnhenne, Markus

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Air-coupled ultrasound driven Inline quality control of lightweight metal façades

Haugwitz, Christoph¹; Ziermann, Yannick²; Schardt, Annalena³; Soennecken, Sören¹; Dörsam, Jan Helge¹; Wismath, Sonja¹; Reinartz, Andre²; Hahn-Jose, Thomas²; Rädels, Felicitas³; Lange, Jörg³; Kupnik, Mario¹

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Aging processes and lifecycle monitoring of polyurethane sandwich panels

Steineck, Sonja; Rädels, Felicitas; Schardt, Annalena; Lange, Jörg; Ciupack, Yvonne

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Assessment of existing sandwich panel façades for reuse and retrofit

Rädels, Felicitas; Pradhan, Eric Man; Sivakadadcham, Anusikah; Lange, Jörg; Ciupack, Yvonne

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Parametrized life cycle assessment of modular construction systems

Weniger, Alexandra¹; Gomes, Carlos G.²; Traverso, Marzia¹; Chudoba, Rostislav³

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MS12-1: Advanced fatigue assessment and life design of steel structures

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · Location: POT 112

Session Chair: Helen Bartsch

Session Chair: Antti Ahola

Rethinking renewal: sufficiency strategies for historic steel railway bridges in the German railway network of Deutsche Bahn

Schulte, Clara Jiva

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Fatigue strength of circular hollow section tube-to-gusset plate detail with extended welds

Lipiäinen, Kalle; Grönlund, Kila; Ahola, Antti

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Fatigue strength properties of a connection subjected to far-field compressive stresses

Leander, John; Skoglund, Oskar

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Effect of weld imperfections on the fatigue strength of single-sided butt-welded connections

Mouradian, Kevin^{1,2}; Beyer, André¹; Couchaux, Maël²

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Fatigue strength of cold-formed high-strength steel hollow sections – a fracture mechanical assessment on the imperfection effects

Ahola, Antti¹; Lipiäinen, Kalle¹; Skriko, Tuomas²; Tulonen, Juha³; Hyvärinen, Anssi³; Ikkala, Juha³

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Crack propagation in welded specimens with biaxial non-correlated loading

Steinhoff, Simon¹; Röscher, Stefanie²; Winkler, Rebekka¹; Knobloch, Markus²

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MS16-2: Carbon-negative compression dominant structures for decarbonized and deconstructable concrete buildings

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · Location: BEY 117

Session Chair: Saim Raza

Session Chair: Moslem Shahverdi

Session Chair: Stijn Matthys

Shape stability investigation for 3D printed carbon-curing concrete objects using visual inspection methods

Farahani, Adeleh; Misiarz, Karol; Ooms, Ticho; Van Tittelboom, Kim; Aelterman, Jan; Matthys, Stijn

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An integrated geometry slicing & 3D scanning framework for 3D concrete printing

Bhooshan, Vishu¹; Lin, Wo¹; Hanlon, Justin¹; Bhooshan, Shajay¹; Megens, Johannes²; Sanin, Sandro²; Dell'Endice, Alessandro³; Van Mele, Tom³; Block, Philippe³

1: Zaha Hadid Architects, United Kingdom; 2: Incremental3D, Innsbruck, Austria; 3: Block Research Group (BRG), ETH Zurich, Switzerland; Vishu.Bhooshan@zaha-hadid.com

Parametric design and life cycle assessment of slab bridges for Swiss road infrastructure with reduced CO2 emissions

Harmanci, Yunus Emre¹; Kramer, Lukas¹; Mohammadi, Amirhossein²; Serra, Martina³; Hischier, Roland³; Wyrzykowski, Mateusz¹; Shahverdi, Moslem¹; Steiger, René¹

1: Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, 8600, Switzerland; 2: University of Minho, ISE Department of Civil Engineering, Guimarães, 4800-058, Portugal; 3: Empa, Swiss Federal Laboratories for Materials Science and Technology, St. Gallen, 9014, , Switzerland; yunus.harmanci@empa.ch

