



25–27 May 2022

# IABSE Symposium Prague 2022

Challenges for Existing and Oncoming Structures



## Preliminary Technical Programme

ORGANISED BY  
CZECH GROUP OF IABSE

IN COOPERATION WITH  
CZECH TECHNICAL UNIVERSITY PRAGUE



# Content

<b>Programme at Glance</b>	<b>1</b>
<b>Scientific Programme Itinerary</b>	<b>4</b>
<b>Wednesday, 25 May 2022</b>	<b>4</b>
Plenary Session: Opening Ceremony	4
Keynote Session: Keynote Lectures I	4
Coffee Break	4
Special Session: The Storstrøm Bridge in Denmark – Challenges in Design and Construction	4
Scientific Session: Advanced Bridge Solution	5
Special Session: Structural Steel Connection Design – Challenges and Vision	6
Scientific Session: Wind, Vibrations and Fatigue	6
Scientific Session: Experimental Design of Structures	7
Lunch	7
Special Session: Ultra-High-Performance Concrete is Ready to Revolutionize	7
Scientific Session: Structural Health Monitoring	8
Scientific Session: Coming up Standards	9
Scientific Session: Seismic and Dynamic Design	9
Scientific Session: Diagnostics of Bridges	10
Coffee Break	10
Scientific Session: Railway Bridges	10
Scientific Session: Fatigue I	11
Scientific Session: Damage Repair and Retrofitting I	11
Scientific Session: Steel Connections	12
Scientific Session: Seismic Design and Testing	12
Social Programme: Welcome Reception	13
<b>Thursday, 26 May 2022</b>	<b>13</b>
Keynote Session: Keynote Lectures II	13
Coffee Break	13
Scientific Session: Landmark Bridges	13
Special Session: Bridge Management System and Building Information Modelling: Challenges and vision 1	14
Scientific Session: Advanced Modelling I	15
Scientific Session: Fatigue II	15
Scientific Session: Strengthening of Bridges I	16
Lunch	16
Scientific Session: Assessment of Existing Bridges I	17
Special Session: Bridge Management System and Building Information Modelling: Challenges and Vision 2	17
Special Session: Membrane Structures – Recent Achievements in Practice and Standardization	18
Scientific Session: New Bridge Solutions	18
Scientific Session: Footbridges	19
Coffee Break	19
Scientific Session: Architecture and Structures	19
Scientific Session: Assessment of Existing Bridges II	20
Scientific Session: Bolts and Anchors	20
Scientific Session: Damage Repair and Retrofitting II	21
Scientific Session: Innovative Materials and Solutions	22
<b>Friday, 27 May 2022</b>	<b>22</b>
Keynote Session: Keynote Lectures III	22
Coffee Break	22
Scientific Session: Large Bridges	23
Special Session: New European Standardisation on Monitoring, Safety Assessment and Bridge Maintenance	23
Scientific Session: Advanced Modelling II	24
Scientific Session: Infrastructure Design	24
Special Session: Design Assisted by Finite Element Analysis	25
Lunch	25
Scientific Session: Dynamic Analysis of Bridges	25
Scientific Session: Composite and Non-steel Materials – Structures and Bridges	26
Scientific Session: Challenging Bridges	27
Scientific Session: Seismic Design	27
Scientific Session: Dynamics of Structures	28
Coffee Break	28
Scientific Session: Advanced Models of Structures and Bridges II	28
Scientific Session: Design by FEA	29
Scientific Session: Bridge Details and Solutions	29
Scientific Session: Modern Methods of Design and Models	30
Scientific Session: Bridges and Bridge Modelling	30
Plenary Session: Closing Ceremony	31
<b>List of Posters</b>	<b>32</b>

# Programme at Glance

Wednesday, 25 May 2022

	Forum Hall	North Hall	Terrace 2 A	Terrace 2 B	South Hall 2 B
08:30	<b>Plenary Session:</b> Opening Ceremony				
09:00					
09:30	<b>Keynote Session:</b> Keynote Lectures I				
10:00					
10:30					
11:00	Coffee Break – Foyer/Exhibition Area				
11:30	<b>Special Session:</b> The Storstrøm Bridge in Denmark – Challenges in Design and Construction	<b>Scientific Session:</b> Advanced Bridge Solution	<b>Special Session:</b> Structural Steel Connection Design – Challenges and Vision	<b>Scientific Session:</b> Wind, Vibrations and Fatigue	<b>Scientific Session:</b> Experimental Design of Structures
12:00					
12:30					
13:00	Lunch – Foyer/Exhibition Area				
13:30					
14:00	<b>Special Session:</b> Ultra-High-Performance Concrete is Ready to Revolutionize	<b>Scientific Session:</b> Structural Health Monitoring	<b>Scientific Session:</b> Coming up Standards	<b>Scientific Session:</b> Seismic and Dynamic Design	<b>Scientific Session:</b> Diagnostics of Bridges
14:30					
15:00					
15:30	Coffee Break – Foyer/Exhibition Area				
16:00	<b>Scientific Session:</b> Railway Bridges	<b>Scientific Session:</b> Fatigue I	<b>Scientific Session:</b> Damage Repair and Retrofitting I	<b>Scientific Session:</b> Steel Connections	<b>Scientific Session:</b> Seismic Design and Testing
16:30					
17:00					
17:30	<b>Social Programme:</b> Welcome Reception – Foyer/Exhibition Area				
18:00					
18:30					
19:00					
19:30					

## Thursday, 26 May 2022

	Forum Hall	North Hall	Terrace 2 A	Terrace 2 B	South Hall 2 B
09:00	<b>Keynote Session:</b> Keynote Lectures II				
09:30					
10:00					
10:30	Coffee Break – Foyer/Exhibition Area				
11:00	<b>Scientific Session:</b> Landmark Bridges	<b>Special Session:</b> Bridge Management System and Building Information Modelling: Challenges and vision 1	<b>Scientific Session:</b> Advanced Modelling I	<b>Scientific Session:</b> Fatigue II	<b>Scientific Session:</b> Strengthening of Bridges I
11:30					
12:00					
12:30	Lunch – Foyer/Exhibition Area				
13:00					
13:30					
14:00	<b>Scientific Session:</b> Assessment of Existing Bridges I	<b>Special Session:</b> Bridge Management System and Building Information Modelling: Challenges and Vision 2	<b>Special Session:</b> Membrane Structures – Recent Achievements in Practice and Standardization	<b>Scientific Session:</b> New Bridge Solutions	<b>Scientific Session:</b> Footbridges
14:30					
15:00					
15:30	Coffee Break – Foyer/Exhibition Area				
16:00	<b>Scientific Session:</b> Architecture and Structures	<b>Scientific Session:</b> Assessment of Existing Bridges II	<b>Scientific Session:</b> Bolts and Anchors	<b>Scientific Session:</b> Damage Repair and Retrofitting II	<b>Scientific Session:</b> Innovative Materials and Solutions
16:30					
17:00					
17:30					
19:30	<b>Social Programme:</b> Gala Dinner – Restaurant Mlýnec				
20:00					
20:30					
21:00					
21:30					
22:00					

