TECHNICAL PROGRAM

September 15–17, 2025
Lausanne, Switzerland

SAHC 2025

14th International Conference on Structural Analysis of Historical Constructions

EPFL SGEB DiSTRUCT solutions fokus GmbH Leipzig metigo MAP

Graphic Designer
Trinidad Suazo Vacarezza

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01 Welcome message

It is with great pleasure that we welcome you to the 14th International Conference on Structural Analysis of Historical Constructions (SAHC 2025) and to the picturesque city of Lausanne.

Since 1995, the SAHC conference series has been the leading international forum for sharing research, innovation, and practical advances in the protection of built cultural heritage. Each edition brings together engineers, researchers, academics, and professionals from around the world who share a passion for safeguarding heritage structures. This year, we are delighted to welcome over 550 participants from more than 50 countries, making SAHC 2025 the largest event in the history of the series.

The theme of this edition highlights the growing role of digital tools in heritage protection. The digital era offers vast opportunities for safer, more efficient, and sustainable conservation—when paired with a deep understanding of the material, structural, and architectural characteristics of cultural heritage.

We are deeply grateful to our host, EPFL, and the members of the Earthquake Engineering and Structural Dynamics Laboratory, for their commitment in assembling an excellent technical and social program.

Our gratitude goes to all authors, keynote speakers, and participants for their invaluable contributions to the technical program. A special thanks goes to the organizers of the many special sessions, whose efforts in curating focused and timely topics greatly resonated with the community. We extend our sincere thanks to the members of the Advisory, Scientific and Review Committees for their meticulous work, and to our sponsors and supporting organizations for their generous support and dissemination efforts.

SAHC 2025 is more than a conference—it is a global gathering dedicated to advancing the protection of built cultural heritage. We look forward to the ideas, discussions, and collaborations that will flourish during our days in Lausanne.

Welcome to SAHC 2025!

Savvas Saloustros & Katrin Beyer
Organizing Committee

02

Committees

Organizing Committee

Savvas Saloustros
École Polytechnique Fédérale de Lausanne
Switzerland

Katrin Beyer
École Polytechnique Fédérale de Lausanne
Switzerland

Advisory Committee

Paulo B. Lourenço
University of Minho
Portugal

Pere Roca
Technical University of Catalonia
Spain

Claudio Modena
University of Padova
Italy

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Antonella Saisi	Polytechnic University of Milan, Italy
Antonio Formisano	University of Naples Federico II, Italy
Antonio Maria D'Altri	University of Bologna, Italy
Arun Menon	Indian Institute of Technology Madras, India
Bahman Ghiassi	University of Birmingham, UK
Belén Riveiro	University of Vigo, Spain
Bora Pulatsu	Carleton University, Canada
Bozidar Stodjadinovic	ETHZ, Switzerland
Chi Chiu Lam	University of Macau, Macau
Claudia Cancino	Getty Conservation Institute
Climent Molins	Technical University of Catalonia, Spain
Claudio Modena	University of Padova, Italy
Cristián Sandoval	Pontifical Catholic University of Chile, Chile
Damir Lazarevic	University of Zagreb, Croatia
Daniel Oliveira	University of Minho, Portugal
Daniele Malomo	Mc Gill University, Canada
Dina D'Ayala	University College London, UK
Dora Foti	Dora Foti
Elisa Bertolesi	University of Cardiff, UK
Elizabeth Vintzileou	National Technical University of Athens, Greece
Els Verstrynge	KU Leuven, Belgium

Enrico Garbin	National Research Council of Italy (CNR), Italy
Eva Coïsson	University of Parma, Italy
Fernando Peña	National Autonomous University of Mexico, Mexico
Friederike Braune	Federal Office for the Environment, Switzerland
Gabriele Milani	Polytechnic University of Milan, Italy
Gianfranco de Matteis	University of Campania, Italy
Gianmarco de Felice	Roma Tre University, Italy
Giorgia Giardina	Delft University of Technology, Netherlands
Graça Vasconcelos	University of Minho, Portugal
Guido Camata	Università degli studi "G.d'Annunzio" sede Pescara
Humberto Varum	University of Porto, Portugal
Jan Rots	Delft University of Technology, Netherlands
Jason Ingham	University of Auckland, New Zealand
Javier Ortega	CSIC Madrid, Spain
John Ochsendorf	Massachusetts Institute of Technology, USA
Jose M. Adam	Polytechnic University of Valencia, Spain
Khalid El Harrouni	National School of Architecture Rabat, Morocco
Koenraad Van Balen	KU Leuven, Belgium
Leire Garmendia Arrieta	University of the Basque Country, Spain
Luca Pelà	Technical University of Catalonia, Spain
Luigi Sorrentino	Sapienza University of Rome, Italy
Marcela Hurtado	Federico Santa María Technical University, Chile
Maria Rosa Valluzzi	University of Padova, Italy
Mariapaola Riggio	Oregon State University, USA
Mario Uroš	University of Zagreb, Croatia
Marius Mosoarca	University of Life Sciences 'King Mihai I' Timisoara, Romania
Matthew DeJong	University of California at Berkeley, USA
Maurizio Piazza	University of Trento, Italy
Mehrdad Hejazi	University of Isfahan, Iran
Mislav Stepinac	University of Zagreb, Croatia
Nicola Tarque	Universidad Politécnica de Madrid, Spain
Paulo B. Lourenço	University of Minho, Portugal
Pere Roca	Technical University of Catalonia, Spain
Philippe Garnier	Université Grenoble Alpes, National School of Architecture, France
Pia Hannenwald	Swiss Society for Earthquake Engineering and Dynamics, Switzerland
Pierino Lestuzzi	Exigo Expertises SA, Switzerland
Pierre Smars	National Yunlin University of Science and Technology, Taiwan
Rafael Aguilar	Pontifical Catholic University of Peru, Peru
Rebecca Napolitano	Penn State University, USA
Rita Bento	University of Lisbon, Portugal
Rita Esposito	Delft University of Technology, Netherlands
Serena Cattari	University of Genova, Italy
Sergio Lagomarsino	University of Genova, Italy
Silke Langenberg	ETHZ, Switzerland
Sinan Acikgoz	University of Oxford, UK
Stéphane Morel	Université de Bordeaux, France
Stephen J. Kelley	SJK Inc., USA
Tim Michiels	Columbia University, USA
Vasilis Sarhosis	University of Leeds, UK
Yohei Endo	Shinshu University, Japan

03

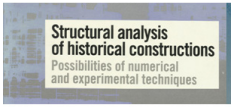
About SAHC

Since 1995, the SAHC Conference has been recognized as a leading international event focused on the assessment and restoration of heritage structures. With a primary goal of advancing the field of heritage restoration, the conference serves as a gathering point for researchers and practitioners from various disciplines fostering discussions on the multifaceted challenges, innovative methodologies, and materials pertinent to the study and conservation of heritage structures. The SAHC conference offers an excellent opportunity for scientific exchange, dissemination and networking in the field.

