



SMAR 2026

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

Daily Overview -- WEDNESDAY

8:00am				
9:00am				
9:00am	Opening session			
-	Location: POT 81			
10:30am	Chair: Yvonne Ciupack			
	Chair: Steffen Marx			
10:30am				
11:00am				
11:00am	KS 01: Keynote lectures			
-	Location: POT 81			
12:30pm	Chair: Steffen Marx			
	Speakers: Zahra Sharif Khodaei and Mark F. Green			
12:30pm				
2:00pm				
1:15pm	Supplementary lecture			
-	Location: POT 81			
1:45pm	Chair: Chongjie Kang			
	Speaker: Gregor Schacht, Gino Ebell			
2:00pm	MS03-1: Railway track monitoring – an essential basis for the optimization of railway infrastructure	MS04: Load testing of bridges	MS05-1: Research on shape memory alloys in Germany	MS08-1: Hybrid construction and strengthening with wire arc additive manufacturing
-	Location: BEY 138	Location: BEY 117	Location: BEY E40	Location: BEY E17
4:00pm	Chair: Marc Wenner	Chair: Gregor Schacht	Chair: Elyas Ghafoori	Chair: Yvonne Ciupack
	Chair: Günther Grunert	Chair: Oliver Mosig	Chair: Thomas Niendorf	Chair: Leroy Gardner
		Chair: Eva Lantsoght	Chair: Hans Jürgen Maier	Chair: Elyas Ghafoori
			Chair: Anja Weidner	Chair: Vittoria Laghi
			Chair: Philipp Krooss	Chair: Vlad-Alexandru Silvestru
	MS10-1: Advances and applications of vibration-based structural health monitoring	MS13-1: Intelligent digital methods for extending the service life of structures beyond 100 years	MS22-1: Advances in fiber optic sensing solutions for infrastructure, geotechnics, and earth sciences	MS25: Advancements in risk, reliability, and resilience assessment of existing structures
	Location: POT 112	Location: POT 51	Location: BEY 245	Location: BEY 137
	Chair: Silke Scheerer	Chair: Chongjie Kang	Chair: Massimo Facchini	Chair: Edward Steeves
	Chair: Kerstin Speck	Chair: Steffen Marx	Chair: Luca Schenato	Chair: Abdalla Alhashmi
			Chair: Lorenzo Brezzi	
	MS26-1: Retrofitting, strengthening and strategies to extend the service live for concrete and masonry structures	MS29: Distributed acoustic sensing (DAS) in civil engineering		
	Location: BEY 127	Location: POT 151		
	Chair: David Sandmann	Chair: Katarzyna Zdanowicz		
	Chair: Flávio de Andrade Silva	Chair: Christos Karapanagiotis		
	Chair: Daniel Cardoso	Chair: Bertram Richter		
	Chair: Juliane Wagner			
	Chair: Alois Vorwagner			
	Chair: Jan Berger			
	7th Session Chair: Preinstorfer, Philipp / TU Wien, AT			
4:00pm				
4:30pm				
4:30pm	MS03-2: Railway track monitoring – an essential basis for the optimization of railway infrastructure	MS05-2: Research on shape memory alloys in Germany	MS08-2: Hybrid construction and strengthening with wire arc additive manufacturing	MS10-2: Advances and applications of vibration-based structural health monitoring
-	Location: BEY 138	Location: BEY E40	Location: BEY E17	Location: POT 112
6:00pm	Chair: Marc Wenner	Chair: Elyas Ghafoori	Chair: Yvonne Ciupack	Chair: Enrico Baumgärtel
	Chair: Günther Grunert	Chair: Thomas Niendorf	Chair: Leroy Gardner	Chair: Silke Scheerer
		Chair: Hans Jürgen Maier	Chair: Elyas Ghafoori	
		Chair: Anja Weidner	Chair: Vittoria Laghi	
		Chair: Philipp Krooss	Chair: Vlad-Alexandru Silvestru	
	MS13-2: Intelligent digital methods for extending the service life of structures beyond 100 years	MS20: Earth observation and other remote sensing methods for infrastructure monitoring	MS26-2: Retrofitting, strengthening and strategies to extend the service live for concrete and masonry structures	MS28: Impact of climate change on infrastructure
	Location: POT 51	Location: BEY 245	Location: BEY 127	Location: BEY 117
	Chair: Chongjie Kang	Chair: Alois Vorwagner	Chair: David Sandmann	Chair: Julian Unglaub
	Chair: Steffen Marx	Chair: Vazul Boros	Chair: Flávio de Andrade Silva	
		Chair: Maria Pina Limongelli	Chair: Daniel Cardoso	
		Chair: Antje Thiele	Chair: Juliane Wagner	
		Chair: Lydia Puttkamer	Chair: Alois Vorwagner	
		Chair: Iris Hinderstmann	Chair: Jan Berger	
		7th Session Chair: Stammler, Melanie / Bundesanstalt für Straßen..., DE 8th Session Chair: Rüffer, Jürgen / ALLSAT GmbH, DE	7th Session Chair: Preinstorfer, Philipp / TU Wien, AT	
	PS4: Structural behaviour and performance of concrete and hybrid structures			
	Location: BEY 137			
	Chair: Enzo Martinelli			