## Friday, 27 May 2022

	Forum Hall	North Hall	Terrace 2 A	Terrace 2 B	South Hall 2 B
09:00	<b>Keynote Session:</b> Keynote Lectures III				
09:30					
10:00					
10:30	Coffee Break – Foyer/Exhibition Area				
11:00	<b>Scientific Session:</b> Large Bridges	<b>Special Session:</b> New European Standardisation on Monitoring, Safety Assessment and Bridge Maintenance	<b>Scientific Session:</b> Advanced Modelling II	<b>Scientific Session:</b> Infrastructure Design	<b>Special Session:</b> Steel Structure Design Assisted by Finite Element Analysis
11:30					
12:00					
12:30	Lunch – Foyer/Exhibition Area				
13:00					
13:30					
14:00	<b>Scientific Session:</b> Dynamic Analysis of Bridges	<b>Scientific Session:</b> Composite and Non-steel Materials – Structures and Bridges	<b>Scientific Session:</b> Challenging Bridges	<b>Scientific Session:</b> Seismic Design	<b>Scientific Session:</b> Dynamics of Structures
14:30					
15:00					
15:30	Coffee Break – Foyer/Exhibition Area				
16:00	<b>Scientific Session:</b> Advanced Models of Structures and Bridges II	<b>Scientific Session:</b> Design by FEA	<b>Scientific Session:</b> Bridge Details and Solutions	<b>Scientific Session:</b> Modern Methods of Design and Models	<b>Scientific Session:</b> Bridges and Bridge Modelling
16:30					
17:00					
17:30					
17:45	<b>Plenary Session:</b> Closing Ceremony				
18:15					

# Scientific Programme Itinerary

IABSE Symposium Prague 2022  
25–27 May 2022

## Wednesday, 25 May 2022

### Plenary Session: Opening Ceremony

08:30–09:30

FORUM HALL

### Keynote Session: Keynote Lectures I

09:30–11:00

FORUM HALL

**Chairs:** Pavel Ryjáček, *Czech Republic*,  
Ysabel Guil Celada, *Spain*

09:30

#### **Carbon Concrete – Towards a climate neutral building industry**

Manfred Curbach, *Germany*

10:15

#### **Multilevel FEA and BIM for the design of structural steel**

František Wald, *Czech Republic*

### Coffee Break

11:00–11:30

FOYER/EXHIBITION AREA

### Special Session: The Storstrøm Bridge in Denmark – Challenges in Design and Construction

11:30–13:00

FORUM HALL

**Chairs:** Martin Svendsen, *Denmark*,  
Marco Raimondi, *Denmark*

11:30

#### **The New Storstrøm Bridge – From tender requirements to reality**

Barbara MacAulay, *Denmark*

- 11:43 **Independent check and validation activities for the New Storstrøm Bridge**  
Ysabel Guil Celada, *Spain*
- 11:56 **The New Storstrøm Bridge – Construction tolerances and precast structures installation challenges**  
Marco Raimondi, *Denmark*
- 12:09 **The New Storstrøm Bridge – Pier Design**  
Michael Needham, *United Kingdom*
- 12:22 **The New Storstrøm Bridge – Prestressed Box Girder Design**  
Luca Cargino, *Denmark*
- 12:35 **The New Storstrøm Bridge – Pylon and Stay Cable Design**  
James Wharton, *United Kingdom*
- 12:48 **Discussion**

## Scientific Session: Advanced Bridge Solution

11:30–13:00

NORTH HALL

**Chairs: Pablo Tarín, *Spain*,  
Nagy Zsolt, *Romania***

- 11:30 **Weathering Steel Bridges – the New European ECCS Design Guide**  
Peter Hatke, *Germany*
- 11:45 **Economical Steel Bridges**  
Martin Van Leeuwen, *Belgium*
- 12:00 **Structural stress analyses of long-span railway extradosed cable-stayed bridge based on rational construction state**  
Bruno Briseghella, *China*
- 12:15 **Methods and technologies for evaluating and minimising noise from road bridge expansion joints**  
Simon Hoffmann, *Switzerland*
- 12:30 **Modular composite bridges with integral sheet piling abutments for a time efficient construction**  
Mike Tibolt, *Luxembourg*
- 12:45 **Discussion**

## Special Session: Structural Steel Connection Design – Challenges and Vision

11:30–13:00

TERRACE 2 A

Chair: Milan Veljkovic, *Netherlands*

11:30

**Experimental Database on Resistance of Hybrid Joints with High-strength Bolts and Epoxy Adhesive**

Hitoshi Moriyama, *Japan*

11:45

**Mechanical behavior of multi-row riveted joint partially replaced by high strength bolts**

Yu Chen, *Japan*

12:00

**Numerical and experimental analysis of hanger-arch connections for tied arch bridges with rolled sections**

Riccardo Zanon, *Luxembourg*

12:15

**Experimental study on the cooperative slip/bearing limit state of high-strength bolted frictional girder connection**

Ryo Sakura, *Japan*

12:30

**Development of Ductile Cast Iron Components to Shorten On-site Assembly of Existing Steel Earth-Retaining Beams**

Yuma Sugimoto, *Japan*

12:45

**Discussion**

## Scientific Session: Wind, Vibrations and Fatigue

11:30–13:00

TERRACE 2 B

Chair: Alexandre Mathern, *Sweden*

11:30

**Active moment connection system for mitigating wind-induced vibrations**

Anurag Bura, *USA*

11:45

**Recent and future trends of onshore wind turbine foundations**

Jesus Armesto Barros, *Sweden*

12:00

**Development of an accurate low-cost device for structural vibration acquisition**

Syedmilad Komarizadehasl, *Spain*

12:15

**Improving of fatigue assessment method for stud shear connectors using experimental data from studs' test of existing road bridge**

Nikolai Kozak, *Russian Federation*



12:30 **Collapse Fragility Development of Electrical Transmission Towers Subjected to Hurricanes**

Jerome Hajjar, *USA*

12:45 **Discussion**

## Scientific Session: Experimental Design of Structures

11:30–13:00

SOUTH HALL 2 B

**Chair: Abdelhamid Bouchair, *France***

11:30 **Experimental study of the shallow wide-flange steel beam-column under cyclic Loading with constant compressive axial force**

Atsushi Sato, *Japan*

11:45 **A state-of-the-art, flexible, easy-to-replace plug-type expansion joint for the Delaware Memorial Bridges**

Gustav Gallai, *Austria*

12:00 **Structural characteristics and analysis simulation of new Core Truss structure**

Shunichi Nakagawa, *Japan*

12:15 **Experimental Testing of Mechanical Splices for Titanium Alloy Bars**

Mustafa Mashal, *USA*

12:30 **Large-Scale Flexural Testing of Concrete Beams Reinforced with Conventional Steel and Titanium Alloy Bars**

Mustafa Mashal, *USA*

12:45 **Discussion**

## Lunch

13:00–14:00

FOYER/EXHIBITION AREA

## Special Session: Ultra-High-Performance Concrete is Ready to Revolutionize

14:00–15:30

FORUM HALL

**Chair: Eugen Brühwiler, *Switzerland*,**

**Petr Tej, *Czech Republic***

14:00 **Short span UHPFRC railway bridge in Switzerland – from design to implementation**

Ngoc Thanh Trinh, *Switzerland*

- 14:15 **Design and construction of the “Chaumény” footbridge in posttensioned UHPFRC**  
Eugen Brühwiler, *Switzerland*
- 14:30 **Development of timber–UHPC composite bridge system**  
Milan Holý, *Czech Republic*
- 14:45 **Use of fibre reinforcement concrete for encased composite bridge sections – an opportunity?**  
Riccardo Zanon, *Luxembourg*
- 15:00 **New UHPFRC footbridges in the Czech Republic**  
Petr Tej, *Czech Republic*
- 15:15 **Discussion**