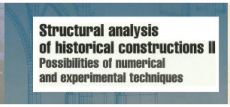
Previous SAHC editions

1st SAHC, 1995, Barcelona (Spain)
2nd SAHC, 1998, Barcelona (Spain)
3th SAHC, 2001, Guimarães (Portugal)
4th SAHC, 2004, Padova (Italy)
5th SAHC, 2006, New Delhi (India)
6th SAHC, 2008, Bath (United Kingdom)
7th SAHC, 2010, Shanghai (China)
8th SAHC, 2012, Wroclaw (Poland)
9th SAHC, 2014, Mexico City (Mexico)
10th SAHC, 2016, Leuven (Belgium)
11th SAHC 2018, Cuzco (Peru)
12th SAHC 2021, Barcelona (Spain)
13th SAHC 2023, Kyoto (Japan)

Barcelona, 1995

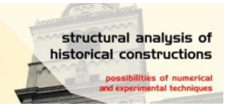


Barcelona, 1998



Guimãraes, 2001

Padova, 2004



New Delhi, 2006

Bath, 2008

Shangai, 2010

Wroclaw, 2012

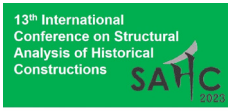
Mexico City, 2014

Leuven, 2016

Cuzco, 2018

Barcelona, 2021

Kyoto, 2023



04 About Lausanne

Lausanne, the fourth-largest city in Switzerland and the capital of the French-speaking canton of Vaud, lies on the shores of Lake Leman with the Alps as its backdrop. Designated some time ago as the best small city in the world, it is home to about 150,000 inhabitants and 35,000 students, making it a vibrant and diverse city.

Today, Lausanne combines its long history with the vitality of a modern city. Set between lake and mountains, it offers endless opportunities to enjoy the outdoors—whether a picnic on the lakeside beaches, a lunchtime paddle on the water, or a walk in the nearby vineyards of Lavaux, a UNESCO World Heritage site just minutes away by train.

Green and liveable, the city is filled with beautiful parks and gardens that provide popular places to meet and relax.
Known as the Olympic Capital, Lausanne is well connected by rail and road, having also the first and only metro system in Switzerland.

Education and innovation are at the heart of Lausanne. The Federal Institute of Technology (EPFL) is recognised worldwide for excellence in science, technology, and research, while the Ecole Hôtelière de Lausanne (EHL), the world's first hotel management school, is ranked as the best in its field. Among others, the University of Lausanne (UNIL) and the Lausanne University of Art and Design (ECAL) add to the city's reputation as a centre of academic and creative excellence.

The city also nurtures a thriving cultural life, from its new Plateforme 10 arts district to the Olympic Museum, one of Switzerland's most visited attractions. Together, they reinforce Lausanne's role as both a cultural and sporting capital.

05

Topics and special sessions

Topics

- Digitalization for documentation and management
- Climate change: adaptation & mitigation
- History of construction and building technology
- Theory and practice of conservation
- Management of heritage structures and conservation strategies
- Inspection methods, non-destructive techniques, and laboratory testing
- Numerical modeling & structural analysis
- Seismic vulnerability & risk
- Structural health monitoring (SHM)
- Repair and strengthening strategies and techniques
- 20th c. built heritage: history, inspection, analysis, and conservation
- Vernacular constructions: history, inspection, analysis, and conservation
- Durability & sustainability
- Interdisciplinary project and case studies

Special sessions

SS-1: Sustainable repair, rehabilitation and retrofit of existing masonry structures: design, testing and analysis

SS-2: Advanced monitoring and analysis tools for collapse prevention of ageing bridges

SS-3: Digital technologies for the inspection and assessment of historic structures

SS-4: Challenges for the mechanical characterization of masonry material

SS-5: Exploring Digital Tools for the Maintenance and Repair of Historic Structures: Innovations and Applications

SS-6: Advancements in conservation practices for historical infrastructure: inspection, monitoring, structural analysis, and intervention

SS-7: New perspectives in Archaeoseismology: contribution to seismology knowledge, cultural heritage and re-engineering of local building cultures

SS-8: Novel Techniques for Imaging Subsurface Conditions of Heritage Structures

SS-9: MSc SAHC 2023-2025 graduates & poster competition

SS-10: Seismic assessment and retrofit of cultural heritage buildings in Balkan region

SS-11: Earthquake assessment of historical monuments with arches, vaults, domes, irregularities: Case studies and advances in research

SS-12: Countable vs uncountable: the impact of construction history, materials and technologies on the structural behaviour of ancient buildings

SS-13: Experimental and numerical assessment of the structural performance of earthen structures

SS-14: Strategies and challenges in quantifying uncertainties for predicting the response of masonry buildings

SS-15: Challenges and possible directions toward harmonized guidelines for the modelling of unreinforced masonry addressed to the seismic safety assessment according to Codes

SS-16: Interventions on heritage structures: lessons learned from past earthquakes

SS-17: Historical seismic resisting structural systems

SS-18: Grouting application methodology and its impact on the efficiency of the intervention

SS-19: Seismic response of masonry cross vaults: Experimental and blind prediction results from the ERIES-REVAULTs project

SS-20: Open Research Data for Historical Constructions – Sharing experimental data and numerical models

SS-21: Seismic assessment and retrofit projects in Switzerland

06 Keynote speakers

Masonry modelling for Groningen induced seismicity

Prof. Jan Rots

Delft University of Technology, The Netherlands

Jan Rots is a Full Professor of Structural Mechanics at the faculty of Civil Engineering and Geosciences, TU Delft. Over the years he has picked up various roles including head of department at TNO, at the faculty of Architecture and at the faculty of Civil Engineering and Geosciences at TU Delft.

Jan Rots developed smeared and discrete crack models for concrete and masonry. He enjoys both in-FEM research on constitutive models and with-FEM research inspired by applications. Examples of the latter are studies on tunnelling-induced damage to historical masonry and research into damage and safety of Groningen building stock subjected to gas-extraction induced seismicity. He teaches structural mechanics.

Out-of-Plane Behaviour of Stone Masonry Walls: Influence of Masonry Bond Irregularity

Prof. Graça Vasconcelos

University of Minho, Portugal

Graça Vasconcelos holds a PhD in Civil Engineering (research field: masonry structures) from the University of Minho, where she is currently an Associate Professor. Her research primarily focuses on masonry structures and historical built heritage, with an emphasis on the experimental analysis of masonry materials and structures.

She has participated in several national and international funded research projects, namely in the development of new solutions for structural masonry, analysis of the seismic behavior of masonry infills, and the seismic vulnerability assessment of vernacular heritage.

Data driven structural diagnosis of historical constructions

Prof. Rafael Aguilar

Pontifical University of Peru, Peru

Rafael Aguilar is Full Professor at the Engineering Department in the Civil Engineering Division at PUCP in Peru. He has over 15 years of academic experience in the broad field of civil engineering, specializing in structural engineering. His academic career includes international appointments such as visiting professor at the University of Rochester and Drexel University in the US in 2014. His research areas include non-destructive testing, structural health monitoring, seismic vulnerability assessment, preservation of historical architecture, and sustainable construction materials.

He is also the founder and director of the interdisciplinary research center Engineering & Heritage at PUCP, specializing in Advanced Engineering Analysis and Monitoring of Historical Buildings.

Novel approaches for the structural inspection of historic structures

Prof. Vasilis Sarhosis

University of Leeds, United Kingdom

Professor Vasilis Sarhosis holds the Chair in Resilient Structures and Infrastructure at the School of Civil Engineering, University of Leeds. He is also a visiting Professor at Southeast University, Nanjing, China and a CDRI (Coalition for Disaster Resilience Infrastructure) Fellow.

He is currently undertaking multi-disciplinary research with the aim to quantify degradation and understand long term behaviour of ageing masonry infrastructure and provide detailed and accurate data that will better inform maintenance programmes and asset management decisions. He is also chairing the UK Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage (ISCARSAH-UK), which is part of the ICOMOS.

Application of the ISCARSAH Guidelines to Assess Heritage Structures Exposed to Natural Hazards

Prof. Dina D'Ayala

University College London, United Kingdom

Prof Dina D'Ayala is the UNESCO Chair in Disaster Risk Reduction and Resilience Engineering at UCL. She is Professor of Structural Engineering within the Department of Civil, Environmental and Geomatic Engineering. She is Co-Director of the UCL EPICentre and Co-Director of the StrEnTHE, the Structural and Environmental Laboratory at UCL Here East, and founder member and Scientific committee member of the ICOMOS ISCARSAH.