MS03-1: Railway track monitoring – an essential basis for the optimization of railway infrastructure

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: BEY 138

Session Chair: Marc Wenner

Session Chair: Günther Grunert

Smart Instrumented Test Track for Advanced Railway Superstructure Evaluation

Gschwandl, Timna Jakomijna¹; Gabernig, Thomas²; Prettner, Lukas¹; Mayer, Thomas³

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Experimental DAS, FBG and DFOS based monitoring of the rail track in high-speed train loading

Đługosz, Szymon¹; Sieńko, Rafał²; Bednarski, Łukasz³; Howiacki, Tomasz^{1,2}

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Piezoresistive Sensors for Smart Monitoring Applications in Railway Infrastructure

Grohs, Gernot; Marangon, Francesco; Pospischil, Ferdinand

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Mission Profiling of Railway Bridges using Low-Power Smart MEMS Sensors

Liebermann, Joris; Bachmann, Hannes; Lehmann, Martin; Beyer, Volkhard

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Continuous Track Monitoring (CTM) for condition-based maintenance of Railway Bridges

Grunert, Günther¹; Rupp, Maximilian M.²; Wolter, Klaus-Ulrich³

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Track Geometry Prediction Method - Development and Practice at DBInfraGO

Jovanovic, Mirjana; Feng, Joseph

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MS04: Load testing of bridges

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: BEY 117

Session Chair: Gregor Schacht

Session Chair: Oliver Mosig

Session Chair: Eva Lantsoght

Advancing SHM of Bridges: The Deformation and Strain Area Difference Methods

Čamo, Tarik¹; Waldmann, Danièle²

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Integration of IoT-Based SHM in Bridge Load Testing: Field Applications in Italy

Ferrara, Salvatore; Longo, Monica; Alovise, Isabella; La Mazza, Dario; Darò, Paola; Mancini, Giuseppe

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Static distributed fiber optic measurements on prestressed concrete bridges

Wosniok, Aleksander; Karapanagiotis, Christos; Ettaouaje, Omar

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Assessment of applied tension on high strength steels by X-ray diffraction (XRD) and magnetic Barkhausen (MBN)

Pisani, Luigi¹; Ventura, Giulio²; Corrado, Mauro²; Torboli, Alessandro¹

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Residual Prestressing Evaluation in HISCC-Prone Bridges: Full-Scale Loading at Lingelbach

Bujotzek, Lukas; Moriche-Quesada, Sergio; Rudolf, Martin

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Load test on the Elbe bridge Bad Schandau

Mosig, Oliver¹; Fritsch, Christina¹; Müller, Steffen²; Gruner, Andreas²; Schacht, Gregor¹; Marx, Steffen³

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Hybrid Monitoring Approach for Structural Assessment of the Nibelungen Bridge (Worms)

Herbers, Max¹; Monsberger, Christoph Martin²; Buchmayer, Fabian³; Voigt, Chris¹; Lüttmann, Andre³; Lehmen, Judith³; Schneider, Leon³; Haaß, Maximilian⁴; Kriegeskorte, Darius⁴

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Study of ambient vibration based structural health monitoring of bridge girder

Tanbir, Mushir; Acherjee, Devjit; Bandyopadhyay, Debasish

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MS05-1: Research on shape memory alloys in Germany

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: BEY E40

Session Chair: Elyas Ghafoori

Session Chair: Thomas Niendorf

Session Chair: Hans Jürgen Maier

Session Chair: Anja Weidner

Session Chair: Philipp Krooss

Recent research and applications of Fe-SMA in Germany and Europe

Ghafoori, Elyas; Hilscher, Marlon; Jübner, Paul

Leibniz University of Hannover, Germany; ghafoori@stahl.uni-hannover.de

Effect of pre-strain on recovery stress and its stability in Fe-Mn-Si-Cr-Ni-VC shape memory alloys

Bauer, André¹; Hilscher, Marlon²; Vollmer, Malte¹; Ghafoori, Elyas²; Niendorf, Thomas¹

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Influence of recovery stress level and loading amplitude on the fatigue behavior in iron-based shape memory alloys

Hilscher, Marlon^{1,3}; Bauer, André²; Niendorf, Thomas²; Ghafoori, Elyas¹

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4D-printed Fe-based shape memory alloy architectures with enhanced recoverability

Mohri, Maryam¹; Heydarinouri, Hossein¹; Asadollahi, Navid²; Vaseghanianfard, Ali³; Niliahmadaadi, Mahmoud³

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Remote fastening in inaccessible spaces using shape memory alloys

Thüsing, Kai; Drossel, Welf-Guntram

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MS08-1: Hybrid construction and strengthening with wire arc additive manufacturing

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: BEY E17

Session Chair: Yvonne Ciupack

Session Chair: Leroy Gardner

Session Chair: Elyas Ghafoori

Session Chair: Vittoria Laghi

Session Chair: Vlad-Alexandru Silvestru

Integrating WAAM into an adaptive and systematic digital workflow applicable to steel components and their rehabilitation

Waldschmitt, Benedikt; Grebner, Philipp; Ciupack, Yvonne; Lange, Jörg

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Strengthening of structural steel elements using additive manufacturing

Gardner, Leroy; Yang, Jiachi; Kyvelou, Pinelopi

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Feasibility study on the rehabilitation of fatigue-damaged steel plates using wire arc additive manufacturing