## Scientific Session: Structural Health Monitoring

14:00–15:30

NORTH HALL

**Chair: Robert Veit-Egerer, Austria,  
Miloš Drdácý, Czech Republic**

- 14:00 **Structural Health Monitoring of the Canakkale Bridge in Turkey, the largest monitoring system for the longer bridge in the world**  
Stephane Joye, *France*
- 14:15 **Monitoring to secure the Ile-de-Ré Viaduct, France**  
Stephane Joye, *France*
- 14:30 **Periodic assessment of an old concrete road bridge based on operational dynamic bridge behaviour with regard to structural integrity and the remaining load bearing capacity**  
Robert Veit-Egerer, *Austria*
- 14:45 **A Framework for Automated Bridge Inspections and Assessments with Visual Sensing Technology**  
Jerome Hajjar, *USA*
- 15:00 **Monitoring and assessment of bridge cable stays consisting of bundles of fully locked coil ropes**  
Rudolf Aroch, *Slovakia*
- 15:15 **Discussion**

## Scientific Session: Coming up Standards

14:00–15:30

TERRACE 2 A

Chair: Michael Schäfers, *Germany*

14:00

### Risk-Based Design of Bridges

Dana Prochazkova, *Czech Republic*

14:15

### Shear design of composite columns with sheet metal sections

Michael Schäfers, *Germany*

14:30

### From ETAG to EADs – The ongoing development of the European regulatory system governing the design and manufacture of bridge expansion joints

Simon Hoffmann, *Switzerland*

14:45

### Beam-column behaviour of stainless steel I-section members

Michal Jandera, *Czech Republic*

15:00

### Safety level of longitudinally stiffened plates under biaxial loading considering different launching bearings and eccentricities

Nadine Maier, *Germany*

15:15

### Discussion

## Scientific Session: Seismic and Dynamic Design

14:00–15:30

TERRACE 2 B

14:00

### Seismic Performance Evaluation of an Existing Low-Rise RC Building after Strengthening using the Nonlinear Static Procedure

Samard Buddee, *Thailand*

14:15

### Standardized Seismic Design of Modular High-rise Steel Structure Equipped with Viscous Dampers

Gang Wang, *China*

14:30

### Development of simplified Bridge-Weigh-In-Motion based on displacement evaluation using an accelerometer

Nanami Ashizawa, *Japan*

14:45

### Development of a 3D Finite-Element Modelling Technique Based on Data Processing Platform and Fatigue Analysis of Full-Scale Reinforced-Concrete Bridge Deck

Taiju Yoneda, *Japan*

15:00

### Proposal of nonlinear buffeting analysis framework for long-span bridges using Volterra series-based non-stationary wind force model

Aleena Saleem, *Japan*

15:15

### Discussion

## Scientific Session: Diagnostics of Bridges

14:00–15:30

SOUTH HALL 2 B

**Chairs:** Vanessa Saback, *Sweden*,  
Kouichi Takeya, *Japan*

14:00

**Subsurface defect detection in concretes by active infrared thermography**

Masoud Pedram, *United Kingdom*

14:15

**Crack monitoring by fibre optics and image correlation: a pilot study**

Vanessa Saback, *Sweden*

14:30

**Physics-informed Gaussian process model for Euler-Bernoulli beam elements**

Gledson Rodrigo Tondo, *Germany*

14:45

**Damage detection in concrete with coda wave interferometry using a 60 kHz ultrasonic signal**

Stefan Grabke, *Germany*

15:00

**Design of energy harvesting from temperature difference in concrete bridges**

Kouichi Takeya, *Japan*

15:15

**Discussion**

## Coffee Break

15:30–16:00

FOYER/EXHIBITION AREA

## Scientific Session: Railway Bridges

16:00–17:30

FORUM HALL

**Chairs:** Jakub Dolejš, *Czech Republic*,  
Jindřich Potůček, *Czech Republic*

16:00

**Replacing of a steel bridge by a rotation around the longitudinal axis**

Jakub Dolejš, *Czech Republic*

16:15

**Structural analysis of a historical masonry arch railway bridge in Gata de Gorgos, using a commercial Finite Element Analysis software**

Pablo Tarín, *Spain*

16:30

**The design of the anchoring of the steel double track railway integral bridge in Mechelen contrasting the historical Vierendeel bridges**

Bart De Pauw, *Belgium*

16:45

**System identification and finite element model updating of a multi-span railway bridge with uncertain boundary conditions**

Emrah Erduran, *Norway*

17:00 **Railway bridges – Monuments in the network**

Johanna Monka, *Germany*

17:15 **Discussion**

## Scientific Session: Fatigue I

16:00–17:30

NORTH HALL

**Chairs:** Lisa-Marie Gölz, *Germany*,

Philippe Van Bogaert, *Belgium*

16:00 **Fatigue behaviour of cracked concrete decks under cyclic shear loading**

Lena Stempniewski, *Germany*

16:15 **Fatigue analysis of existing railway bridges: strengthening through geometry improvement**

Hans Pétursson, *Sweden*

16:30 **Fatigue behaviour of tubular bracings in steel and composite bridges**

Lisa-Marie Gölz, *Germany*

16:45 **Experimental and numerical investigations on the fatigue behavior of high-strength concrete under combined shear-compression loading**

Henrik Becks, *Germany*

17:00 **The effect of undue transverse welding on the fatigue resistance of hanger connections for steel tied arch bridges**

Philippe Van Bogaert, *Belgium*

17:15 **Discussion**

## Scientific Session: Damage Repair and Retrofitting I

16:00–17:30

TERRACE 2 A

**Chairs:** Rob Vergoossen, *Netherlands*,

Milan Veljkovic, *Netherlands*

16:00 **West Seattle bridge rehabilitation**

Jan Žitný, *Czech Republic*

16:15 **Re-using existing prefabricated prestressed concrete girders in new bridges**

Rob Vergoossen, *Netherlands*

16:30 **Structural Assessment of existing masonry arch bridges**

Thomas Harrewijn, *Netherlands*

16:45 **Shear performance of replaced bolt shear connectors used in prefabricated steel-concrete composite beams**

Milan Veljkovic, *Netherlands*

17:00 **D4R7. Prievoz Interchange refurbishment at Bratislava**

Wojciech Wlodzimirski, *Poland*

17:15 **Discussion**

## Scientific Session: Steel Connections

16:00–17:30 TERRACE 2 B

16:00 **An experimental and numerical approach to investigate the load – deformation behavior of anchorages with headed fasteners in reinforced-concrete columns**

Taygun Firat Yolacan, *Luxembourg*

16:15 **An experimental investigation on base-plate joints of steel storage pallet racks**

Riccardo Zandonini, *Italy*

16:30 **Prototype of no-projected and Sandglass-shaped Bolt Having High Strength and Durability for Efficient Steel Structures Maintenance**

Tatsuya Hashimoto, *Japan*

16:45 **Investigating strength and stiffness of out-of-plane bending by biaxial testing of a nailed glulam connection**

Oskar Ranefjärd, *Sweden*

17:00 **New possibilities with the use of automated laser- laser-hybrid welding methods for steel bridges**

Johannes Veie, *Norway*

17:15 **Discussion**

## Scientific Session: Seismic Design and Testing

16:00–17:30 SOUTH HALL 2 B

**Chair: Taiki Giga, *Japan***

16:00 **Influence of design criteria on the seismic response of single-storey steel buildings**