Her specialization is in Structural Resilience Engineering, with a particular focus on the assessment, strengthening, preservation, and resilience of existing buildings, structures, transport infrastructure, and cultural heritage. She has worked extensively in the seismic and flood related protection of architectural heritage worldwide, developing the FaMIVE and PARNASSUS procedures. Additionally, Prof D'Ayala has worked closely with industry to develop dissipative devices for inclusions in building anchoring systems for masonry structures.

Monumental Masonry Constructions under Extreme Earthquake Shaking

Prof. Arun Menon

Indian Institute of Technology Madras, India

Arun Menon, Full Professor of Structural Engineering at IIT Madras, holds a first degree in architecture, and PhD in earthquake engineering from University of Pavia, Italy (ROSE School). His research interests are in structural aspects of historical constructions, earthquake behaviour of historical masonry structures, earthquake-resistant structural masonry, and earthquake risk assessment.

Arun Menon currently coordinates the activities of National Centre for Safety of Heritage Structures (NCSHS), a research center at IIT Mandras supported by teh Ministry of Education of India. Additionally, he is an expert member and Vice President of International Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage (Iscarsah), and Coordinator of National Scientific Committee (NSCARSAH) of ICOMOS India.

07

Sponsors

Swiss Society for Earthquake Engineering and Structural Dynamics SGEB

The SGEB promotes all aspects of the fields of earthquake engineering and structural dynamics in Switzerland, in particular cooperation between scientists and engineers working in this field and international cooperation. To this end we:

- Inform interested professionals about important research results, publications and conferences and promote attendance.
- Organise training events for professionals.
- Organise reconnaissance missions
- Maintain contacts with related national and international organisations.
- Foster relationships with national universities and support young engineers with prizes and stipends.

Want to learn more about SGEB?

→ Check out our website
https://sgeb.ch/

We currently have over 500 members – individuals and corporate members, members active in research and engineering practice, young engineering professionals as well as senior experts, mostly located in all regions Switzerland with a few additional international members.

For a brief video (in German, French and Italian) explaining our history and activities since our foundation in 1982, as well as the milestones achieved in earthquake risk mitigation in Switzerland via the lens of our former presidents, please see:

We are delighted to support SAHC 2025 and wish all of you an inspiring conference filled with fresh perspectives and insights, stimulating discussions and meaningful connections!

SGEB
Swiss Society for Earthquake Engineering and Structural Dynamics
Schweizer Gesellschaft für Erdbebeningenieurwesen und Baudynamik
Société Suisse du Génie Parasismique et de la Dynamique des Structures
Società Svizzera di Ingegneria Sismica e Dinamica Strutturale

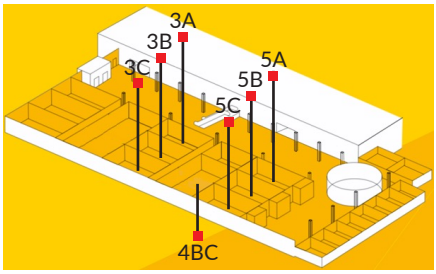
08

Conference program

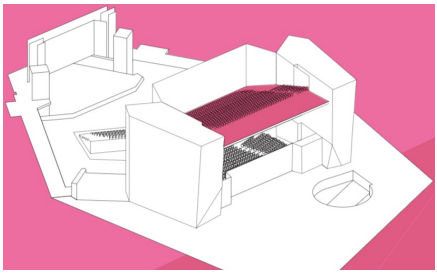
The conference is taking place at the SwissTech Convention Center, located at the campus of the Swiss Federal Institute of Technology (EPFL).

Quartier Nord EPFL
Route Louis-Favre 2
1024 Ecublens
Switzerland

Level Garden - Rooms



Level Cloud - Auditorium



The conference app

To stay up-to-date with the program and not miss your sessions of interest, download the SAHC 2025 app here (QRs).

iOS

Android

Posters

Seismic and structural analysis of a historical building registered as cultural heritage in Turin, Italy
Charlang Bakhtyari, Amirehsan; Civera, Marco; Pollo, Riccardo; Chiaia, Bernardino

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Effective properties of masonry
García, Hernán Alfredo; Jimenez, Juan Carlos; Vázquez, Jose Fernando

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Integrating Investigative 3D Scanning Workflows for Adaptive Reuse Programming of Historic Structures
Fernando, Randy

Seismic retrofitting of schools in Basel: a practicing architects' perspective
Thalhofer, Thomas; Moharram, Roula

IdentiTwin: defining the scope for the future development of Digital Twins for heritage buildings in Costa Rica
Bulgarelli-Bolaños, Jose Pablo; Valverde-Solano, María del Carmen; Solano-Fernández, Ericka

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Reflections on Ancient Egyptian mud-brick Vaults: A Structural Necessity, Constructional Facility or a Symbolic Choice?
Carranza Peco, Luis Miguel; Kassab, Omar; Fortea Luna, Manuel; Chapón, Linda

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Fragility curves for Neapolitan RC ecclesiastical buildings (1950-1980) based on a mechanical model
Postiglione, Marco; Brandonisio, Giuseppe; Calderoni, Bruno; Sandoli, Antonio; Fabbrocino, Giovanni

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Traditional and innovative techniques for existing buildings monitoring
Ranaldo, Antonella; Lo Monaco, Anna; D'Amato, Michele; D'Alessandro, Antonella; Gigliotti, Rosario; Mosoarca, Marius

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Numerical models for seismic assessment of masonry churches
Sulla, Roselena; D'Amato, Michele; Gigliotti, Rosario; Liberatore, Domenico

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Experimental evaluation of seismic performance of ce-mented bahareque walls for sustainable social housing
Zambrano-Montalvan, Hilda; Garcia-Troncoso, Natividad; Molina-Cedeño, Juan; Vergara-Pin, Miguel; Tello-Ayala, Ken; Sosa, Diego; Gómez Soto, Christian Michael; Baquero Campaña, Raúl Fernando

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Numerical Modeling of an Innovative Cemented Bahareque Wall: Calibration and Sensitivity Analysis
Molina-Cedeño, Juan; Garcia-Troncoso, Natividad; Zambrano-Montalvan, Hilda; Vergara-Pin, Miguel; Tello-Ayala, Ken; Sosa, Diego; Gómez Soto, Christian Michael; Baquero Campaña, Raúl Fernando

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Fire Risk Identification and Analysis of the Timber Lounge Bridges in Taishun County, China
Su, Chang; Wang, Ximo; Du, Qian; Cao, Yongkang

The seismic vulnerability of the archaeological heritage: proposal of a qualitative-quantitative speditive assessment model
Montenegro, Elisabetta; Donatelli, Adalgisa

Experimental approach to the use of hot-mixed lime in traditional and contemporary earthen architecture: methodology and scope
Mileto, Camilla; Vegas, Fernando; Manzano-Fernández, Sergio; Hueto-Escobar, Alicia

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The role of interventions on roofs in the seismic behavior of masonry churches: studies and observations
Parisi, Maria Adelaide; Chesi, Claudio; Sferrazza Papa, Gessica

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Out-of-plane behaviour of a structure with dry jointed mortar block walls simulating an Inca room in the Coricancha Temple, Cusco, Peru
Sanchez Solis, Jeffrey Juan; Mejía Albarracín, Yohara Daniel; Lipa Cusi, Leonel