Gilliar-Schönenberger, Lionel Arthur¹; Silvestru, Vlad-Alexandru¹; Dahaghin, Hamid²; Heydarinouri, Hossein³

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DED-arc strengthening of steel beams: design, manufacturing and mechanical performance

Ledderose, Lukas¹; Muggenburg, Marc¹; Altobelli, Martin Gabriel²; Hoefer, Kevin²; Köhler, Markus²; Kugler, Nina³; Unglaub, Julian¹; Radlbeck, Christina³; Hensel, Jonas²; Kloft, Harald¹

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Strengthening end-of-life steel sections for reuse through wire arc additive manufacturing

Silvestru, Vlad-Alexandru

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Investigation on the load-bearing capacity of thin sheet steel façades reinforced using WAAM

Grebner, Philipp; Waldschmitt, Benedikt; Ciupack, Yvonne; Rädcl, Felicitas; Lange, Jörg

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Wire arc additive manufacturing to the rescue of historic structures

Hadjipantelis, Nicolas¹; Georgiou, Andreas¹; Ioannou, Ioannis¹; Kontovourkis, Odysseas²; Mavros, Marios¹

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A digital workflow for optimized repair of corroded steel bridges via cold spray deposition

Tzortzinis, Georgios¹; Abhyankar, Kaushik¹; Christoff, Bruno¹; Schagen, Brian²; Hart, A. John³; Gerasimidis, Simos²; Gude, Maik¹

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MS10-1: Advances and applications of vibration-based structural health monitoring

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: POT 112

Session Chair: Silke Scheerer

Session Chair: Kerstin Speck

Innovations and practical experiences in monitoring cable forces in cable stayed bridges

Vollmering, Max; Bieber, Simon; Brand, Werner

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Calculation of normal forces in hangers of tied-arch-bridges based on frequency measurements considering model uncertainty and boundary condition sensitivity

Schneider, Lukas; Mols, Felix; Weidner, Philipp; Ummenhofer, Thomas

Steel and Lightweight Structures, Karlsruhe Institute of Technology, Germany; lukas.schneider@kit.edu

Preliminary dynamic characterization of the Pisa Baptistery (Italy) using ambient vibration testing

Caffarri, Caterina¹; Bartolini, Giada²; De Falco, Anna¹; Landi, Filippo¹; Vignali, Laura¹

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Modal-based damage Assessment of an arch dam

Rossmannith, Leonie; Stark, Alexander

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Catching the shift: anomaly detection in concrete dams

Pereira, Sergio¹; Salvi, Chanalisa¹; Magalhães, Filipe¹; Mata, Juan²; Gomes, Jorge²; Cunha, Alvaro¹

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Vibration-based structural health monitoring of an industrial plant: methodology and findings

Balaskas, Georgios; Hoffmeister, Benno; Butenweg, Christoph

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Self-sensing cementitious composites for SHM: insights from the PRIN 2022 SUCCESS project

Dattu Shanker More, Florence More¹; Cassese, Paolino²; Fantasma, Francesca¹; De Felice, Vincenzo¹; Fabbrocino, Giovanni^{1,3}; Rainieri, Carlo²

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Data-driven structural health monitoring under static and dynamic loading

Arailopoulos, Alexandros¹; Kardoulas, Andreas¹; Seventekidis, Panagiotis²

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MS13-1: Intelligent digital methods for extending the service life of structures beyond 100 years

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: POT 51

Session Chair: Chongjie Kang

Session Chair: Steffen Marx

Information-guided Bayesian modelling for structural health monitoring

Bakeer, Tammam¹; **Herbers, Max**²; **Marx, Steffen**³

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Temperature-informed autoencoder for structural health monitoring of bridges

Baasch, Benjamin; **Degener, Sebastian**; **Herrmann, Ralf**; **Baeßler, Matthias**

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Applied structural health monitoring utilizing state projection estimation error (SP2E)

Moeller, Max; **Lenzen, Armin**

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GA-based FE model updating for damage detection: application to the openBridgeLAB

Sprenger, Bjarne; **Schnellenbach-Held, Martina**

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Physics-informed neural networks for inverse modeling of non-uniform bending stiffness in beams

Hendricks, Amelie; **Radin, Nils**; **Klinkel, Sven**

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Transfer learning for traffic identification in SHM based on visual and vibration data

Herrmann, Ralf; **Degener, Sebastian**; **Baasch, Benjamin**; **Baeßler, Matthias**

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Validation of a cloud-based digital twin for long-term structural health monitoring of the Terfener Inn Bridge

Weissenbach, Nils; **Penasa, Massimo**; **Große, Hannes**

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Multi-sensor equipped load testing on the openBridgeLAB

Walker, Maria¹; **Richter, Bertram**¹; **Speck, Kerstin**¹; **Kielreiter, Anett**²; **Marx, Steffen**¹

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MS22-1: Advances in fiber optic sensing solutions for infrastructure, geotechnics, and earth sciences

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: BEY 245

Session Chair: Massimo Facchini

Session Chair: Luca Schenato

Session Chair: Lorenzo Brezzi

Characterizing footstep-induced strain in pavement fibers with distributed acoustic sensing

