

3rd *fib* YMG Symposium on Concrete and Concrete Structures Concrete challenges in a sustainable perspective

Final Program

9th November 2023

8:30-9:00	Registration desk
9:00-9:45	Opening ceremony Marta Del Zoppo - Chair of <i>fib</i> Italy YMG Paolo Castaldo - Welcome to Polito David Fernandez Ordonez - <i>fib</i> Secretary Marco di Prisco - <i>fib</i> Presidium Alberto Meda - <i>fib</i> Italy
9:45-10:00	The new <i>fib</i> TG2.14 “Open-source code development by the <i>fib</i>” <i>Morten Engen, Chair of TG2.14</i>
10:00-10:45	Keynote "Reliability aspects in damaged existing structures" <i>Giuseppe Mancini, Politecnico di Torino, Sintecna, Sacertis</i>
10:45-11:15	Coffee Break
11:15-13:30	Session 1 "Analysis, design and modelling" <i>Chairs: Alberto Meda, Paolo Castaldo, Marta Del Zoppo</i> Blind prediction of an experimental test on a dapped-end beam through finite element analysis Chiara Di Salvatore Danilo D'Angela Federico Tuozzo Gennaro Magliulo Massimo Acanfora Edoardo Cosenza Predicting Hysteretic Damping of Rectangular Concrete Columns Subjected to Seismic Loading using Artificial Neural Networks Hollman Putoy López Rubén D. López-Carreño Ricardo Pieralisic Luis A. Montoya-Coronado Design of RC wall structures: a comparison between the current and the upcoming Eurocodes Luca Danesi Andrea Belleri Paolo Riva Failure-mode Scale-transitions in Reinforced Concrete Structures Renato Cafarelli Federico Accornero Alberto Carpinteri Probabilistic Evaluation of the Robustness of a Reinforced Concrete Frame Designed in Seismic Area Elena Miceli Luca Giordano Paolo Castaldo Crack-width driven design of steel fiber reinforced concrete precast watertight structures Danilo Di Giacinto Ali Pourzarabi Gerhard Vitt Hendrik Thoof

Numerical investigation of displacement compatibility and interaction between reinforced concrete walls forming a system

Verdiana Miceli | Livio Pedone | Simone D'Amore | Michele Matteoni | Farhad Dashti | Patricio Quintana Gallo | Stefano Pampanin

Preliminary numerical investigation on punching shear resistance of post-tensioned fibre reinforced concrete elevated slabs

Chiara Gaddi | Matteo Colombo | Marco di Prisco

Reinforced concrete dapped-end beams subjected to corrosion-induced deterioration: a preliminary numerical investigation

Katherina Flores Ferreira | Marco Carlo Rampini | Giulio Zani | Marco di Prisco

Numerical Simulation of the Bond Behaviour of FRCM Systems after Elevated Temperatures Exposure

Alfredo Micieli | Francesco Campolongo | Pietro Mazzuca | Luciano Ombres

13:30-14:30 **Lunch Break**

14:30-16:30 **Session 2 "Existing structures"**

Chairs: Andrea Prota, Michele Mak, Simone Labò

Seismic Behaviour of Exterior Reinforced Concrete Beam-Column Joints: Experimental and Numerical Evaluation

Teklewoin Haile Fitwi | Lorenzo Hofer | Dario De Domenico | Mariano Angelo Zanini | Carlo Pellegrino | Flora Faleschini

Analytical study of cable corrosion effects due to lack of mortar injection in a post-tensioned concrete bridge

Emma Ghini | Luca Tomassetti | Matteo Marra | and Stefano Silvestri

Numerical investigation on the seismic residual capacity of reinforced concrete beams' plastic hinges

Giulia Nicolò | Livio Pedone | Michele Matteoni | Stefano Pampanin

Influence of prestress on shear strength: experimental program

Matteo Lamberti | Giulia Rossini | Stefano G. Mantelli | Fausto Minelli | Giovanni Plizzari

Evaluation of residual stresses in prestressed concrete girders: experimental and analytical study

Giulia Rossini | Matteo Lamberti | Stefano G. Mantelli | Fausto Minelli

Seismic assessment of infilled RC frame structures: analysis and analytical estimation of the internal forces due to frame-infill interaction

Marilisa Di Benedetto | Fabio Di Trapani | Massimo Petracca | Guido Camata

I-BIM for Asset Information Management of existing bridges

Chiara Gragnaniello | Giulio Mariniello | Giuseppe Augugliaro | Canio Mennuti | Antonio Bilotta | Domenico Asprone

Life cycle environmental impact of traditional and innovative retrofitting strategies for precast concrete structures

Martina Caruso | Francesco Cavalieri | Davide Bellotti | Roberto Nascimbene

Effects of corrosion on the bending moment-curvature diagram of post-tensioned concrete elements

Matteo Marra | Emma Ghini | Michele Palermo | Stefano Silvestri

16:30-17:00 Coffee break

17:00-19:00 **Session 3 "Durability"**

Chairs: Diego Talledo, Diego Gino

"Durability Assessment-based Design" approach for structural applications of advanced cement-based materials.