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A Novel Image-Based Forensic Framework for Concrete in Historical and Modern Structures
Ahmad, Afaq; ullah, Mati; Plevris, Vagelis; Mir, Junaid; Hussain, Sameed

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Design and construction of the monumental dome using novel interlocking stone masonry
Mali, Karan Bhaiyasaheb; Prasad, Ram Babu; Upadhyaya, Sonali; Singhal, Vaibhav

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Analytical study of Guadua bamboo connections with threaded steel rods used in the construction of vernacular houses in Ecuador
S. F. Trujillo Tamayo, J. A. Cisneros Rengifo, E. J. Cuadros Rojas

Day 1 - Monday Sept. 15th

8:00 - 8:45	Registration & coffee	Level Garden
8:45 - 9:30	Opening ceremony	Auditorium
9:30 - 10:15	Keynote: Prof. Jan Rots Masonry modelling for Groeningen induced seismicity	Auditorium
10:30 - 11:00	Coffee-break	Level Garden
11:00 - 12:30	Parallel technical sessions	Check pages 16 and 17 for details on sessions, presentations, and location
12:30 - 13:30	Lunch	Level Garden
13:30 - 14:15	Keynote: Prof. Graça Vasconcelos Out-of-plane behaviour of stone masonry walls: influence of masonry bond irregularity	Auditorium
14:30 - 16:00	Parallel technical sessions	Check pages 18 and 19 for details on sessions, presentations, and location
16:00 - 16:30	Coffee-break	Level Garden
16:30 - 18:30	Parallel technical sessions	Check pages 20 and 21 for details on sessions, presentations, and location

Day 2 - Tuesday Sept. 16th

8:30 - 9:00	Registration & coffee	Level Garden
9:00 - 9:45	Keynote: Prof. Arun Menon Monumental masonry constructions under extreme earthquake shaking	Auditorium
10:00 - 11:00	Parallel technical sessions	Check pages 22 and 23 for details on sessions, presentations, and location
11:00 - 11:30	Coffee-break	Level Garden
11:30 - 12:30	Parallel technical sessions	Check pages 24 and 25 for details on sessions, presentations, and location
12:30 - 13:30	Lunch	Level Garden
13:30 - 14:15	Keynote: Prof. Dina D'Ayala Application of the ISCARSAH guidelines to assess heritage structures exposed to natural hazards	Auditorium
14:30 - 16:00	Parallel technical sessions	Check pages 26 and 27 for details on sessions, presentations, and location
16:00 - 16:30	Coffee-break	Level Garden
16:30 - 18:30	Parallel technical sessions	Check pages 28 and 29 for details on sessions, presentations, and location

Day 3 - Wednesday Sept. 17th

8:30 - 9:00	Registration & coffee	Level Garden
9:00 - 9:45	Keynote: Prof. Vasilis Sarhosis Novel approaches for the structural inspection of historic structures	Auditorium
10:00 - 11:00	Parallel technical sessions	Check pages 30 and 31 for details on sessions, presentations, and location
11:00 - 11:30	Coffee-break	Level Garden
11:30 - 12:30	Parallel technical sessions	Check pages 32 and 33 for details on sessions, presentations, and location
12:30 - 13:30	Lunch	Level Garden
13:30 - 14:15	Keynote: Prof. Rafael Aguilar Data driven structural diagnosis of historical constructions	Auditorium
14:30 - 16:00	Parallel technical sessions	Check pages 34 and 35 for details on sessions, presentations, and location
16:00 - 16:30	Coffee-break	Level Garden
16:30 - 17:30	Parallel technical sessions	Check pages 36 and 37 for details on sessions, presentations, and location
17:30 - 18:00	Closing ceremony	Auditorium

Day 1 - Monday September 15th

Sessions (Time slot starts 11:00 - ends 12:30)

Parallel sessions	SS-01: Sustainable repair, rehabilitation, and retrofit of existing masonry structures: design, testing, and analysis	SS-08: Novel techniques for imaging subsurface conditions of heritage structures	CE4: Fire risk: inspection, testing, and analysis	SS-04: Challenges for the mechanical characterization of masonry material
Chairs	D. Malomo, D. Chung, B. Pulatsu	J. Ortega, M. Schuller	C. Sandoval, M. Hurtado	R. Esposito, F. Ferretti
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Experimental in-plane seismic response of masonry walls strengthened with innovative modular steel	Reconstructing masonry textures in Pompeii's buildings using ground-penetrating radar: a feasibility study	Multi-scale fire modelling framework in timber heritage structures	An overview of codes and regulations on the qualification and mechanical characterization of existing masonry
Authors	C. F. Manzini, L. Albanesi, N. Damiani, **P. Morandi**	**S. Donzelli**, L. Petrini, A. Zambrano, V. Calvanese, G. Zuchtriegel, M. Lualdi	**W. S. Aisyah**, A. Guibaud, A. Albuerne, J. Torero	**Z. Sharafi-Roumi,** F. Casarin, M. R. Valluzzi
Title	Combined structural-thermal retrofitting of existing URM structures through low-impact innovative anti-seismic coat: practical implementations	Unreinforced masonry interior morphology digitization via ultrasonics and data fusion	Comprehensive fire risk management through multi-vulnerability analysis: Valparaíso's historic centre case study	Mechanical characterization of existing masonry of the Marche Region: comparisons between experimental in-situ measurements and the Italian Seismic Code provisions
Authors	**A. Rossi,** S. Galano, A. Dallari	**E. Hamp,** M. Santana Quintero, B. Pulatsu, J. Erochko	P. Baquedano-Juliá, **T. M. Ferreira,** C. Arriagada-Luco, N. C. Palazzi, C. Sandoval, D. V. Oliveira	E. Quagliarini, **G. Romano,** G. Pace
Title	Structural retrofit of URM pier-spandrel assemblies using an engineered timber cladding system with thermal insulation: first experimental insights	Development of tomographic imaging methods for evaluating civil structures	On the fire risk of historical buildings in Minas Gerais- Brazil	Mechanical characterization of non-standard masonry samples extracted from old buildings in Montreal (QC,Canada)
Authors	J. Liu, B. Pulatsu, D. Chung, P. Tidwell, **D. Malomo**	**M. Schuller**	**L. M. Pedrosa Cruz Ercan,** J. P. Correia Rodrigues	**L. J. Davis,** S. Løvfall Aasen, R. Debrousses, D. Malomo
Title	Hygrothermal testing protocols for improved retrofits of existing masonry	Automated sonic tomography for heritage infrastructure inspection using a cable-driven robotic system	Damage assessment of Greek classical structure of marble stone affected by historical fire	Mechanical characterisation of multi-wythe quay walls in Amsterdam
Authors	**K. Rowan,** C. Baldwin, D.Chung, C. A. Cruickshank, M. Santana Quintero, T. Dalkowski, D. Malomo	**F. Ramonet,** J. Ortega, P. Sanz-Honrado, S. Aparicio, M. González, F. J. Suárez, J. C. Liébana, J. J. Anaya	**T. Hanazato,** H. Mouzakis, V. Eleftheriou	**U. Jain,** R. Esposito
Title	Experimental investigation of an innovative seismic-energy coating system for enhancing structural integrity and thermal efficiency in existing masonry buildings	Integration of tomographic inspections and 3D point clouds for supporting the diagnosis of masonry walls	Numerical study of a room fire in a wooden-frame historical building	Characterization of portuguese masonry through the use of in situ flat-jacks tests
Authors	**G. Longobardi,** M. Mosoarca, A. Formisano	**P. Sanz-Honrado,** R. Santamaria-Maestro, R. San Segundo-Camarero, et al.	S. Tung, C. Liao, H. Chang, **C. Lai**	**J. E. Ramalho da Fonseca,** H. F. Pinheiro Rodrigues, A. Guimarães da Costa
Title	Self-sensing natural hydraulic lime-based mortars with carbon microfibers	Understanding acoustic wave propagation through heterogeneous materials: numerical and experimental investigations at different scales		In-situ characterisation of the Gran Pórtico of Medina Azahara for seismic vulnerability assessment and conservation
Authors	**A. Dalalbashi,** V. Mendizabal, A. Drougkas, V. Sarhosis	**J. Ortega**, F. Ramonet, S. Aparicio, M. González, J. J. Anaya		**B. Zapico Blanco,** L. M. Giraldez Segura, J. D. Rodriguez Mariscal, et al.
Title				
Authors				