Saw, Jaewon¹; Jasiak, Maksymilian²; Yamaguchi, Marina³; Wu, Yan²; Dong, Chuao²; Liu, Jingxiao²; Soga, Kenichi²

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Earth structures with embedded fibre optic sensors: from the lab to the field

Bednarski, Łukasz¹; Sieńko, Rafał²; Zuziak, Katarzyna³; Howiacki, Tomasz³

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Integration of distributed fiber-optic sensing in pile foundations and civil structures

Yannie, Jorge¹; Nöther, Nils²; Facchini, Massimo²; Peter, Alheid³; Emil, Karlén³

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DFOS for pull-out testing of self-drilling passive anchors in port reinforcement works

Brezzi, Lorenzo¹; Turchetti, Omar¹; Ruggeri, Paolo²; Fabbian, Nicola¹; Senigaglia, Matteo²; Alesiani, Pierluigi²; Cola, Simonetta¹

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Distributed fibre optic monitoring of a repaired concrete tunnel lining at CERN

de Battista, Nicholas¹; Castle, Ben²; Kechavarzi, Cedric³; Di Murro, Vanessa⁴; Osborne, John Andrew²

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Fiber optic strain telemetry with mid-range OFDR for viaduct structural monitoring

Yoshimura, Yuichi¹; Fujiwara, Kotaro¹; Taira, Yohei¹; Imai, Michio¹; Zhang, Chao²; Hara, Sakuya³; Nakao, Keigo³; Ito, Fumihiko³

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Damage localization in the openLAB research bridge using fiber segment interferometry

Rossi, Filippo^{1,2}; Statham, Kristopher²; Richter, Bertram³; Marx, Steffen³; Polak, Peter¹

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Smart road monitoring: fiber optic sensor integration for traffic and structural analysis

Lipus, Martin¹; Ganzer, Merlin¹; Jansen, Dirk²; Ork, Jan²; Liehr, Sascha³

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MS25: Advancements in risk, reliability, and resilience assessment of existing structures

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: BEY 137

Session Chair: Edward Steeves

Session Chair: Abdalla Alhashmi

Fragility assessment of existing reinforced concrete buildings under ground-settlement and seismic action

Miano, Andrea¹; Del Gaudio, Carlo²; Cantisani, Gaetano²; Verderame, Gerardo Mario²; Prota, Andrea²

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Fast seismic risk assessment of highway bridges using artificial neural networks

Principi, Lorenzo¹; Morici, Michele¹; Leggieri, Valeria¹; Zona, Alessandro¹; Dall'Asta, Andrea²

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SEISMic risk and URBan resilience in historical environments: the case study of Molfetta, Italy

Caporizzo, Claudia; Sciotti, Albina; Belliazzi, Stefano; Francavilla, Antonella Bianca; Mazzeo, Giuseppe; Mecca, Ippolita; Ramaglia, Giancarlo; Todisco, Paolo; Pisapia, Alessandro; Miano, Andrea

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Rocking and wobbling of dry-jointed masonry elements: a sensitivity analysis using DEM

Postiglione, Marco^{1,2,3}; Salvalaggio, Matteo⁴; Fierro, Tony²; Fabbrocino, Giovanni^{2,3}; Brandonisio, Giuseppe¹; Sandoli, Antonio²; Lourenço, Paulo B.⁴

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Capacity prediction of existing concrete structures based on limited field testing using Bayesian compressive sampling and random finite element

Alhashmi, Abdalla¹; Abdelmaksoud, Ahmed^{1,2}; Oudah, Fadi¹

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Updating the reliability of sheet pile walls – 3D scans for a load-deflection curve approximation

Baumgarten, Niklas¹; Holste, Karsten^{1,2}; Jost, Berit²; Loebjinski, Maria^{1,3}; Mädge, Christian¹

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Practical evaluation procedure for structural robustness assessments of steel truss bridges

Steeves, Edward; Oudah, Fadi

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Damage affecting the stability of anchored structures – a new research approach

Rebhan, Matthias J.¹; Daxer, Hans-Peter¹; Schuch, Markus²; Klass, Clemens³; Tschuchnigg, Franz¹

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MS26-1: Retrofitting, strengthening and strategies to extend the service life for concrete and masonry structures

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · 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

Numerical investigation of brittle failure and tensile strength scatter in CRC systems

Lamisa, Farhat^{1,2}; Schütze, Elisabeth²; Schumann, Alexander^{1,2}

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Lap-splice analysis of carbon-reinforced concrete strengthening with DFOS

Sandmann, David¹; Beckmann, Birgit¹; Marx, Steffen^{1,2}

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A simplified design approach for CRC strengthening using a single ω -table

Hasan, Md Nazmul¹; Schumann, Alexander^{1,2}

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Numerical investigation of the influence of a CRC waterproofing layer on the structural behavior of masonry arch bridges

Würgau, Carolin¹; Keßler, Jenny¹; Achenbach, Rebecca²; Červenka, Jan³; Beckmann, Birgit¹; Marx, Steffen¹

1: Technische Universität Dresden, Institute of Concrete Structures, Germany; 2: RWTH Aachen University, Germany; 3: Červenka Consulting s.r.o., Czech Republic; Jenny.kessler@tu-dresden.de