A design optimization framework for discrete compression-dominant structures

Sakha, Mahsa¹; Raza, Saim¹; Czaderski, Christoph¹; Shahverdi, Moslem^{1,2}

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Sensor-integrated masonry systems for predictive monitoring and circular construction

Florenzano, Daniele; **Dell'Endice, Alessandro**; Van Mele, Tom; Block, Philippe

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LCA of bridge and tunnel components – basis for sustainable infrastructure

Schiessl-Pecka, Angelika¹; **Steinmetz, Paul**¹; Rausch, Anne¹; Zintel, Marc²

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MS18/19-1: Advances in monitoring, assessment and rehabilitation of timber structures

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · Location: POT 51

Session Chair: Robert Jockwer

Session Chair: Mike Sieder

Session Chair: Pedro Palma

Session Chair: Elena Perria

Session Chair: Maria Loebjinski

Development of the new Eurocode 5 part on assessment of existing timber structures

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Preliminary visual assessment of historic timber structures in Georgia

Kambek, Erkan¹; Papiashvili, Nutsa²; Potskhishvili, Gvantsa³

1: Istinye University, Turkiye; 2: Heritage Conservation Laboratory, Georgia; 3: Heritage Conservation Laboratory, Georgia; erkankambek@kambek.com

Prediction of mechanical timber properties – experimental investigation and updating

Gehling, Luca; Loebjinski, Maria; Grobe, Jan; Perria, Elena; Sieder, Mike

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Combination of NDT for assessment of timber beam stiffness in view of reusability

Vandecruys, Eline¹; Detremmerie, Xander²; Lombaert, Geert¹; Caspee, Robby²; Verstrynge, Els¹

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Non-destructive assessment of hybrid CLT

Borghese, Vittoria; Vonk, Niels; Niederwestberg, Jan

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Enhancing CT accuracy of historic timber via LTI-SIRT with velocity compensation

Borghese, Vittoria¹; Xuwei, Ling²; Demartino, Cristoforo³; Dongdong, Chen²

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MS23-1: Considering defects and damage effects on the safety of civil engineering structures

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · Location: BEY 127

Session Chair: Matthias J. Rebhan

Session Chair: André Arnold

Session Chair: Franz Tschuchnigg

Session Chair: Dirk Schlicke

Info4Infra - including geotechnical and structural information into the inspection process

Glatz, Sandra¹; Lienbacher, Lukas²; Grubinger, Stefan³; Kammersberger, Andreas⁴; Schlicke, Dirk²; Rebhan, Matthias J.¹

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2: Graz University of Technology - Institute of Structural Concrete, Austria; 3: recordIT GmbH, Austria; 4: Styrian Government, Austria;

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Real-time damage annotation and damage development using 3D inspection models

Grubinger, Stefan¹; Kalenjuk, Slaven²; Kammersberger, Andreas³; Dobrezberger, Johann⁴

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Landeshochbau, Austria; 4: IBZ Geotechnik GmbH, Austria; grubinger@recordit.at

Advancing structural diagnostics: computed tomography of a full-scale historical building component

Pahn, Matthias; deSousa, Christoph; Siebecker, Klaus

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Sensitivity analysis of a peridynamic model for alkali-activated materials based on μ -CT-derived pore structure

Wang, Tongfang^{1,2}; Wang, Chao²; Tu, Yongming¹; Sas, Gabriel²

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Static characterization and damage localization in prestressed concrete beams

Shamsaddinlou, Amir¹; De Domenico, Dario¹; La Mazza, Dario²; Longo, Monica²; Maugeri, Natale¹; Longo, Paolo¹; Messina, Davide¹; Recupero, Antonino¹; Mancini, Giuseppe²

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Multi-sensor detection of controlled prestress release in an existing continuous post-tensioned bridge

Agredo-Chavez, Angelica¹; Colmenares, Daniel²; Gonzalez-Libreros, Jaime¹; Wang, Chao¹; Sas, Gabriel¹

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MS27-2: Machine learning methodologies for structural health monitoring