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

SS-17: Historical seismic resisting structural systems	SS-13: Experimental and numerical assessment of the structural performance of earthen structures	SS-02: Advanced monitoring and analysis tools for collapse prevention of ageing bridges	SS-03: Digital technologies for the inspection and assessment of historic structures
A. Miltiadou-Fezans, E. Vintzileou, G. Arun	N. Tarque, D. Oliveira, S. Saloustros	J. M. Adam, B. Riveiro, L. Pelà	V. Sarhosis, A. Drougkas
Room 4BC	Room 5A	Room 5B	Room 5C
Importance of local construction methods in restoration **E. Gorun Arun**	Preliminary seismic vulnerability assessment of the Hittite adobe wall in Arslantepe (Turkey) O. AlShawa, **L. Giresini**	Preventing collapse in ageing masonry arch bridges: experimental analysis and numerical validation **L. Garcia-Ramonda,** V. Hrabinova, A. Cabané, P. Roca, L. Pelà	Enhancing predictive accuracy for detecting deterioration in cultural heritage structures using transfer deep learning **N. Karimi,** M. Mishra, P. B. Lourenco
Experimental seismic assessment of traditional hybrid timber-masonry panel subjected to lateral in-plane loads **D. Muñoz,** B. Jiménez, C. Sandoval, F. Orduz	Seismic protection strategies for rammed earth-timber hybrid structures in Southeast China's Tulou architectural heritage: integrating material property experiments with systematic structural analysis **A. Li,** C. Zhang, J. Hu, B. Zhou	Optimized sensor placement for vibration-based monitoring of masonry arch bridges using triaxial and uniaxial configurations **S. Gönen,** O. Gumus, P. Roca, L. Pelà	AI-assisted computational modeling framework to perform structural analysis of URM buildings considering pre-existing damages **A. Farcasiu,** P. Griesbach, R. Wilson, Q. Mei, B. Pulatsu
Experimental research on structural behavior of traditional Chinese brick masonry arches **Q. Chun,** B. Lin, Y. Ma	Seismic analysis of an earthen free-standing bell tower in the historical center of Cusco (Peru): ambient vibration testing, model calibration and seismic capacity assessment **M. Montesinos,** D. Mercerat, J. Rojas-Bravo, V. Alferez, A. Combey	Limit analysis modeling of the Osserain bridge using Gavrinis tool **M. Moussa,** A. Fliscounakis, F. Meftah, K. Ferradi	A framework for generating a 3D synthetic dataset for automatic crack detection in masonry surfaces D. Boerema, **I. E. Bal,** E. Smyrou, J. Kosinka
Construction analysis of Greek adobe masonry buildings **I. Papandreou,** A. Miltiadou-Fezans	Evaluation of the reduction factor (R) for the design of earthen constructions **N. Tarque,** R. Gutierrez, E. Moscoso, D. Torrealva	Dynamic characterization of a monitored masonry arch bridge using a discrete element approach **A. Furiosi,** N. Damiani, M. Rota, A. Penna	Digital approach to heritage conservation: first steps for the digital twin of Gubbio's Medieval Wall **E. Moreira,** M. Breccolotti, R. Paulo, N. Cavalagli, F. Ubertini
Overview of historic Masonry building performance during the February 6th, 2023 Kahramanmaras, Turkey Earthquake Doublet (Mw 7.8 and Mw 7.6) **S. Guntepe,** O. Koz, O. C. Celik	State of the art of earthquake resistant earthen construction in Colombia and Peru: from laboratory and numerical research to a Latin American construction standard **N. Tarque,** D. Ruiz, J. C. Reyes, M. Blondet	An approach for identification of damaged steel bridge signature using artificial neural network K. Goswami, **A. Upadhyay**	Post-earthquake forensic assessment of a historical cross-vault using the physics-informed ICP (π-ICP) algorithm **G. L. S. Sacco,** S. Acikgoz
Seismic Performance Assessment of Timber-Laced Masonry: A Numerical Study of Dhajji-Dewari and Kath-Kuni Walls **K. T. Harathi,** T. Choudhury	Recommendations for structural analysis of heritage adobe structures with irregular floor plans **B. J. Suquillo Ronquillo,** J. P. Chacón, F. Rojas	Full-scale masonry bridge loading test: experimentation vs numerical calculations **P. Taforel,** M. Bagnéris, J. Christophe, A. Colas, F. Dubois, B. Malenfant, P. Marquis-Lhuillier, et al.	A machine learning-based survey strategy for the safety assessment of masonry churches based on prior damage **S. Szabó,** C. Casapulla
		Conservation of ageing steel bridges through robustness and monitoring **J. C. Reyes-Suárez,** M. Buitrago, B. Barros, J. M. Adam	

Day 1 - Monday September 15th

Sessions (Time slot starts 14:30 - ends 16:00)