Influence of Fe-SMA embedment under semi-cyclic loading and multiple activation

Mir Pons, Antoni; del-Río-Bonnín, Sandra; Ribas, Carlos; Ruiz-Pinilla, Joaquín G.; Cladera, Antoni

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Recovery stress behavior of Fe-SMA under cooling and semi-cyclic loading

Mir Pons, Antoni; Ruiz Pinilla, Joaquín G.; Cladera, Antoni

Universitat de les Illes Balears, Spain; antoni.mir@uib.cat

Flexural rehabilitation of damaged RC balconies using Fe-SMA bars

Rahman, Manzoor; Barros, Joaquim António Oliveira; Correia, Luís Luciano Gouveia

University of Minho, Portugal; manzoorrahman395@gmail.com

Shear strengthening mechanism and analytical model for Fe-SMA-retrofitted masonry walls

Sun, Xiaochao¹; Zhu, Hong^{1,2}; Dong, Zhiqiang^{1,2}; Yan, Wenlong³; Pan, Yijie⁴

1: Key Laboratory of Concrete and Prestressed Concrete Structures of the Ministry of Education, Southeast University, Nanjing, 211189, China; 2: National and Local Joint Engineering Research Center for Intelligent Construction and Maintenance, Southeast University, Nanjing, 211189, China; 3: School of Architecture and Engineering, Xinjiang University, Urumqi, 830047, China; 4: Fusteel Co., Ltd., Nanxun, 313009, China; 1907721149@qq.com

MS29: Distributed acoustic sensing (DAS) in civil engineering

Time: Wednesday, 26/Aug/2026: 2:00pm - 4:00pm · Location: POT 151

Session Chair: Katarzyna Zdanowicz

Session Chair: Christos Karapanagiotis

Session Chair: Bertram Richter

Development towards a high frequency acoustic emission distributed acoustic sensing system

Neubeck, Robert¹; Kühmstedt, Mario; Gaul, Tobias; Augustin, Jörn; Beltran Perez, Oscar Dario; Tautz, Lili; Stephan, Mareike; Weihnacht, Bianca; Tschöke, Kilian; Schubert, Lars

Fraunhofer Institute for Ceramic Technologies and Systems (IKTS), Germany; robert.neubeck@ikts.fraunhofer.de

Distributed acoustic sensing for detection and localization of steel wire breaks

Jensen, Andrew; Frantzis, Alexander; DeJong, Matthew

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Distributed acoustic sensing for bridges – from traffic monitoring to damage detection

Bochenska, Marta^{1,2}; Goldyn, Michal¹; Zdanowicz, Katarzyna¹; Guzik, Artur³

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Simultaneous assessment of bridge traffic and bridge response with distributed acoustic sensing

Lienhart, Werner¹; Farhadi, Sasan¹; Kohlbacher, Michael¹; Agreiter, Andrea¹; Bertola, Numa²; Fabbriatore, Francesco²

1: Graz University of Technology, Austria; 2: University of Luxembourg, Luxembourg; werner.lienhardt@tugraz.at

Bridge traffic load monitoring using distributed acoustic sensing and machine learning

Karapanagiotis, Christos; Schrödter, Moritz; Breithaupt, Mathias; Chruscicki, Sebastian; Münzenberger, Sven; Wosniok, Aleksander

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Vehicle weigh-in-motion (WIM) along roadways with distributed acoustic sensing (DAS)

Jasiak, Maksymilian¹; Wu, Yan¹; Saw, Jaewon²; Yamaguchi, Marina³; Dong, Chuao¹; Chiu, Shih-Hung¹; Liu, Jingxiao¹; Hubbard, Peter⁴; Soga, Kenichi¹

1: University of California, Berkeley, USA; 2: Exponent, USA; 3: Nippon Koei, Japan; 4: FiberSense, USA; jasiak@berkeley.edu

Crack detection on road surfaces using distributed acoustic sensing (DAS)

Yamaguchi, Marina¹; Jasiak, Maksymilian²; Saw, Jaewon³; Dong, Chuao²; Wu, Yan²; Liu, Jingxiao²; Soga, Kenichi²

1: Nippon Koei Co., Ltd., Japan; 2: University of California, Berkeley, USA; 3: Exponent, Inc., USA; yamaguchi-mr@n-koei.jp

Monitoring of long-span structures with DAS: from local tests to 70 km remote interrogation

Đługosz, Szymon¹; Sierńko, Rafał²; Bednarski, Łukasz³; Howiacki, Tomasz^{1,2}

1: SHM System, Poland; 2: Faculty of Civil Engineering, Cracow University of Technology, Poland; 3: Faculty of Mechanical Engineering and Robotics, AGH University of Science and Technology in Kraków, Poland; sd@shmsystem.pl

MS03-2: Railway track monitoring – an essential basis for the optimization of railway infrastructure

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: BEY 138

Session Chair: Marc Wenner

Session Chair: Günther Grunert

Longitudinal Displacement of Ballast Track with Rail Expansion Joints during Traction and Braking

Uzar, Kazim; Liu, Jia

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Track–bridge interaction for a railway bridge with longitudinally movable track

Wenner, Marc¹; Plica, Sebastian²; Röder, Robert¹; Basamad, Khadijah¹; Zeckert, Marcus³; Missler, Michael⁴; Lippert, Peter⁴