Nicola Ceccolini, *Italy*

16:15 **Evaluation of Seismic Performance and Proposing the reinforcement methods for the Bridge with Rocking Piers Penetrating the Railway Platform**

Taiki Giga, *Japan*

- 16:30 **Experimental study of potential bearing uplift of long-span cable-stayed bridges under earthquakes**  
Wei Guo, *China*
- 16:45 **Evaluation of bidirectional seismic input compatible with a maximum-direction target spectrum**  
Alan Rivera-Figueroa, *Puerto Rico*
- 17:00 **Dynamic responses and failure pattern of suspended cable tray system through shaking table test**  
Chen Wu, *China*
- 17:15 **Discussion**

## Social Programme: Welcome Reception

17:30–19:30 FOYER/EXHIBITION AREA

# Thursday, 26 May 2022

## Keynote Session: Keynote Lectures II

- 09:00–10:30 FORUM HALL  
**Chair: Jan Vitek, Czech Republic**
- 09:00 **UHPFRC is ready to revolutionize existing and new structures**  
Eugen Brühwiler, *Switzerland*
- 09:45 **Extrapolation of test data in time, size and risk – a challenge for concrete design codes**  
Zdeněk P. Bažant, *USA*

## Coffee Break

10:30–11:00 FOYER/EXHIBITION AREA

## Scientific Session: Landmark Bridges

- 11:00–12:30 FORUM HALL  
**Chair: Rasmus Rempling, Sweden**
- 11:00 **Pelješac Bridge – design and construction**  
Marjan Pipenbaber, *Slovenia*

- 11:15 **New Pumarejo bridge over Magdalena river**  
Miguel Ortega, *Spain*
- 11:30 **The Design of the new Storstrom Bridge: design philosophy, structural concepts, fundamental design and innovative Construction Methods**  
Mario de Miranda, *Italy*
- 11:45 **Process and methods for verification of performance requirements for transport infrastructure**  
Rasmus Rempling, *Sweden*
- 12:00 **The New Little Belt Bridge – the role of the physical model and it's digital twin for the first suspension bridge in Denmark**  
Baris Wenzel, *Germany*
- 12:15 **Discussion**

## Special Session: Bridge Management System and Building Information Modelling: Challenges and vision 1

11:00–12:30

### NORTH HALL

**Chairs: Vanja Samec, *Austria*,  
Rade Hajdin, *Switzerland***

- 11:00 **BIM and BMS: current status and challenges**  
Rade Hajdin, *Switzerland*
- 11:15 **From data to bridge information model**  
Eetu Partala, *Finland*
- 11:30 **Geometry as a common ground for BMS and BIM**  
Dušan Isailović, *Serbia*
- 11:45 **Creating digital twins of existing bridges through AI-based methods**  
M. Saeed Mafipour, *Germany*
- 12:00 **Bridge Condition Assessment Based on Image Data and Digital Twins**  
Marcel Helmrich, *Germany*
- 12:15 **Discussion**



## Scientific Session: Advanced Modelling I

11:00–12:30

TERRACE 2 A

**Chair: Wolfgang Bachofner, Austria,  
Jörg-Martin Hohberg, Switzerland**

11:00

**Long-term concrete strain measurements of large-scale experiments exposed to environmental effects**

Wolfgang Bachofner, *Austria*

11:15

**Strength assessment of prestressed concrete sections under the combined action of internal forces**

Filip Svoboda, *Czech Republic*

11:30

**Analysis of Machine Learning for Detect Concrete Crack Depths Using Infrared Thermography Technique**

Young K. Ju, *Republic of Korea*

11:45

**Rehabilitation of Earth Retaining Wall for Slope Failure due to Strength Reduction and Seismic Accelleration, Considering Nonlinear Soil-Structure Interaction**

Jörg-Martin Hohberg, *Switzerland*

12:00

**Modelling rebar-concrete interaction, (bond) with a mesh-objective equivalent transition layer scheme for FE analysis of RC structures**

Hongning Ye, *United Kingdom*

12:15

**Discussion**

## Scientific Session: Fatigue II

11:00–12:30

TERRACE 2 B

**Chair: Atte Mikkonen, Finland,  
Dana Procházková, Czech Republic**

11:00

**Study on the Improvement of Fatigue Durability of Steel Box Girder Corner Plate by Peening at the Un-welded Area**

Takamitsu Nishishiba, *Japan*

11:15

**Cracking and Fatigue in Heavy Loaded Prestressed Concrete Bridge in Sweden**

Jaime Gonzalez-Libreros, *Sweden*

11:30

**Experimental investigations of welding induced temperature gradients and distortions in a segment of OSD**

Arvid Maarleveld, *Netherlands*

- 11:45 **Behavior of Othotropic Steel-UHPC Composite Bridge Deck under Cyclic Loading**  
Zhanchong Shi, *China*
- 12:00 **Verification of fatigue load model for stay cables**  
Atte Mikkonen, *Finland*
- 12:15 **Discussion**

## Scientific Session: Strengthening of Bridges I

11:00–12:30

SOUTH HALL 2 B

**Chairs: Paul Herrmann, *Austria*,  
Dimitra Achilopoulou, *Greece***

- 11:00 **Refurbishment, Strengthening and Retrofitting of Façades to increase Seismic Resistances**  
Matthias Roik, *Germany*
- 11:15 **Strengthening of road composite bridge using Fe-SMA**  
Jakub Vůjtěch, *Czech Republic*
- 11:30 **Refurbishment of Franzensbrücke in Vienna- retrofitting a historical steel arch bridge with composite plate in between limited time frame, restrictive urban environment and challenging structural requirements**  
Paul Herrmann, *Austria*
- 11:45 **Efficiency of adhesive layers in strengthening schemes or concrete elements**  
Dimitra Achilopoulou, *Greece*
- 12:00 **Influence of Material Stiffness on Bond Behaviour for CFRP and BFRP Strips Glued to Concrete Surface**  
Szymon Grzesiak, *Germany*
- 12:15 **Discussion**

## Lunch

12:30–14:00

FOYER/EXHIBITION AREA

## Scientific Session: Assessment of Existing Bridges I

14:00–15:30

FORUM HALL

Chair: Miguel Ortega, *Spain*,  
Ioannis Retzepis, *Germany*

14:00

### The assessment and condition survey of concrete prestressed bridges in the Czech railway network

Pavel Ryjáček, *Czech Republic*

14:15

### Evaluation Methods for the Existing Infrastructure in Germany

Ioannis Retzepis, *Germany*

14:30

### Condition assessment of the steel riveted roof structure of heritage value building in Sofia, Bulgaria

Dimitar Dakov, *Bulgaria*

14:45

### Assessment and retrofitting of existing infrastructures in urban area

Theodoros Tzaveas, *Qatar*

15:00

### Equilibrium verification of a steel bridge based on wind tunnel testing, traffic and wind speed probabilistic model

Jan Žitný, *Czech Republic*

15:15

### Discussion

## Special Session: Bridge Management System and Building Information Modelling: Challenges and Vision 2

14:00–15:30

NORTH HALL

Chair: Vanja Samec, *Austria*

14:00

### Enhancement in Indian Bridge Management System (IBMS) using analytics within BIM data model

Sachidanand Joshi, *India*

14:15

### Information is for Life not just for BIM Models

Philip Jackson, *United Kingdom*

14:30

### BMS and BIM: the Portuguese scenario

José Matos, *Portugal*

14:45

### Transportation Infrastructure Mega Project in China Upgrading the 4<sup>th</sup> Ring Transportation Corridor in Zhengzhou, Henan, China