Parallel sessions	SS-01: Sustainable repair, rehabilitation, and retrofit of existing masonry structures: design, testing, and analysis	E1: Inspection methods, non-destructive techniques, and laboratory testing	CE-1: 20th c. built heritage: history, inspection, analysis, and conservation	SS-04: Challenges for the mechanical characterization of masonry material
Chairs	D. Chung, N. Damiani	E. Garbin, A. Miltiadou-Faezans	E. Spacone, F. Di Tripani	C. Mazzotti, F. Ferretti
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Response of undressed stone masonry under diagonal compression: an experimental and numerical study	A study on Vitruvian mortars for architectural heritage restoration	On the original seismic analysis of a modern heritage building based on the theory of seismic wave transmission in buildings	Experimental mechanical characterisation of masonry structures in existing buildings using NDT and MDT techniques
Authors	L. Garcia- Ramonda, M. Ponte, M. S. Heidari, I. Lanese, G. J. O'Reilly, E. Rizzo Parisi, F. Graziotti, **L. Pelà**, et al.	**P. F. Greco,** A. Romani, M. Paolantoni, C. Clementi, A. Baldanza, A. Bertinelli, M. Gioffrè, et al.	**J. Ramos,** F. Peña	A. Cabané, **P. Roca,** L. Pelà
Title	Evaluation of the vibration characteristics before and after seismic retrofit of a timber-masonry composite world heritage building constructed in 1872	Comprehensive investigation of hydraulic lime based mortars: from microstructure to mechanical performance	Classification and seismic behavior of mixed masonry-RC structures within Genoa's historic building stock	Characterizing unreinforced masonry through core testing
Authors	**H. Yokouchi,** T. Hanazato, S. Nishioka	**Z. Slížková,** K. Adamcová, P. Bauerová, D. Frankeová, P. Náhunková, M. Hulec	**M. Rago,** A. Brunelli, S. Lagomarsino, S. Cattari	**F. Ferretti,** R. Esposito
Title	Operational modal testing of a masonry arch bridge before and after strengthening	Experimental investigation of high strain-rate effects on the compressive behaviour of pure lime-putty mortar	Model and soil calibration for the seismic assessment of concrete heritage buildings: the case study of the Ledra Palace Hotel in Nicosia, Cyprus	Tribometer friction tests on cracked brick-mortar interfaces
Authors	**P. Borlenghi,** C. Gentile	**A.G. Nayel,** L. Macorini, C. Malaga-Chuquitaype	I. Gamvrili, **A. Georgiou,** D. Loukidis, I. Ioannou	**R. Esposito,** K. Karthick, A. Cabboi
Title	Historic structural concept of churches with medieval origins – 20 years of structural intervention in Transylvania	The influence of environmental conditions on the performance of self-healing mortars for masonry repair	Monitoring for conservation planning of the Jorge Machado Moreira building modern heritage	Compression tests on lime mortar prisms with in-situ X-Ray synchrotron tomography
Authors	B. Sándor, **D. Makay**	**M. B. Gaggero,** P. A. Korswagen, R. Esposito, J. Rots	P. Cavalcante Cordeiro, A. C. R. Tostes de Oliveira, **T. Melo Grabois**	**M. R. W. Judd,** M. Sangirardi, T. Zillhardt, K. Akcicek, S. Michalik, G. Burca, J. Marrow, S. Acikgoz
Title	Enhancing structural performance of masonry structures: The potential of ultra-high performance fiber reinforced concrete	Evaluating the embodied carbon of mortars: from traditional to modern approaches for sustainable heritage conservation	Assessment of the hangar where the largest wooden airplane in the world was built	Seismic behavior of URM structures: a centrifuge model study
Authors	**N. Bianchini,** S. Paschalis, A. Lampropoulos	**M. Radovic,** P. Maravelaki, V. Kilikoglou, I. Karatasios	**R. Anthony,** D. Porter, K. Slade Diebolt, R. Schmidt	**M. Elmorsy,** A. Katsamakas, L. Jones, E. Brunschweiler, I. Anastasopoulos, M. F. Vassiliou
Title	Non-destructive testing of historic masonry – comparison of techniques for original material analysis in conservation practice	Experimental study of cement mortar mixed with cork	Conservation issues and proposals for an early 20th century Ottoman aviation structure	Vertical compression test of stone masonry wall with mud mortar
Authors	**M. E. Loke,** K. Pallav, G. Cultrone	**I. Costa Prieto,** T. Clarés Garcia, C. Valencia Padín, M. Llorens Sulivera, N. Savalle	**H. Y. Bayram,** U. Alma	**S. Gupta,** R.N. Dubey, P.C.A. Kumar

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

E-2: Numerical modelling & structural analysis	SS-13: Experimental and numerical assessment of the structural performance of earthen structures	SS-02: Advanced monitoring and analysis tools for collapse prevention of ageing bridges	SS-03: Digital technologies for the inspection and assessment of historic structures
J. Rots, Q. Wang	N. Tarque, D. Oliveira, S. Saloustros	J. M. Adam, B. Riveiro, L. Pelà	I. E. Bal, R. Ceravolo
Room 4BC	Room 5A	Room 5B	Room 5C
The role of boundary conditions and overburden mass on the rocking dynamics of vertical spanning strip walls **G. Vlachakis,** C. Colombo, A. I. Giouvanidis, P. B. Lourenço	Experimental study of the bonding between TRM reinforcements and rammed earth structures **P. C. Tole,** F. J. Baeza, L. Estevan, B. Torres, S. Ivorra	Improved assessment of masonry railway viaducts under traffic loading using detailed monitoring and 3D FE modelling **S. Grosman,** Q. Fang, L. Macorini, B. A Izzuddin	Preliminary assessment of the seismic vulnerability of historic urban centers using artificial intelligence: a case study of the Chimba Quarter in Santiago, Chile **M. Toledo,** C. Gasca, N. C. Palazzi
A new theoretical and experimental method for the study of rocking damage of archaeological masonry structures **G. Martellotta,** A. Castellano, A. Fraddosio, M. D. Piccioni	Experimental and numerical investigation on mechanical response of reinforced earth-based masonry system **J. Baldelli,** G. Boscato, A. Cecchi	Reconstruction of a gothic bridge **A. Clarés Garcia,** R. Chacón Flores, M. Llorens Sulivera, I. Costa Prieto, M. Ribera Palomeras, et al.	Management and sustainable preservation strategies of underwater heritage structures through new innovative AI technologies **K. C. Avellan,** E. Belopotocanova
How surface roughness affects shear strength of stone-mortar interface **H. Lesiv,** K. Beyer	Laboratory study on the performance of scaled adobe masonry walls under the effects of moisture and monotonic lateral loads **E. Davila,** B. D. Weldon, P. Bandini, M. J. McGinnis, M. Gangone	Reduction factors for the load-bearing capacity of a bridge with defects L. Niero, C. Pellegrino, V. Sarhosis, **P. Zampieri**	Ulugbek Observatory (Samarkand, Uzbekistan): detailed evaluation of the main instrument by laser scanning **S. Takhirov,** B. Quigley, M. Akhmedov, R. Shamansurov
Phase field modelling of fracture propagation in flattened and keyhole notched hydraulic lime mortar discs **S. Acikgoz,** E. Martínez-Paneda, F. Hild	Non-destructive evaluation of rammed earth using sonic waves and transmission tomography **M. Solis,** J. D. Rodríguez-Mariscal, M. Zielinska, M. Rucka	Vibration-based damage detection and localization in a historical bridge **M. Pirrò,** C. Gentile	A synthetic data generator of realistic masonry point clouds **Y. Yang,** S. Acikgoz, B. Pulatsu
FFT-based strength homogenization for irregular masonry structures **E. Donval,** M. Schneider	Structural evaluation of earthen and fired tile vernacular vaults of sha'rbafi workshops in Kashan, Iran **A. Remus,** B. Anh Nguyen, N. Sayadi, R. Perucchio	Evaluating the dual impact of scour and seismic loads on masonry arch bridges: a kinematic analysis approach J. George, **K. Rajkumar**	Symptom-based prognosis through integrated digital models and experimental data **A. Crocetti,** G. Miraglia, R.Ceravolo, G. Ciavarrella, L. Scussolini, M. Taliano
Optimising machine learning algorithms for predicting and mapping the compressive strength of masonry P. G. Asteris, G. Drosopoulos, L. Cavaleri, A. Formisano, **A. Drougkas,** G. Milani, A. Mohebkhah, P. B. Lourenço	Traditional masonry performance in the 2022 Afghanistan earthquake **D. Sonda,** H.Kit Miyamoto, S. Kast, K. Meguro	Identification of damage-sensitive features in masonry arch bridge through 3D FEM modal analysis V. Hrabinova, **L. Garcia-Ramonda,** P. Roca, L. Pelà	

Day 1 - Monday September 15th

Sessions (Time slot starts 16:30 - ends 18:30)