1: MKP GmbH, Germany; 2: Dr. Plica Ingenieure Beratende Ingenieure – PartG mbB, Germany; 3: DB InfraGO AG, Germany; 4: DB InfraGO AG, Bauartverantwortung, Germany; marc.wenner@marxkrontal.com

Track-bridge interaction – preliminary experimental results about the behavior of ballasted track on bridges

Wenner, Marc¹; Bracklow, Franz¹; Schneider, Sebastian¹; Plica, Sebastian²; Hacker, Andreas³; Nachtigall, Randy⁴; Zdanowicz, Katarzyna⁵; Huber, David⁶; Will, Elias⁷; Arana, Tomas⁸

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High-speed testing of a tied arch railway bridge, Vehicle-bridge interaction at resonance

Schlegel, Florian Alexander¹; Grunert, Günther²

1: GMG Ingenieurgesellschaft mbH, 01069 Dresden, Germany; 2: DB InfraGO AG, Berlin 10115, Germany; florian.schlegel@gmg-dresden.de

Sensor-based load–response correlation for monitoring railway bridge condition

Vospernig, Michael¹; Firus, Andrei²; Arana Villafán, Tomás³; Angermann, Falk³; Brandenstein, Max⁴

1: REVOTEC zt gmbh, Austria; 2: isea tec GmbH, Germany; 3: German Centre for Rail Traffic Research, Germany; 4: Technical University of Darmstadt, Germany; michael.vospernig@revotec.at

Take it to the bridge – drive-by monitoring to assess railway bridge and track dynamics

Lorenzen, Steven Robert¹; Rupp, Maximilian Michael²; Brandenstein, Max²; Hübler, Clemens²

1: Frankfurt University of Applied Sciences, Germany; 2: Technical University of Darmstadt, Germany; steven.lorenzen@fra-uas.de

MS05-2: Research on shape memory alloys in Germany

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: BEY E40

Session Chair: Elyas Ghafoori

Session Chair: Thomas Niendorf

Session Chair: Hans Jürgen Maier

Session Chair: Anja Weidner

Session Chair: Philipp Krooss

Influence of Fe-SMA material nonlinearity on the bond-slip and debonding behavior

Jübner, Paul¹; Li, Lingzhen²; Wang, Sizhe³; Ghafoori, Elyas¹

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

Recent advances in shear strengthening of concrete structures using self-prestressed Fe-SMA

Sun, Yu^{1,2}; **Sun, Xiaochao¹**; Hilscher, Marlon²; Zhu, Hong¹; Dong, Zhiqiang¹; Pan, Yijie³; Ghafoori, Elyas²

1: Southeast University, 211189 Nanjing, China.; 2: Institute for Steel Construction, Faculty of Civil Engineering and Geodetic Science, Leibniz University Hannover, 30167 Hannover, Germany.; 3: Fusteel Co., Ltd., 313011 Huzhou, China.; 1907721149@qq.com

Tensile behavior of Fe-SMA bar reinforced UHPFRC

Shen, Xiujiang^{1,2}; Li, Yulin²; Randl, Norbert¹

1: Carinthia Unveristy of Applied Sciences, Austria; 2: Changsha University of Science & Technology, China; x.shen@fh-kaernten.at

Modeling pure shear in Z-shaped mortar specimens reinforced with SMA fibers

Makhmudov, Jaloliddin; Choi, Eunsoo; Kim, Kiyeon; Jang, Minkyung; Namgung, Min

Department of Civil and Environmental Engineering, Hongik University, Seoul 04066, Korea; jmax@g.hongik.ac.kr

Activation of shape memory Fe-SMA reinforced concrete beams subjected to localized fires

Martins-Robalino, Austin; Jasinski, Melody; Rajab, Riad; Palermo, Dan; Gales, John

York University, Canada; austinmr@my.yorku.ca

Seismic retrofit strategy based on self-centering rocking frames

Ferraioli, Massimiliano; **Mottola, Salvatore**; Pecorari, Osvaldo; Munerotto, Sergio

Department of Engineering, University of Campania "Luigi Vanvitelli, Via Roma, 9, Aversa, 81031, Italy; salvatore.mottola@unicampania.it

MS08-2: Hybrid construction and strengthening with wire arc additive manufacturing

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: BEY E17

Session Chair: Yvonne Ciupack

Session Chair: Leroy Gardner

Session Chair: Elyas Ghafoori

Session Chair: Vittoria Laghi

Session Chair: Vlad-Alexandru Silvestru

Large-scale WAAM setup for hybrid construction and strengthening

Ghafoori, Elyas

Leibniz University of Hannover, Germany; ghafoori@stahl.uni-hannover.de

Influences of shielding gas on wire arc additive manufacturing process for structural steel

Kampffmeyer, Dirk

Messer SE &Co. KGaA, Germany; dirk.kampffmeyer@messergroup.com

Hybrid DED-arc of multi-materials: mechanical properties and FE analysis

Imran, Aatif; Amraei, Mohsen; Salminen, Antti

University of Turku, Finland; mohsen.amraei@utu.fi

Mechanical performance and failure of ultrahigh-strength welded hybrid structures

Afkhami, Shahriar¹; Ahola, Antti²; Penttilä, Sakari¹; Lipiäinen, Kalle²; Lund, Hannu¹; Skriko, Tuomas¹