Time: Thursday, 27/Aug/2026: 2:00pm - 3:30pm · *Location:* BEY E40

Session Chair: Yunus Harmanci

Session Chair: Panagiotis Martakis

Graph neural networks for structural damage detection on the Hell Bridge Test Arena

Concha Avila, Carlos; Marasco, Giulia; Azizinamini, Atorod

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Machine-learning-based damage detection in beam-column connections using modal features

Javadzadegan, Mohammadreza¹; Shamsaddinlou, Amir²; Shirgir, Sina³; De Domenico, Dario²

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Damage identification of bridge girders using limited strain data and stacked machine learning

Vafaei, Mohammadreza¹; C Alih, Sophia²; Naseem Yousif, Allban Eevyan¹

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Automated seismic damage assessment using limited strain data and machine learning

Vafaei, Mohammadreza¹; C Alih, Sophia²; Zhong Yi, Sam¹

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Vibration-based assessment of a historic railway bridge using convolutional autoencoder networks

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Deep learning-based structural health monitoring for CFRP-strengthened RC slabs

Özekin, Hasan¹; Harmanci, Yunus²

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MS09: Monitoring of structural health, noise and vibration of urban transportation infrastructure, and its assessment planning

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: BEY E17
Session Chair: Duo Liu

Experimental Validation of a Drive-By Bridge Monitoring Algorithm

Ereiz, Suzana^{1,2}; Limonelli, Marina Pina¹; Malekjafarian, Abdollah³; Duvnjak, Ivan²

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Monitoring of Tramway Superstructures using Short- and Long-term Measurements

Liu, Jia; Uzar, Kazim

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Railway track irregularity estimation based on sleeper acceleration and Kalman filter (KF) method

Han, Xiaodong¹; Li, Shaoguang²; Cheng, Liangliang¹

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Inspection of rail roughness with acoustic based vehicle side measurement

Unger, Martin; Liu, Duo

Chair of Railway Track Engineering, Dresden University of Technology, Germany; martin.unger@mailbox.tu-dresden.de

SmartPontem – Overload detection on structures via embedded instrumentation

Brossard, Baptiste; Mercier, Julien; Najeeb, Sabir

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A large-scale experimental setup for cyclically loaded soils beneath road pavements

Ullmann, Sebastian; Uhlig, Markus; Kahnt, Maximilian; Herle, Ivo

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MS12-2: Advanced fatigue assessment and life design of steel structures

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: POT 112

Session Chair: Helen Bartsch

Session Chair: Antti Ahola

Fatigue limit estimation of WAAM specimens using temperature-based load increase tests

Heydarinouri, Hossein¹; Canclini, Severin²; Gilliar-Schönenberger, Lionel Arthur²; Mohri, Maryam¹; Silvestru, Vlad-Alexandru²; Affolter, Christian¹; Leinenbach, Christian^{1,3}

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Consideration of residual stresses in fatigue verification of 60 E2 rails

Will, Elias^{1,2}; Wenner, Marc³; Marx, Steffen^{1,2}; Kang, Chongjie^{1,2}

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Dealing with fatigue cracks in steel components

Knoedel, Peter¹; Gkatzogiannis, Stefanos²; Hörenbaum, Christoph³

1: Dr Knoedel Engineering Consultants, 76530 Baden-Baden, Germany; 2: Institute of Steel Structures, NTUA, Zografou Campus, 15772, Athens, Greece; 3: IPU Ingenieurgesellschaft Karlsruhe mbH, 76185 Karlsruhe, Germany; info@peterknoedel.de

Increasing residual lifetime of steel structures through use of nanometallic multilayer treatment

Rutner, Marcus

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Optimization of composite bridge design using high-frequency mechanical impact: a case study

Al-Karawi, Hassan; Al-Emrani, Mohammad; Dagduk, Saffa; englund, cecilia; Öst, Mattias

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A monitoring concept for grouted connections: state of the art and application to the FINO3 research platform