Parallel sessions	SS-19: Seismic response of masonry cross vaults: Experimental and blind prediction results from the ERIES-REVAULTs project	E-1: Inspection methods, non-destructive techniques, and laboratory testing	CE-1: 20th c. built heritage: history, inspection, analysis, and conservation	E-2: Numerical modelling & structural analysis
Chairs	C. Calderini, C. Ferrero, C. Cirabisi, N. Bianchini, P. B. Lourenço	J. Ingham, S. De Santis	R. Anthony, R. Aguilar	F. P.A. Portioli, C. Casapulla
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	The ERIES-REVAULTs project: from experimental design to tests and blind predictions	Design challenges in shake-table testing of reduced-scale masonry building for the floor response spectra evaluation	Structural innovation in Colombia: analysis of the 'Reticular Celulado' slab system and its influence on the development of modern architecture	Comparison of distinct element modeling strategies of the in-plane response of retrofitted URM structures
Authors	**C. Calderini,** C. Cirabisi, C. Ferrero, N. Bianchini, N. Mendes, P. B. Lourenço, M. Lamperti Tornaghi, et al.	**F. Parisse,** S. Degli Abbati	**M. C. Escobar Solano**	**Y. Oktiovan,** N. Damiani, F. Messali, J. G. Rots
Title	Presentations of predictions by participants	Out-of-plane shake-table tests on unreinforced masonry gables	Balancing historical integrity and modern conservation in 20th century timber-imitated concrete architecture: the restoration of the Main Hall of Yu Temple in the Great Yu Mausoleum	DEM analysis of axial load effects in stiffness of masonry walls
Authors	**C. Ferrero,** J. Ramos Aguilera, O. Al Shawa, A. Aşıkoğlu, C. Chisari, N. Damiani, E. Giordano, et al.	S. Sharma, N. Damiani, M. Bertassi, M. Smerilli, **M. Mirra,** I. Lanese, E. Rizzo Parisi, G. O'Reilly, F. Messali, F. Graziotti	**Q. Zheng,** S. Hu	**J. Orjuela Mejia,** K. Beyer
Title	Presentation of the experimental results and comparison with numerical predictions	Artificial Intelligence application to damage assessment of Italian historic masonry building under shaking table testing	Study on the bamboo reinforced concrete of the 20th Century in China (1910-1960)	Discontinuum-based analysis of URM walls with weak brick and strong mortar under out-of-plane loading
Authors	**C. Ferrero**	**D. Palumbo,** S. De Santis, D. Liberatore, G. de Felice, I. Roselli	**Q. Du,** B. Qiu, X. Chen, H. Chen, T. Xie, W. Zhao	**P. Prasoon,** B. Pulatsu, P. Ravi Prakash
Title	Round-table discussion blind test prediction	Application of a digital image correlation technique to a shaking table test of a half-scale two-storey brick masonry building with a timbrel vault	Reviving tradition in modern Iranian architecture: an analysis of Kamran Diba's Jundishapour University Mosque	Computational planning and structural analysis for robotic construction of stone masonry walls
Authors	**C. Calderini,** C. Cirabisi, C. Ferrero, P. B. Lourenço, N. Mendes, N. Bianchini	**Y. Endo,** S. Yamamoto, A. Hatai, K. Machino, R. Kato, Y. Niitsu, et al.	S. A. Seyedi, M. A. Sechin Matouri, **A. Mehan**	**Q. Wang,** K. R.M. dos Santos, K. Beyer
Title		Experimental dynamic behaviour of vertical spanning strip walls under free and forced vibrations	Sustainable strategies for the conservation and transformation of zoological gardens. The 20th century Naples Zoo as a case study	A pattern generator for the evaluation of the "builder's bias" on the mechanical characteristics of planar stone masonry walls
Authors		**C. Colombo,** G. Vlachakis, D. Vecchio, N. Mendes, A. I. Giouvanidis, N. Savalle, P. B. Lourenço	**G. de Martino,** V. Saitto, M. Masi, S. Guadagno	**S. Markantonis,** C. Zeris
Title		Experimental study of the seismic response of as-Built and reinforced three-leaf masonry walls under horizontal-only and horizontal and vertical ground motion components	Structural assessment of Mexican heritage buildings built in the 20th century	Critical assessment of ASCE/SEI 7-22 waterborne debris impact calculations for masonry wall design
Authors		F. Di Michele, **E. Spacone,** G. Brando, G. Camata, A. Sextos, et al.	**M. M. Chávez,** R. Sánchez	**A. De Iasio,** B. Ghiassi, R. Briganti, G. Milani
Title		Real scale shaking table tests for the investigation of the influence of the use of vertical connectors between the drums in columns		Investigating internal defects in flattened brick cores: a DEM-based parametric analysis
Authors		V. Palieraki, **E. Tavouktsi,** C. Mouzakis, C. Arvanitis		**R. Wilson,** M. Judd, S. Acikgoz, B. Pulatsu
Title				Modelling short-term mechanical loading of masonry using particle-based DEM
Authors				**K. Devanand,** B. Ghiassi

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E-2: Numerical modelling & structural analysis	SS-13: Experimental and numerical assessment of the structural performance of earthen structures	SS-20: Open research data for historical constructions – Sharing experimental data and numerical models	E-3: Seismic vulnerability & risk
P. Roca, A. Penna	N. Tarque, D. Oliveira, S. Saloustros	K. Beyer	A. Menon, D. D'Ayala
Room 4BC	Room 5A	Room 5B	Room 5C
Modelling of light damage to façades from combined soil curvature and horizontal strain **P. A. Korswagen,** M. Longo, J. G. Rots	Structural characterization of short bahareque walls with different lath anchoring techniques D. A. Sosa, I. A. Jiménez, **C. M. Gómez,** J. C. Velasteguí, N. García-Troncoso, J. Molina-Cedeño, C. Zambrano	Embracing Digital Tools and Open Science for Engineering Innovation **Gerard O'Reilly**	The Domus of Arianna in Pompei archaeological site. Risk assessment on the colonnades through historical analysis and digitization techniques **L. Cantini,** M. A. Parisi, D. Jovanovic, D. Oreni
Settlement cracks in historic masonry churches: limit analysis and numerical modelling G. Di Santo, **M. Sangirardi,** A. Amorosi	Guadua shear retrofit in earthen short walls **D. A. Sosa,** E. R. Morales, P. A. Toledo, J. J. Iza, M. A. Estrella, D. J. Bonilla, J. F. Velásquez, C. M. Gómez	Open data and Data management - the ERIES experience **Stathis Boussias**	Derivation of fragility curves of masonry buildings in a row aggregate located in Mirandola (MO) **S. Pinasco,** G. Longobardi, A. Brunelli, S. Lagomarsino, A. Formisano, S. Cattari
Development of fragility curves for historical masonry buildings on strip foundations exposed to subsidence using NLFE models **A. Prosperi,** M. Longo, P. A. Korswagen, M. Korff, J. G. Rots	Mechanically stabilized earth systems in monumental structures: historical perspectives and computational analyses E. Kapogianni, **A. Savaidis**	The stone masonry walls database **I. Božulić,** F. Vanin, M. Ullah Shah, S. Saloustros, K. Beyer	Seismic vulnerability assessment of the Montecassino abbey **M. Serpe,** V. Cima, V. Tomei, E. Grande, G. Musto, M. Imbimbo
Numerical modelling of the influence of masonry building stiffness and irregularity on tunnelling induced damage G. Di Santo, **M. Sangirardi,** A. Amorosi	Influence of cavities on the structural performance of compressed earth brick masonry: a parametric comparison of various cavity shapes and sizes **S-P. Joy Salassi,** P. Nshimiyimana, D. Decroly Denouwe, A. Messan, L. Courard	Database of 3D stone masonry walls and its analysis based on geometric parameters **M. Ullah Shah,** S. Saloustros, K. Beyer	Conservation and seismic vulnerability assessment of the lanterns of the Águas Livres Aqueduct in Lisbon, Portugal **B. Quelhas da Silva,** P. Candeias, A. Carvalho, J.V. Lemos
The influence of settlement on seismic capacity of unreinforced masonry building **M. Serpe,** A. Barontini, V. Tomei, E. Grande, P. B. Lourenço, M. Imbimbo	Digital modelling and experimental structural assessment of the Cathedral Basilica of Lima V. Quinto, D. Cuadros, **E. M. Gonzales,** R. Aguilar	Open-access database of shake table tests for enhancing the seismic assessment of unreinforced masonry buildings **M. Haindl,** I. F. C. Smith, K. Beyer	Seismic vulnerability assessment methods of existing unreinforced masonry buildings in Zagreb **K. Ožić,** M. Stepinac, J. Ortega, A. Moretić
High-fidelity implicit block-based numerical modeling of out-of-plane behavior in unreinforced masonry walls with pre-existing settlement-induced damages **A. Ghezelbash,** A. Prosperi, S. Sharma, A. M. D'Altri, J. G. Rots, F. Messali	Retrofit of historic earthen constructions in Morocco using traditional materials: evaluation of impact of the Al Haouz earthquake **A. Albuerne,** V. Novelli, F. Freddi, J. Black, S. Esper, Z. Khalil, G. Giardina, R. Gentile, et al.	Rammed earth mechanical properties database: challenges in data collection and processing **Y. Zhu,** K. Beyer, S. Saloustros	The influence of different parameters of neighboring buildings in aggregates on the seismic vulnerability level **M. Mrkonjić,** J. Atalić, I. Tomić
Numerical simulations of temperature variations in historical masonry façades considering soil **M. Longo,** P. A Korswagen, J. G. Rots	Building with earth, educating for the world: the new Erasmus Mundus Master in Earthen Architecture and Construction **D. Oliveira**		A simplified approach for seismic vulnerability assessment of masonry buildings **D. Ziello,** L. Di Gennaro, M. Guadagnuolo, G. Faella, G. De Matteis
A 3D approach aimed at crack patterns in masonry resting on the soil **V. Mallardo,** N. Grillanda, A. Iannuzzo			Evaluating seismic capacity of historical masonry buildings: the critical role of vault damage **V. Buonocunto,** F. Parisi