Francesco Soave | Liberato Ferrara

Concrete fatigue life assessment: a railway bridge case study

Marco Martino Rosso | Angelo Aloisio | Massimo Fragiaco | Giuseppe Carlo Marano | Rocco Alaggio

Empirical correlation between electrical resistivity and strain development in concrete under compression

M. A. Alrazak | A. Benedetti

The impact of amorphous calcium aluminate powder on the durability of blended concrete system

Nora AL-Ansari | Abbas AL-Ameeri

Silane-based corrosion inhibitor to reduce the carbonation risk of existing Italian high-speed railway's tunnels

Denny Coffetti | Simone Rapelli | Andrea Nicoletti | Luigi Coppola

Calibrating a crack self-healing kinetic law for Ultra High Performance Concrete from the ReSHEALience experimental campaign

Zhewen Huang | Estefania Cuenca | Liberato Ferrara

Influence of corrosion inhibitors on the performance of ferrocement specimens subjected to corrosive environment

Erica Lenticchia | Greta Bruschi | Irene Matteini | Gerardo Sorrentino | Rosario Ceravolo | Paolo Faccio | Francesco Tondolo

Experimental behaviour of PBO-FRCM systems subjected to elevated temperature

Francesco Campolongo | Alfredo Micieli | Pietro Mazzuca | Luciano Ombres

Study on the structural defects of existing bridges according to the Italian guidelines 2020

Andrea Miano | Annalisa Mele | Irene Della Ragione | Antimo Fiorillo | Marco Di Ludovico | Andrea Prota

20:00 Social dinner @ Circolo Ufficiali di Torino

10th November 2023

8:15-8:45 Registration desk

8:45-9:30 **Keynote "A Tale of Two Concretes: the Journey of Recycled Aggregate Concrete and Macro-Synthetic Fibre Reinforced Concrete towards European Standards"**
Nikola Tasic, Universitat Politècnica de Catalunya (UPC)

9:30-11:15 **Session 4 "Retrofit of existing structures"**

Chairs: Ciro Del Vecchio, Giuseppe Melcangi, Simone Spagnuolo

Analysis of the experimental response of a two-story frame retrofitted with thermal insulation coating

Carmine Moliterno | Ciro Del Vecchio | Marco Di Ludovico | Alberto Balsamo | Andrea Prota

Contribution of in-plane transfer forces to the seismic demand on floor diaphragms

Michele Milesi | Chiara Passoni | Alessandra Marini

Textile-Reinforced Mortars based on plant fibers: characterisation and numerical analysis on masonry structures

Bruno Paolillo | Marco Pepe | Rosario Lombardi | Giuseppe Ferrara | Enzo Martinelli

Analytical interpretation of the mechanical behaviour of FRCM-strengthened RC coupling beams

Marco Carlo Rampini | Giulio Zani | Matteo Colombo | Marco di Prisco

Proposal for an equivalent strut model for Cross Laminated Timber infills in Reinforced concrete frames

Carlotta Pia Contiguglia | Cristoforo Demartino | Camillo Nuti

Experimental tests on Steel Jacketing Retrofitting of Concrete Bridges Gerber Saddles

Mario Ferrara | Gabriele Bertagnoli | Luca Giordano | Marzia Malavisi

Finite element analyses of shear-critical prestressed girders strengthened with High Performance Fiber Reinforced Concrete

Anna Bontempi | Nico Di Stefano | Fausto Minelli | Giovanni Plizzari

An experimental study on the mechanical and thermal properties of graphene-reinforced screeds

Cristiano Giuseppe Coviello | Sulyman Mansour | Fabio Rizzo | Dora Foti

An analytical proposal to calculate splitting bearing capacity of FRC elements under partially loaded area

Ivan Trabucchi | Giuseppe Tiberti | Giovanni Plizzari

11:15-11:45 Coffee Break

11:45-13:15 **Session 5 "Sustainability"**

Chairs: Nikola Tasic, Costantino Menna, Alessandro Morbi

Short- and long-term deformative properties of concrete containing Electric Arc Furnace slags