Gernot Komar, *USA*

15:00 **Correlation between early- and later-age performance indices of early frost-damaged concrete**

Liu Dongyun, *Sweden*

15:15 **Discussion**

## **Special Session: Membrane Structures – Recent Achievements in Practice and Standardization**

14:00–15:30

TERRACE 2 A

**Chair: Jörg Uhlemann, *Germany*,  
Vipul Surana, *India***

14:00 **Design-driven Uniaxial and Biaxial Tensile Testing of Knitted Fabrics Applied to Construction**

Alara Kutlu, *Italy*

14:15 **European harmonized design for membrane structures**

Jörg Uhlemann, *Germany*

14:30 **Developing weathering induced ageing strength modification factors for PVC-coated polyethylene terephthalate fabrics**

Hastia Asadi, *Germany*

14:45 **Comparison of Stainless Steel with HYSD Rebars**

Vipul Surana, *India*

15:00 **FC Cincinnati, TQL Stadium featuring an elegant, efficient roof over a complex seating arrangement and a structural façade supporting state-of-the-art dynamic lighting technology was built to a fast-track schedule**

Joe Darcy, *United Kingdom*

15:15 **Discussion**

## **Scientific Session: New Bridge Solutions**

14:00–15:30

TERRACE 2 B

**Chair: Niklas Schweer, *Germany***

14:00 **Design and construction of the Second Hinterrhein Bridge**

Andreas Galmarini, *Switzerland*

14:15 **Effects of Truck Platooning on Highway Bridges**

Marian Ralbovsky, *Austria*

- 14:30 **Design and structural behavior analysis of a balanced cantilever bridge with a below suspended bicycle and pedestrian bridge**  
Niklas Schweer, *Germany*
- 14:45 **Building bridges from thin-walled pre-cast elements**  
Franz Untermarzoner, *Austria*
- 15:00 **Integral VFT-RS composite bridges – Efficient standard highway overpasses**  
Riccardo Zanon, *Luxembourg*
- 15:15 **Discussion**

## Scientific Session: Footbridges

14:00–15:30

SOUTH HALL 2 B

**Chair: Vojtěch Kolínský, Czech Republic,  
Pablo Tarín, Spain**

- 14:00 **New Prague footbridge connecting the districts of Holešovice and Karlín**  
Petr Tej, *Czech Republic*
- 14:15 **Neby Bru: one footpath, three ways of sustainability**  
Pablo Tarín, *Spain*
- 14:30 **Analysis of the Florida University Pedestrian Bridge Collapse**  
Vojtěch Kolínský, *Czech Republic*
- 14:45 **Bru over Otra, a new footbridge in Kristiansand (Norway)**  
Birger Opgård, *Norway*
- 15:00 **Pedestrian bridge over the River Elbe in Hradec Králové**  
Jiří Keclík, *Czech Republic*
- 15:15 **Discussion**

## Coffee Break

15:30–16:00

FOYER/EXHIBITION AREA

## Scientific Session: Architecture and Structures

16:00–17:30

FORUM HALL

**Chair: Petr Tej, Czech Republic,  
Elif Ünalán, Kuwait**

- 16:00 **Above Or Below – This Is The Question**  
Cezary Bednarski, *United Kingdom*

16:15 **1 Triton Square – Structural reuse for low-carbon architecture**

Eric Sturel, *United Kingdom*

16:30 **Education City Stadium, Doha, Qatar**

Johanna Isaksson, *United Kingdom*

16:45 **3D scanning applications in structural design**

Zsolt Nagy, *Romania*

17:00 **Challenges of a Bridge Design in Tight Urban Areas**

Elif Ünalán, *Kuwait*

17:15 **Discussion**

## Scientific Session: Assessment of Existing Bridges II

16:00–17:30

NORTH HALL

**Chair: Jaroslav Odrobiňák, Slovakia,  
Jaime Gonzalez-Libreros, Sweden**

16:00 **Stochastic degradation model analysis for prestressed concrete bridges**

José Matos, *Portugal*

16:15 **Trough constructions on arched bridges**

Conrad Pelka, *Germany*

16:30 **Torsion of a Norwegian bridge with partial box-action – a case study**

Victor Vestman, *Sweden*

16:45 **Evaluation of Riveted Railway Bridge Using Experimental-Numerical Analyses**

Jaroslav Odrobiňák, *Slovakia*

17:00 **Assessment of available methodologies to evaluate residual prestressing forces in concrete bridges**

Angélica María Agredo, *Sweden*

17:15 **Discussion**

## Scientific Session: Bolts and Anchors

16:00–17:30

TERRACE 2 A

**Chair: František Wald, Czech Republic**

16:00 **Quasi-static load bearing behaviour of hybrid grouted joints**

Jakob Boretzki, *Germany*

- 16:15 **Proposal of Ultrasonic Bolt Axial Force Evaluation Method Using Machine Learning and Signal Processing**  
Kensho Hirao, *Japan*
- 16:30 **Advancement of Eddy Current Based Evaluation of Axial Force of High-Strength Bolts**  
Ayako Akutsu, *Japan*
- 16:45 **Durability of Rock and Soil Anchor Kits Using Prestressing Steel Strands**  
Xiaomeng Wang, *Switzerland*
- 17:00 **Improvement of high slip coefficient of the combined joint using adhesive and high strength frictional bolts**  
Sae Fukutsuji, *Japan*
- 17:15 **Discussion**

## Scientific Session: Damage Repair and Retrofitting II

16:00–17:30

TERRACE 2 B

**Chair: Rudolf Aroch, *Slovakia***

- 16:00 **Rehabilitation and Strengthening of Bridges over Boa Vista River**  
Marcelo Melo Filho, *Brazil*
- 16:15 **Potential of memory steel reinforcement for shear strengthening of concrete bridge girders with I-sections**  
Muhammad Arslan Yaqub, *Belgium*
- 16:30 **Repair effect of externally bonded CFRP on propagation life of fatigue cracks initiated at in-plane welded gusset joints**  
Atsushi Matano, *Japan*
- 16:45 **Temperatures during weld repair in orthotropic steel decks**  
Rudolf Aroch, *Slovakia*
- 17:00 **Influence of anchor length and drilled hole on mechanical behaviour of masonry column structures strengthened with bonded anchor**  
Daisuke Sasaki, *Japan*
- 17:15 **Discussion**