Sievers, Tilman Johannes^{1,2}; Reichling, Kenji²; Rozsar, Peter²; Goertz, Stephan²

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MS18/19-2: Advances in monitoring, assessment and rehabilitation of timber structures

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: POT 51

Session Chair: Robert Jockwer

Session Chair: Mike Sieder

Session Chair: Pedro Palma

Session Chair: Elena Perria

Session Chair: Maria Loebjinski

Hygro-mechanical response of a timber canopy: integrating SHM data and FEM simulations

Shahsavar, Sadra; Knoop, Ine; Dragan, Dan; Gouveia Henriques, Jose; Vandoren, Bram; Vereecken, Eline
Hasselt University, Belgium; sadra.shahsavar@uhasselt.be

Can pre-war vernacular houses in the Ore Mountains offer a good indoor microclimate?

Výšková, Dominika; Bošová, Daniela

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Comprehensive assessment and static analysis enabling rehabilitation through compensatory measures alone: a case study

Perria, Elena; Sieder, Mike

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Museum of local history Sternberg: a holistic rehabilitation of the historic building substance

Meisel, Andreas¹; Schlichting, Björn¹; Mägede, Christian¹; **Loebjinski, Maria**^{1,2}

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Re-use of timber piles with the application of CFRP

Heithorn, Jendrik; Fouad, Nabil A.

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Investigation of recoverability of prestressed self-centering rocking timber columns

Chen, Xi; Zhang, Rui; Leng, Yubing; Zhang, Fuwen; Wang, Mingqian; Chen, Lingzhu; Xu, Qingfeng

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MS23-2: Considering defects and damage effects on the safety of civil engineering structures

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: BEY 127

Session Chair: Matthias J. Rebhan

Session Chair: André Arnold

Session Chair: Franz Tschuchnigg

Session Chair: Dirk Schlicke

Condition assessment and structural behavior of prototype bridge deck slabs

Khan, Asad-Ur-Rehman¹; Mahmood, Wajeeha²; khalid, Fatima¹; Fareed, Shamsoon¹

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Effect of defects on stress concentration factors in pipes under bending

Wang, Jiahao¹; Subhani, Mahbube²; Zhang, Peng¹; Gong, Jinzhe¹

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Durability and corrosion of micropiles: insights from a multi-year field study

Arnold, André¹; Angst, Ueli²; Brem, Martin³; Marti, Benjamin⁴; Portmann, Gregor¹

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3: SGK - Swiss Society for Corrosion Protection, Switzerland; 4: BS Zeier AG, Switzerland; andre.arnold@hslu.ch

Damaged anchored structures: geotechnical and structural assessment using numerical analysis

Daxer, Hans-Peter¹; Ober, Julia²; Rebhan, Matthias J.¹; Leo, Johannes¹; Schlicke, Dirk²; Tschuchnigg, Franz¹

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Condition assessment and rehabilitation ageing large concrete water reservoirs: South African case studies

MAIDI, Marcia Retlogetswe¹; MAKAMA, Lebogang²; MATHABATHA, Trevor³

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Secant stiffness and failure modes of EBF frames using castellated beams

Parung, Herman¹; Sandy, Desi²; Sangle, Pebrinar Riani²; Rachmansyah, Rachmansyah³

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MS27-3: Machine learning methodologies for structural health monitoring

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: BEY E40

Session Chair: Yunus Harmanci

Session Chair: Panagiotis Martakis

Satellite-based, territorial-scale screening and maintenance prioritization of river-crossing bridges via interferometry

Civera, Marco¹; Miano, Andrea²; Hamzaoui, Yassir¹; Vera, Costantini³; Paolo, Mazzanti^{3,4}; Francesco, Fabbrocino²; Andrea, Prota⁵; Bernardino, Chiaia¹

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A deep learning and ray casting framework for bridge inspection

Fonseca, João¹; Jorge, Tomás¹; Soares, Eduardo¹; Magalhães, Jorge¹; Cabral, Rafael^{1,2}; Lima, Bernardino³; Santos, Ricardo^{1,2}; Ribeiro, Diogo^{1,2}