1: Laboratory of Welding Technology, LUT University, Lappeenranta, Finland; 2: Laboratory of Steel Structures, LUT University, Lappeenranta, Finland; Shahriar.afkhami@lut.fi

3D-scan based analysis of the relative rib area fR of additively manufactured reinforcement using WAAM

Locher, Luca; Braml, Thomas

University of the Bundeswehr Munich; luca.locher@unibw.de

Geometric imperfections and post-fire behavior of WAAM stub columns

Yan, Lu¹; Liu, Dechuang¹; Huang, Senbin²; Cai, Yancheng²; Mensinger, Martin¹

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MS10-2: Advances and applications of vibration-based structural health monitoring

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: POT 112

Session Chair: Enrico Baumgärtel

Session Chair: Silke Scheerer

How financial methods can help to evaluate sensor data

Beering, Carina

Helmut Schmidt University Hamburg, Germany; beeringc@hsu-hh.de

Assessing displacement estimation from velocity vs. acceleration: effectiveness and limitations for SHM applications

Imani Moghaddam, Hamid¹; Russo, Salvatore¹; Betti, Raimondo²; Stella, Alberto¹; Sietta, Anna¹

1: Iuav University of Venice, Italy; 2: Columbia University of New York, USA; hamidimani.m@gmail.com

Covariate-dependent functional principal component analysis for SHM

Wittenberg, Philipp¹; Neumann, Lizzie¹; Maes, Kristof²; Gertheiss, Jan¹

1: Helmut Schmidt University, Germany; 2: KU Leuven, Belgium; pwitten@hsu-hh.de

A simulated data-driven SHM framework for bridge infrastructures

Rillo, Vera; De Angelis, Alessandra; Maddaloni, Giuseppe

University of Sannio, Italy; v.rillo@studenti.unisannio.it

Investigating the dynamic characteristics of a viaduct with steel orthotropic deck

Calabrese, Angelo Savio¹; Gentile, Carmelo¹; Pagot, Riccardo²

1: Politecnico di Milano, Italy; 2: Autostrade Alto Adriatico S.p.A., Italy; angelosavio.calabrese@polimi.it

Effect of damage versus environmental variations on the background-resonant-inertial components

Geuzaine, Margaux

University of Liège, Belgium; mgeuzaine@uliege.be

MS13-2: Intelligent digital methods for extending the service life of structures beyond 100 years

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: POT 51

Session Chair: Chongjie Kang

Session Chair: Steffen Marx

Ontology-based integration of spatial sensor information in digital twins

Rolke, Fabian¹; Becks, Henrik²; Göbels, Anne¹; Schulz, Oliver¹; Beetz, Jakob¹

1: Design Computation, RWTH Aachen University; 2: Chair and Institute of Structural Concrete, RWTH Aachen University;
rolke@dc.rwth-aachen.de

Automatic semantic enrichment for BIM-based SHM

Rudenko, Iryna¹; Kähler, Philipp²; Rackwitz, Frank¹; Petryna, Yuri²

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i.rudenko@tu-berlin.de

Scan2SAM – a concept for the derivation of structural analytic models of bridges from point clouds

Vassilev, Hristo; Blankenbach, Jörg

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Towards reliable digital twins for bridges: quantifying model form uncertainty

Andrés Arcones, Daniel^{1,2}; Weiser, Martin³; Koutsourelakis, Phaedon-Stelios²; Unger, Jörg F.¹

1: Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; 2: Technical University of Munich (TUM), Germany; 3: Zuse Institute Berlin (ZIB), Germany; daniel.andres-arcones@bam.de

A surrogate model for approximating the load-bearing behavior of prestressed concrete bridges

Otto, Marie; Sprenger, Bjarne; Schnellenbach-Held, Martina

University of Duisburg-Essen, Germany; marie.otto@uni-due.de

Quantitative damage progression analysis using globally aligned time-series 3D digital models

Bae, Hyunjin; An, Yun-Kyu

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MS20: Earth observation and other remote sensing methods for infrastructure monitoring

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: BEY 245

Session Chair: Alois Vorwagner

Session Chair: Vazul Boros

Session Chair: Maria Pina Limongelli

Session Chair: Antje Thiele

Session Chair: Lydia Puttkamer

Session Chair: Iris Hindersmann

BBD-V: A national, transport-focused ground motion monitoring service in Germany

Stammler, Melanie¹; Afonso, Tiago¹; Brcic, Ramon²; Cziudai-Sonntag, Felix¹; Dörr, Nils³; Katharina, Fricke⁴; Hiller, Johannes¹; Kalia, Andre⁵; Konen, Lars⁵; Navarro-Sanchez, Victor²; Preußler, Vreni⁴; Jonas, Ziemer⁵; Florian, Zimmermann⁶

1: Federal Highway and Transport Research Institute, Germany; 2: Remote Sensing Technology Institute, German Aerospace Center, Germany; 3: Institute of Photogrammetry and Remote Sensing at KIT, Germany; 4: German Centre for Rail Traffic Research, Germany; 5: Federal Institute for Geosciences and Natural Resources, Germany; 6: Federal Institute of Hydrology, Germany; stammler@bast.de

Structural health monitoring of flood protection structures through improved InSAR processing