## Scientific Session: Innovative Materials and Solutions

16:00–17:30

SOUTH HALL 2 B

**Chairs: Mario Rando Campos, Norway,  
Cosmin Chiorean, Romania**

16:00

### **Fly ash Based Banana Fiber-reinforced Geopolymer Mortar**

Vincent Pilien, *Philippines*

16:15

### **Mechanical performance of Alkali Treated Kawayan Tinik Bamboo Fiber Textile**

Roneh Glenn Libre Jr., *Philippines*

16:30

### **SporX – Design and construction of a ten-storey timber building in Drammen, Norway**

Mario Rando Campos, *Norway*

16:45

### **Control of fatigue in hydraulic steel structures**

Ryszard Daniel, *Netherlands*

17:00

### **Analysis and Design of Link Slab in Steel-Concrete Composite Bridge**

Liang XIAO, *China*

17:15

### **Discussion**

## Friday, 27 May 2022

### Keynote Session: Keynote Lectures III

09:00–10:30

FORUM HALL

**Chairs: Birger Opgård, Norway,  
Michal Jandera, Czech Republic**

09:00

### **The bridges in Italy: how to manage the infrastructural heritage guaranteeing safety and sustainability**

Marco Di Prisco, *Italy*

09:45

### **Steel structure design assisted by finite element analysis**

László Dunai, *Hungary*

### Coffee Break

10:30–11:00

FOYER/EXHIBITION AREA



## Scientific Session: Large Bridges

11:00–12:30

FORUM HALL

Chair: Bartłomiej Halaczek, *United Kingdom*

11:00

**Braila Suspension Bridge: Construction Methodology of the Pylons**

Oguz Berber, *Romania*

11:15

**The new City Bridge in Drammen, Norway: Designing a new urban landmark for an extreme environment**

Bartłomiej Halaczek, *United Kingdom*

11:30

**Reconstruction of the Vilemov Viaduct on the railway line Rumburk-Sebnitz**

Marek Rusňák, *Czech Republic*

11:45

**The new City Bridge of Drammen: An structural insight**

Birger Opgård, *Norway*

12:00

**Quisi Bridge: a new route for the railway line in Alicante, Spain**

Manuel Sánchez-Solís, *Spain*

12:15

**Discussion**

## Special Session: New European Standardisation on Monitoring, Safety Assessment and Bridge Maintenance

11:00–12:30

NORTH HALL

Chair: Diego Lorenzo Allaix, *Netherlands*

11:00

**Standardization of structural performance monitoring: existing documents and open questions**

Maria Pina Limongelli, *Italy*

11:15

**Review of surveying and non-destructive techniques for the condition assessment of in-service bridges**

Ana Sánchez Rodríguez, *Spain*

11:30

**Numerical model updating of an ageing bridge based on multidisciplinary experimental campaign**

Brais Barros González, *Spain*

11:45

**Review of the current state of standardisation on monitoring, data-informed safety assessment and decision-making regarding maintenance of the transport infrastructure**

Diego Lorenzo Allaix, *Netherlands*

12:00 **Future perspectives of standardisation for a safe European transport infrastructure**

Diego Lorenzo Allaix, *Netherlands*

12:15 **Discussion**

## Scientific Session: Advanced Modelling II

11:00–12:30

TERRACE 2 A

**Chairs: Richard Stroetmann, Germany,  
Martina Eliášová, Czech Republic**

11:00 **Advanced modeling of concrete bridges**

Jan Cervenka, *Czech Republic*

11:15 **New beam element for horizontally curved steel-concrete composite box girder bridges**

Iván Campo-Rumoroso, *Spain*

11:30 **Toward crack-based assessment of shear-distressed reinforced concrete infrastructure**

Jarrod Zaborac, *USA*

11:45 **Design for Manufacturing and Assembly-Oriented Parametric Modelling of Prefabricated Bridges**

Cuong Nguyen, *Republic of Korea*

12:00 **Discussion**

## Scientific Session: Infrastructure Design

11:00–12:30

TERRACE 2 B

**Chair: Michele W.T. Mak, United Kingdom,  
Michal Jandera, Czech Republic**

11:00 **New reinforcement concept for radial joints of precast tunnel segments**

Clemens Proksch-Weilguni, *Austria*

11:15 **Influence of large-scale asperities on the stability of concrete dams**

Adrian Ulfberg, *Sweden*

11:30 **Assessment of scour risk in hydraulic infrastructures. A bridge case study**

Ana Margarida Bento, *Portugal*

11:45 **Shear design in concrete beams without transverse reinforcement – A comparative study**

Michele W.T. Mak, *United Kingdom*

12:00 **Fatigue-resistant design of modular bridge structures made of precast concrete elements**

David Schaarschmidt, *Germany*

12:15 **Discussion**

## Special Session: Design Assisted by Finite Element Analysis

11:00–12:30

SOUTH HALL 2 B

**Chair: László Dunai, *Hungary*,  
Mohammad Ashour, *Kuwait***

11:00 **Finite element analysis of wind turbine tower with a tapered cross-section using various finite element models**

Mohammad Ashour, *Kuwait*

11:15 **Application of ABAQUS secondary development in finite element analysis of rebar behavior in reinforced concrete member**

Wang Yang, *China*

11:30 **Evaluation of Prestressed Reinforced Concrete Slab Punching Shear Using Finite Element Method**

Zhi Zhang, *USA*

11:45 **Numerical Investigation of Slab-Column Connections with Various Reinforcement Ratios**

Hadi Panahi, *Canada*

12:00 **Nonlinear analysis of reinforced concrete structural elements**

Ananth Ramaswamy, *India*

12:15 **Discussion**

## Lunch

12:30–14:00

FOYER/EXHIBITION AREA

## Scientific Session: Dynamic Analysis of Bridges

14:00–15:30

FORUM HALL

**Chairs: Martin Svendsen, *Denmark*,  
Antonia M. Kohl, *Germany***

14:00 **Advanced analysis of a pedestrian bridge and considerations on crowd-structure interaction**

Antonio De Luca, *USA*

- 14:15 **The New Storstrøm Bridge – Nonlinear Dynamic Ship Impacts**  
Martin Svendsen, *Denmark*
- 14:30 **Vehicle-bridge interaction: Influence of the train type on the dynamic response of bridges due to a train crossing**  
Antonia M. Kohl, *Germany*
- 14:45 **Effect of skew wind on curved long-span floating bridges**  
Pål Grøthe Sandnes, *Norway*
- 15:00 **Approach for the mathematical calculation of the damping factor of railway bridges with ballasted track**  
Andreas Stollwitzer, *Austria*
- 15:15 **Discussion**

## Scientific Session: Composite and Non-steel Materials – Structures and Bridges

14:00–15:30

### NORTH HALL

**Chair: Martina Eliášová, *Czech Republic*,  
Nora Susanne Bies, *Germany***

- 14:00 **Kagraner Steg – new GFRP pedestrian bridge in Vienna**  
Stoyan Ivanov, *Bulgaria*
- 14:15 **Tensile strength of the bent portion of GFRP rebars**  
Nora Susanne Bies, *Germany*
- 14:30 **Tests of glass banister panels with embedded laminated connections**  
Michaela Zdražilová, *Czech Republic*
- 14:45 **Stability and Resistance of Hybrid Composite Glass Structures under Seismic and Temperature Loads**  
Nikoleta Stamataki, *Greece*
- 15:00 **Adhesive two-part acrylate steel-glass and aluminium-glass connection – influence of temperature and thickness of adhesive layer**  
Markéta Zikmundová, *Czech Republic*
- 15:15 **Discussion**

## Scientific Session: Challenging Bridges

14:00–15:30

TERRACE 2 A

**Chair:** Miguel Ortega, *Spain*,  
Oguz Berber, *Romania*

14:00

**Balanced cantilever bridge, 125 m maximum span, in a high risk seismic area, at Wiwili, Nicaragua**

Jose Luis Sanchez Jimenez, *Spain*

14:15

**Evaluation of a Non-Prismatic Open Cross-Section Arch for the Toronto Port Lands Bridges**

Jonathan Werner, *Canada*

14:30

**Functionality, aesthetics and structural efficiency integrated into the design for an outstanding bridge on the access to the new T4 Terminal at Barajas Airport (Madrid)**