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SLAM-based drone inspection and damage detection for underground rainwater tunnels

Lee, Changjun¹; Choi, Woonggyu¹; Kim, Inhi²; Park, Seunghee¹

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Pi-MFLNet: a DFL-based raster-scan MFL imaging system for structural monitoring

YIGZEW, FITSUM EMAGNENEHE¹; Kim, Hansun²; Park, Seunghee³

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A semantic workflow linking image-based concrete damage segmentation to ontology-driven knowledge graphs for digital twin integration and automated structural diagnostics

Dalvi, Vedant Girish; Fröhlich, Daniel; Preidel, Cornelius; Dauberschmidt, Christoph

Hochschule München, Germany; vedant_girish.dalvi@hm.edu

Synthetic data generation for visual damage recognition of aging bridge structures using 3D engine-based simulation

Choi, Woonggyu¹; Lee, Changjun¹; Bak, Jinyeong¹; Jang, Kitae²; Park, Seunghee¹

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MS31: Wave-based monitoring techniques for structural engineering

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: BEY 117

Session Chair: Kilian Tschoeke

Session Chair: Lars Schubert

Session Chair: Max Fiedler

Non-destructive wave-based detection of delamination in corroded RC panels

Vandecruys, Eline; Vanquaille, Andras; Verstrynghe, Els

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Non-destructive measurements for assessing concrete material in underwater conditions

Lippold, Lukas; Reichert, Ina; Bonitz, Frank

Materialforschungs- und -prüfanstalt Weimar, Germany; Lukas.lippold@mfpa.de

Field application of acoustic emission during load testing of existing reinforced concrete bridge

Zhang, Fenggiao¹; Kortendijk, Coen²; Besseling, Floris²; Yang, Yuguang¹

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Acoustic digital twin for prestressed concrete bridges

Zaripova, Gulshat¹; Brinkman, Nienke²; Marty, Patrick²; Pirskawetz, Stephan¹; Boehm, Christian²; Trattnig, Horst³; Gebraad, Lars²

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Machine learning for wire break detection

Göbel, Philipp; Fiedler, Max; Jansen, Andreas

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Acoustic emission monitoring of fatigue damage in a transition piece of a wind turbine tower

Pirskawetz, Stephan¹; Thiele, Marc¹; Löhr, Manuel²; Liao, Chun-Man¹; Degener, Sebastian¹; Herrmann, Ralf¹

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PS2: Digital methods for structural assessment

Time: Thursday, 27/Aug/2026: 4:00pm - 5:30pm · Location: BEY 245
Session Chair: Francesca Marsili

How effective are LLM-designed optimizers for multilevel thresholding of concrete defects?

Jafar¹, Jafar¹; Konstantis, Spyridon²; Papastamos, George³; Spyridis, Panagiotis¹

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Digital volume correlation applied to in-situ tomography data of a hollow core beam

Liebold, Frank¹; Zierul, Lore²; Grzesiak, Szymon³; Pahn, Matthias³; Beckmann, Birgit²; Maas, Hans-Gerd¹

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Assessment of historic cast steel bearings

Burkart, Andreas¹; Döbereiner, Benedikt²; Langenberg, Peter²; Mensinger, Martin³

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Maintenance and monitoring for the conservation of industrial steel buildings: a review

Francavilla, Antonella Bianca; Miano, Andrea; Pireneo, Gianmarco; Olivieri, Carlo; Fabbrocino, Francesco
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A rapid post-earthquake loss assessment system for open-pit mines in Taiwan

Lin, Chi-Hao¹; Hsu, Hsi-Chieh²; Lin, Fan-Ru¹; Huang, Lee-Hui¹; Lu, Xue-Min¹; Lin, Che-Min¹; Chai, Juin-Fu¹; Chen, Kuo-Ching³

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Prediction of unified strain ductility in FRP-confined concrete column using machine learning

Win, Sandar¹; Shayanfar, Javad²; Nguyen, Hoang¹; Rezazadeh, Mohammadali¹

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