Dohnalik, Petr¹; Boros, Vazul¹; Kwapisz, Maciej¹; Leopold, Philip¹; Vorwagner, Alois¹; Thiele, Antje²; Evers, Madeline²

1: Austrian Institute of Technology, Austria; 2: Fraunhofer-IOSB, Germany; Petr.Dohnalik@ait.ac.at

Strategies for monitoring bridge portfolios by radar satellites

Boros, Vazul¹; Kwapisz, Maciej¹; Leopold, Philip¹; Kolomaznik, Jan²; Hlvacova, Ivana²; Martínez, César³

1: Austrian Institute of Technology, Austria; 2: GISAT, Czechia; 3: Bernard Gruppe, Austria; vazul.boros@ait.ac.at

Interpreting InSAR-derived bridge displacements through a calibrated finite element model

Liuzzo, Riccardo¹; Brasca, Andrea¹; Celli, Gaia¹; Giordano, Pier Francesco¹; Limongelli, Maria Pina¹; Piscini, Andrea²

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Design and implementation of a multi-channel ultra-low-power IoT-based strain monitoring system with edge computing and precise time synchronization

Tong, Jian-Hua¹; Lin, Yi-Ching²

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Raman spectroscopy-based stress monitoring of nuclear containment structures

Ha Eun, Park; Myung Soo, Kang; Yun-Kyu, An

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MS26-2: Retrofitting, strengthening and strategies to extend the service live for concrete and masonry structures

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · 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

Electromagnetic quality assessment of fiber orientation in cement-based composites

Carrera, Kristýna¹; Mára, Michal¹; Konrád, Petr¹; Máca, Petr²; Beckmann, Birgit²; Sovják, Radoslav¹

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Distribution patterns of surface tensile strength in low-strength concrete slabs

Berger, Jan¹; Marx, Steffen²; Bösche, Thomas¹

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The role of bond, friction and hook-bearing on anchor pull-out in low-strength concrete: experiments and design implications

Demir, Ugur¹; Akyol, Can²; Cavunt, Yavuz Selim³; Palaoglu, Zulkuf Rohat⁴; Bozgul, Berkay⁴; Avci, Ali Suayp⁴; Tako, Serhan⁴; Akpınar, Erkan⁵; Orakcal, Kutay⁶; İlki, Alper⁷

1: Izmir Institute of Technology; 2: Is Bankasi; 3: SİKA; 4: TUPRAS; 5: Kocaeli University; 6: Bogazici University; 7: Istanbul Technical University; ailki@itu.edu.tr

Experimental study on the creep behavior of old, preloaded concrete

Pech, Jenny¹; Herbers, Max²; Speck, Kerstin¹; Schacht, Gregor²; Marx, Steffen¹

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Smart sensing of restrained shrinkage in UHPC overlays using DFOS

Daneshvar, Dana¹; Robisson, Agathe²; Preinstorfer, Philipp¹

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Higher-order multivariate environmental influences in structural health monitoring

Neumann, Lizzie; Wittenberg, Philipp; Gertheiss, Jan

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MS28: Impact of climate change on infrastructure

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: BEY 117

Session Chair: Julian Unglaub

Inspection of rail and road infrastructure considering climate change related effects

Reinprecht, Volker¹; Rebhan, Matthias²; Kieffer, Scott¹

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Climate change effects on the durability and reliability of reinforced concrete structures

Landi, Filippo; Croce, Pietro

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Alternative evaluation approach to determine the chloride migration coefficient

Rokoß, Nils-Christian; Kapteina, Gesa

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The use of hyperspectral imaging for chloride detection in concrete in the presence of chloride-induced steel corrosion and protective coatings

Habbaba, Nura¹; Mustapha, Samir²; Dawy, Zaher³

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Towards system identification of degraded prestressed concrete bridges

Wessels, Jan Malte¹; Flack, Christian¹; Antonau, Ihar²; Kowalsky, Ursula¹

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PS4: Structural behaviour and performance of concrete and hybrid structures

Time: Wednesday, 26/Aug/2026: 4:30pm - 6:00pm · Location: BEY 137

Session Chair: Enzo Martinelli

Development of a Eurocode 2-compliant model for predicting the flexural behavior of chemically prestressed CTRC plates

Dhahir, Mohammed; Dräger, Jasmin; Beckmann, Birgit; Marx, Steffen

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A physically-based and code-aligned design method for longitudinal shear of RACCS

Saccone, Marta¹; Stochino, Flavio¹; Zucca, Marco¹; Simoncelli, Marco²

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Steel plate to concrete connections: comparison of elastic and plastic analysis methods

Della Corte, Gaetano

University of Naples Federico II, Italy; gaetano.dellacorte@unina.it

Flexural behavior of timber-concrete composite structures with dowel, notch and adhesive connections

Chen, Likang¹; Van der Sanden, Nick¹; Riexinger, Sven²; Vorel, Jan³; Wan-Wendner, Lin¹

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Experimental study on flexural and shear bearing capacities of naturally corroded RC beams

Xiang, Ting-Yu; Jiang, Chao; Gu, Xiang-Lin; Yu, Pei-Xi

Tongji University, China, People's Republic of; 2431009@tongji.edu.cn

Numerical simulation of torsional behavior of corroded reinforced concrete members

Yu, Pei-Xi; Jiang, Chao; Gu, Xiang-Lin

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