Miguel Ortega, *Spain*

14:45

**D4R7. New Danube Crossing at Bratislava**

Luis Martin-Tereso, *Spain*

15:00

**Addressing design and construction challenges for a complex elevated interchange over the sea**

Michael Tapley, *Hong Kong*

15:15

**Discussion**

## Scientific Session: Seismic Design

14:00–15:30

TERRACE 2 B

**Chairs:** Peter Paul Hoogendoorn, *Spain*,  
Katrina Mae Montes, *Japan*

14:00

**Nonlinear soil–structure interaction analysis of retaining walls subjected to pulse-like earthquakes**

Andrea Cruz-Chamorro, *Puerto Rico*

14:15

**Nonlinear Behavior Identification of HDR Bearing using Neural Network for Seismic Structural Design**

Katrina Mae Montes, *Japan*

14:30

**Wind and seismic design of steel preheater towers in cement plants. Adjusting ductility capacity to ductility demand for non-seismic design**

Peter Paul Hoogendoorn, *Spain*

- 14:45 **A Hysteretic Model of Compressive and Tensile Behavior for Laminated Rubber Bearings**  
Seita Komori, *Japan*
- 15:00 **A thermo-mechanical coupled model of hysteresis behavior of HDR bearings**  
Yuqing Tan, *Japan*
- 15:15 **Discussion**

## Scientific Session: Dynamics of Structures

14:00–15:30

SOUTH HALL 2 B

**Chairs:** Lara Bettinelli, *Austria*,  
Marco Martino Rosso, *Italy*

- 14:00 **Alternative approach for additional damping in dynamic calculations of railway bridges under high-speed traffic**  
Lara Bettinelli, *Austria*
- 14:15 **Dynamic Analysis and Innovative Design of a Kilometer Long Highway Bridge under Extreme Landslide Generated Wave Loadings**  
Jianping Jiang, *Canada*
- 14:30 **Vibration response due to group movements on a footbridge**  
Mehdi Setareh, *USA*
- 14:45 **Prediction of the floor vibration response due to walking excitation**  
Mehdi Setareh, *USA*
- 15:00 **Indirect estimate of concrete compression strength framework with FE model updating and operational modal analysis**  
Marco Martino Rosso, *Italy*
- 15:15 **Discussion**

## Coffee Break

15:30–16:00

FOYER/EXHIBITION AREA

## Scientific Session: Advanced Models of Structures and Bridges II

16:00–17:30

FORUM HALL

**Chair:** Richard Stroetmann, *Germany*

- 16:00 **Development of an orthotropic composite slab system for road bridges**  
Richard Stroetmann, *Germany*

- 16:15 **Externally prestressed concrete: anchor block 3D yield design**  
Agnès Fliscounakis, *France*
- 16:30 **A kinematics-based model for complete behaviour of RC dapped-end connections governed by re-entrant corner cracks**  
Chathura Rajapakse, *Belgium*
- 16:45 **On the use of Volterra series for modelling of nonlinear self-excited forces**  
Henrik Skyvulstad, *Norway*
- 17:00 **Discussion**

## Scientific Session: Design by FEA

16:00–17:30

NORTH HALL

**Chair: Paweł Hawryszków, *Poland***

- 16:00 **Parametric Study of Existing Concrete Trough Bridges using non-linear Finite Element Analysis**  
Silvia J. Sarmiento, *Sweden*
- 16:15 **Relating stress concentrations in triangular steel bridge piers to simple beam models**  
Philippe Van Bogaert, *Belgium*
- 16:30 **Full-scale Fatigue Simulations for Reinforced Concrete Bridge Slabs with Multi-scale Multi-chemo Physics FEM system**  
Yuya Takahashi, *Japan*
- 16:45 **Computational sensitivity analysis for structural model assessment under consideration of the construction stage process**  
Martin Füsseder, *Germany*
- 17:00 **Discussion**

## Scientific Session: Bridge Details and Solutions

16:00–17:30

TERRACE 2 A

**Chair: Stephan Fasching, *Austria*,  
Vojtěch Stančík, *Czech Republic***

- 16:00 **Horizontal bracing in steel I-girder bridges with composite concrete decks**  
Victor Vestman, *Sweden*
- 16:15 **An engineering approach to analyze displacement rate in embedded rail system coupled with bridge**  
Vojtěch Stančík, *Czech Republic*

16:30 **The role of key structural components such as bearings, expansion joints, dampers and STUs in addressing the challenges faced by railway bridges**

Filip Kostecký, *Czech Republic*

16:45 **Semi-precast segmental bridge construction method: Construction of a prototype and shear tests on cross-frames**

Stephan Fasching, *Austria*

17:00 **Discussion**

## Scientific Session: Modern Methods of Design and Models

16:00–17:30

TERRACE 2 B

**Chair: Cosmin Chiorean, *Romania*,  
Bidhan Chandra Roy, *India***

16:00 **Ultimate and Nominal Strength Capacity Evaluation of Composite Sections with Arbitrary Shapes at Elevated Temperatures**

Cosmin Chiorean, *Romania*

16:15 **Cost and process optimization of precast segmental bridges in Israel**

Jindrich Potucek, *Czech Republic*

16:30 **Historic Building Information Modeling for Conservation and Management: A case for using HBIM for Heritage Conservation as part of Urban Infrastructure**

Bidhan Chandra Roy, *India*

16:45 **Discussion**

## Scientific Session: Bridges and Bridge Modelling

16:00–17:30

SOUTH HALL 2 B

**Chairs: Francesco Presta, *United Arab Emirates*,  
Xavier Gamme, *Belgium***

16:00 **Design of a flyover for the SAAR Interchange in Bahrain**

Francesco Presta, *United Arab Emirates*

16:15 **Load Sharing System Performance considering Each Member contribution for Plate Girder Bridges with Corrosion Damages**

Ryoga Oura, *Japan*

16:30 **Design and behavior analysis of a long free expansion length, multi-span, V-shaped pier supported bridge**

Xavier Gamme, *Belgium*



- 16:45 **Loss of cable – design criteria for cable stayed bridges**  
Atte Mikkonen, *Finland*
- 17:00 **New developments in the design of Z-shaped steel sheet pile walls**  
Alexander Enders, *Germany*
- 17:15 **Practical Guidance for Design of Steel Truss Footbridges**  
Abhijith Raghuraj Nair, *India*
- 17:30 **Discussion**

## **Plenary Session: Closing Ceremony**

---

17:45–18:15 FORUM HALL

# List of Posters

## **PS-01 Design methodology for Roads Bridges located on Chilean copper miner roads**

Matias A. Valenzuela<sup>1</sup>, Francisco Hernandez<sup>1</sup>

<sup>1</sup> Pontificia Universidad Católica de Valparaíso, Construction Engineering, Valparaíso, Chile

## **PS-02 Quantifying the Environmental Impact of Railway Bridges Using Life Cycle Assessment: A Case Study**

Majid Al-Gburi<sup>1</sup>, Jaime Gonzalez-Libreros<sup>1</sup>, Gabriel Sas<sup>1</sup>, Martin Nilsson<sup>1</sup>

<sup>1</sup> Luleå University of Technology, Division of Structural and Fire Engineering- Department of Civil- Environmental and Natural Resources Engineering, Luleå, Sweden

## **PS-03 State of the art of typologies of piers and abutments of existing Chilean road bridges, considering the risk of scour**

Matias A. Valenzuela<sup>1</sup>, Carlos Gaete<sup>1</sup>

<sup>1</sup> Pontificia Universidad Católica de Valparaíso, Construction Engineering, Valparaíso, Chile