Daniel Trento | Flora Faleschini

Sustainability analysis of code-based reinforced concrete secondary elements: preliminary analysis

Vittoria Borghese | Cristoforo Demartino | Silvia Santini | Camillo Nuti

Timber-concrete hybrid slabs: assessment of a new indicator on sustainability

Laura Corti | Giovanni Muciaccia

CO2 mineralization process of industrial by-products for the production of sustainable mortars

Francesca Bonfante | Giuseppe Ferrara | Pedro Humbert | Jean-Marc Tulliani | Paola Palmero

Design, mechanical and structural characterization of sustainable and high-performance concrete

Vincenzo Romanazzi | Francesco Micelli | Marianovella Leone | Maria Antonietta Aiello

Designing reinforced concrete piles with minimum embodied carbon

Kareem Abushama | Will Hawkins | Loizos Pelecanos | Tim Ibell

Investigation on the suitability of recycled concrete as a source of coarse aggregate replacement in concrete

Humaira Fataar

Case study on High-Performance-Fiber-Reinforced-Concrete manufactures made with recycled steel fibers from End-Life-Tires

Alessandro Fantilli | F. Dehkordi

13:15-14:15 **Lunch break**

14:15-16:00 **Session 6 "Cementitious composites"**

Chairs: Antonino Recupero, Giuseppe Ferrara, Giulio Zani

The influence of hybrid fibre configuration on compressive properties of ultra-high-performance concrete

Ingrid Lande | Rein Terje Thorstensen

Influence of carbon nanotube dosage on the mechanical strength of cement mortars

Eryk Goldmann | Marcin Górski | Barbara Klemczak

Three-point bending tests of concrete notched beams with different content of macro-synthetic PVA fibers

Veronica Bertolli | Mohammad Minhajur Rahman | Tommaso D'Antino | Christian Carloni

Minimum reinforcement condition in fibre-reinforced and hybrid-reinforced concrete beams

Alessio Rubino | Federico Accornero | Alberto Carpinteri

Effect of a random distribution of mortar strength on the shear bond behaviour of FRCM composites

Giovanni Minafò | Marielisa Di Leto | Lidia La Mendola

Investigation of graphene nanoplatelets agglomeration in cement composites using X-ray computed tomography

Zhaohua Wang | Meini Su | Yong Wang

Laboratory tests on cement mortars manufactured with hemp wastes

Emilia Meglio | Antonio Formisano

Size effect in bending of High Performance Fiber Reinforced Concrete (HPFRC) thin slabs

Sara Basci | Matteo Colombo

16:00-16:30 Coffee break

16:30-18:00 Session 7 "Monitoring and performance optimization"

Chairs: Simona Bianchi, Fabio Di Trapani

Setup methodology for real-time monitoring through fiber optical system: a twentieth century skyscraper

Monica Capasso | Angelo Forte | Silvia Santini

Monitoring of tunnel lining performance: comparison between full-scale test and numerical modelling

Giovanni Bongiorno | Alessio Calicchia | Alberto Meda | Simone Spagnuolo

A Multi-Objective Particle Swarm Optimization Algorithm for the Model Updating of Bridge Infrastructures

Miriam De Luca | Giulio Mariniello | Daniele Coluccino | Tommaso Pastore | Daniele Coluccino | Domenico Asprone

Models Uncertainties Assessment of fib Model Code 2020 and Second-Generation Eurocode 2 Transmission Length Formulations

Sergio Belluco | Flora Faleschini | Lorenzo Hofer | Carlo Pellegrino

A Statistical Anomaly Detection Approach to Identify Tendon Damages in Prestressed Concrete Beams

Giulio Mariniello | Tommaso Pastore | Giuseppe Augugliaro | Antonio Bilotta | Domenico Asprone

Fragility curves for low-damage rocking dissipative connections of precast concrete buildings

Michele Matteoni | Jonathan Ciurlanti | Simona Bianchi | Stefano Pampanin

Participating Formwork with CFRP Textile for Shape-Optimised Concrete Beams: Opportunities and Challenges

Amila Jayasinghe | Emmanuel Momoh | Mohammad Hajsadeghi | John Orr | Raffaele Vinai | Prakash Kripakaran | Ken Evans

Numerical modelling and experimental validation of multilayer daytime radiative coolers

Ignacio Peralta | Claudia Fabiani | Victor D. Fachinotti | Antonio Caggiano | Anna L. Pisello

Optimization of the energy performance of building envelopes accounting for structural constraints

Mahdi M. K. Zanjani | Victor Fachinotti | Antonio Caggiano

18:00-18:30 Closing Ceremony and Awards

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