## **PS-04 Laser- and laser-hybrid welding of steel bridge structures**

Cato Dørum<sup>1</sup>, Johannes Veie<sup>1</sup>, Tore Askeland<sup>2</sup>

<sup>1</sup> Norwegian Public Roads Administration, Construction, Hamar, Norway

<sup>2</sup> Norwegian Public Roads Administration, Construction, Otta, Norway

## **PS-05 An analysis of the potential for improving cement efficiency through functionally graded concrete elements**

Jessica Forsdyke<sup>1</sup>, Mar Giménez Fernández<sup>1</sup>, Janet Lees<sup>1</sup>

<sup>1</sup> University of Cambridge, Department of Engineering, Cambridge, United Kingdom

## **PS-06 Resolution improvement of Low-Cost MEMS accelerometer by aligning Simultaneous sensors**

Syedmilad Komarizadehasi<sup>1</sup>, Fidel Lozano<sup>2</sup>, Mahyad Komary<sup>1</sup>, Jose Antonio Lozano-Galant<sup>2</sup>, Jose Turmo<sup>1</sup>

<sup>1</sup> Universitat Politècnica de Catalunya, Department of Civil and Environment Engineering, Barcelona, Spain

<sup>2</sup> Universidad de Castilla-La Mancha, Department of Civil Engineering, Castilla-La Mancha, Spain

## **PS-07 Solution to relieve urban traffic Congestion “CHANDIGARH-KHARAR ELEVATED ROAD – A Case Study”**

Harpreet Singh<sup>1</sup>, Suniti Rautela<sup>1</sup>

<sup>1</sup> B&S Engineering Consultants Pvt Ltd, Bridge Design, Noida, India

## **PS-08 Application of Damped Outriggers in Renovation of Super Tall Building Structures**

Daohang Hu<sup>1</sup>, Xin Zhao<sup>2</sup>, Gang Wang<sup>1</sup>

<sup>1</sup> Tongji University, Department of Structural Engineering, Shanghai, China

<sup>2</sup> Tongji University, Department of Structural Engineering, Shanghai, China

## **PS-09 The Implementation Potentials of BIM in Bridge Maintenance Workflows**

Sebastian Baumgartner<sup>1</sup>, Omar El-Mahrouk<sup>1</sup>, Markus Vill<sup>1</sup>

<sup>1</sup> University of Applied Sciences FH Campus Wien, Building and Design, Vienna, Austria

## **PS-10 Combined LoD – Definition for Bridge Maintenance and 3D City Maps**

Omar El-Mahrouk<sup>1</sup>, Sebastian Baumgartner<sup>1</sup>, Markus Vill<sup>1</sup>

<sup>1</sup> University of Applied Sciences FH Campus Wien, Building and Design, Vienna, Austria

**PS-11 BIM authoring and Data Models for Bridge Maintenance Systems in Korea****Changsu Shim<sup>1</sup>, Roh Kitae<sup>2</sup>, Ns Dang<sup>3</sup>**<sup>1</sup> Chung-Ang University, Dept. of Civil-Env. & Urban, Seoul, Republic of Korea<sup>2</sup> Chung-Ang University, Dept. of Civil Engineering, Seoul, Republic of Korea<sup>3</sup> Chung-Ang University, Dept. of Civil Eng., Seoul, Republic of Korea**PS-12 Instabilities in slender flanged cruciform steel columns. Analysis and evaluation of the influence of external and internal restraints on torsional and distortional buckling****Peter Paul Hoogendoorn<sup>1</sup>, Ignacio Ares Gestal<sup>1</sup>, José Antonio Franco López<sup>2</sup>**<sup>1</sup> MSFPA, Engineering Department, Madrid, Spain<sup>2</sup> MSFPA, Technical Director, Madrid, Spain**PS-13 Fabrication of a device testing bonded joint strength under combined stress****Kumiko Kiyono<sup>1</sup>, Thay Visal<sup>2</sup>, Nakamura Hitoshi<sup>1</sup>, Horii Hisakazu<sup>3</sup>**<sup>1</sup> Tokyo Metropolitan University, Graduate School of Urban Environmental Sciences- Department of Civil and Environmental Engineering, Hachioji-shi, Japan<sup>2</sup> Utsunomiya University, Department of Civil Engineering and Regional Design, Utsunomiya-shi, Japan<sup>3</sup> Konishi Co.-Ltd., Osaka Research Institute, Osaka-shi, Japan**PS-14 Experimental and numerical study on unequal lateral impact behavior of RC circular members****Khalil Al-Bukhaiti<sup>1</sup>, liu Yanhui<sup>1</sup>, Zhao Shichun<sup>1</sup>**<sup>1</sup> Southwest Jiaotong University, School of Civil Engineering, Chengdu, China**PS-15 Izmit Bay Suspension Bridge- Response of Active Mass Damper Using Finite Element Analysis****Oguz Berber<sup>1</sup>**<sup>1</sup> Bridge Engineer, Technical Department, Braila, Romania**PS-16 Data-informed building design using artificial intelligence****Linda Cusumano<sup>1</sup>, Rasmus Rempling<sup>1</sup>, Robert Jockwer<sup>1</sup>, Mats Granath<sup>2</sup>, Nilla Olsson<sup>3</sup>**<sup>1</sup> Chalmers University of Technology, Architecture and Civil Engineering, Gothenburg, Sweden<sup>2</sup> Gothenburg University, Department of Physics, Gothenburg, Sweden<sup>3</sup> NCC Building Sweden AB, Technology and Sustainability, Malmö, Sweden**PS-17 Hyperbox modeling for externally bonded CFRP beams****Alvin Chua<sup>1</sup>, Jason Maximino Ongpeng<sup>1</sup>, Kathleen Aviso<sup>2</sup>**<sup>1</sup> De La Salle University, Civil Engineering, Manila, Philippines<sup>2</sup> De La Salle University, Chemical Engineering, Manila, Philippines**PS-18 Seismic detailing of single span bridges to AASHTO for the state of Nevada, US****Pradeep Kancharla<sup>1</sup>, Gopalakrishnan Sivasamynathan<sup>2</sup>, Gajanan Wagle<sup>3</sup>**<sup>1</sup> Design Engineer- Atkins- member of the SNC-Lavalin Group-, Transportation - Bridges, 10<sup>th</sup> Floor- Safina Towers- 3 Ali Asker Road- Bangalore 560052- Karnataka- INDIA, India<sup>2</sup> Lead Engineer- Atkins- member of the SNC-Lavalin Group, Transportation - Bridges, 10<sup>th</sup> Floor- Safina Towers- 3 Ali Asker Road- Bangalore 560052- Karnataka- INDIA, India<sup>3</sup> Technical Head- Atkins- member of the SNC-Lavalin Group-, Transportation, 10<sup>th</sup> Floor- Safina Towers- 3 Ali Asker Road- Bangalore 560052- Karnataka- INDIA, India**PS-19 Experimental Study of Link Slab in Steel-Concrete Composite Bridge****Liang Xiao<sup>1</sup>, Qingtian Su<sup>1</sup>, Fuyu Wang<sup>1</sup>**<sup>1</sup> Tongji University, College of civil engineering, Shanghai, China**PS-20 Investigation of damage in reinforced concrete deck slabs of an existing bridge through ambient vibration measurements and finite element analysis****Sania Gohar<sup>1</sup>, Yasunao Matsumoto<sup>1</sup>, Satoru Sakuma<sup>2</sup>**<sup>1</sup> Saitama University, Civil and Environmental Engineering, Saitama, Japan<sup>2</sup> East Nippon Expressway Co.-Ltd., Kanto Regional Head Office, Saitama, Japan