Day 2 - Tuesday September 16th

Sessions (Time slot starts 10:00 - ends 11:00)

Parallel sessions	E-2: Numerical modelling & structural analysis	E-5: Repair and strengthening techniques	CE-4: Interdisciplinary case studies	CE-2: Vernacular constructions: history, inspection, analysis, and conservation
Chairs	F. Vanin, K. Beyer	M. Riggio, M. R. Valluzzi	E. Verstrynge, S. Acikgoz	P. Garnier, S. Sharma
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Comparative study of EFM and FEM modelling strategies to assess the seismic response of churches	Experimental evaluation of mortise-and-tenon joints in traditional timber frames under lateral loads and validation of reinforcement strategies	Earthquake protection and preservation of medieval rock sacellum of San Michele in Verona, Italy	Rock-cut vernacular architecture: exploring durability through surface hardness analysis
Authors	**B. Ghaffarpasand,** S. Degli Abbati, S. Lagomarsino	**B. Jiménez,** J. Peña, R. Bazáez, F. Quitral, L. Pérez, C. Cornejo, V. Guzmán	M. Donisi, **E. Manzoni,** P. Caffaro, A. M.R: Pettinaroli	**B. Taye,** T. De Kock
Title	Modelling historical aggregates using the equivalent-frame method: the National Palace of Sintra	Long-term behaviour of timber beams strengthened with near surface mounted CFRP bars and externally bonded steel plate	Structural consolidation with CFRP fabric of the central portal in green Cipollino marble of the Church of San Giacomo in Augusta in Rome	Restoration of the House of Chamber and Jail, in Mariana, MG, Brazil
Authors	**M. Ponte,** G. Guerrini, A. Penna, R. Bento	**X. Chen,** Q. Xu, M. Wang, Y. Leng, L. Chen, F. Zhang	**G. Simoni,** M. Micheloni, F. Sollazzi, A. V. Canale, A. Mascherucci, D. Porro, M. De Santis	**B. Oliveira,** L. Castriota
Title	A 3D nonlinear macroelement for the seismic assessment of unreinforced and strengthened masonry structures	Investigation, emergency stabilization, and repair of timber roof trusses at the Washington County Historic Courthouse	Key performance indicators in the field of energy renovation: application to a real case study in Rome, Italy	Indoor microclimate quality in the Czech preserved vernacular mountain architecture: the Ore mountains
Authors	**C. Salvatori,** G. Guerrini, A. Galasco, A. Penna	**E. Campbell Manning,** S. C. Cotton	**B. Bartolucci,** F. Frasca, C. Bertolin, A. M. Siani	**D. Výšková,** D. Bošová
Title	Quantifying model-error uncertainty in the seismic assessment of unreinforced masonry buildings using equivalent frame models	Finite element analysis of bending performance in circular timber beams near-surface-mounted FRP plates	Addressing structural challenges in built heritage preservation: a digital approach to overturning masonries	Comparison of the results of the structural analysis of the St. Laurentius church in Kating, Germany taking into account the variation of the stiffness of the carpentry connections in the FEM model
Authors	**M. Haindl,** I. F. C. Smith, K. Beyer	**H. Song,** Q. Chun	**M. Montuori**	**E. Perria,** J. Dias Pires, M. Sieder

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

SS-01: Sustainable repair, rehabilitation, and retrofit of existing masonry structures: design, testing, and analysis	SS-05: Exploring digital tools for the maintenance and repair of historic structures: innovations and applications	SS-10: Seismic assessment and retrofit of cultural heritage buildings in Balkan region	E-1: Inspection methods, non-destructive techniques, and laboratory testing
D. Malomo, D. Chung	M. Brenner, A. Pöllinger	M. Uroš, J. Atalić, I. Tomić	R. Aguilar, J. Ortega
Room 4BC	Room 5A	Room 5B	Room 5C
Experimental and analytical studies of differential settlements on unreinforced masonry piers and spandrels specimens, repaired with grouting and FRCM **G. Karanikoloudis,** J. B. Serra, P. B. Lourenço	A pipeline for the assessment of 1960s church buildings with archival research, digital surveying tools and computer vision: the case of Our Lady of Stockel - Belgium (1962-67) **F. Van der Meulen,** L. Vandenabeele, S. Dubois, S. Sterken, S. Van de Voorde	The structural retrofitting of the Monastery St. Francis of Assisi on Kaptol in Zagreb **B. Trogrlić,** D. Foretić, F. Foretić, A. Mihanović, Đ. Nižetić, M. Batinić, et al.	Using dynamic measurements to improve earthquake assessments - case studies **P. Hannewald,** P. Martakis, Y. Reuland, F. Vanin, M. Beqiraj, I. Drakatos
Numerical-experimental validation of masonry arches strengthened with PBO-FRCM composite using the Applied Element Method **M. Calò,** N. Scattarreggia, R. Monteiro, M. Moratti	Digital investigation of modern building elements: a case study on facade details of Munich's to be demolished main building of the Central Station **T. Çapar,** R. S. Grom, A. W. Putz	Identification of critical elements of unreinforced masonry buildings for selection of optimal retrofit solutions **A. Pilipović,** M. Uroš, M. Demšić	Calibration of numerical models for seismic analysis of historic masonry structures: the Venetian Dockyards (Neoria) of Heraklion **F. Greco,** C. Aranha, S. Saloustros, J. Ortega, M. Núñez García
Structural retrofit of Eastern Canada's existing masonry using geosynthetics: preliminary test results **M. EL-Assaly,** G. Aubry, S. Bhat, M. Meguid, D. Malomo	Digital Dong: heritage assessment, reality capturing and 3D modelling **X. Ren,** D. Kong, H. Armagan Dogan, Y. Pang, M. Wang	Comparative seismic assessment and retrofit strategies for interwar and post-World War II multi-residential buildings in Slovenia **P. Prašnikar,** V. Kilar, S. Petrovčič	Dynamic identification and FE model calibration of a monumental basilica **W. Qayyum,** N. Cavalagli, E. García-Macías, M. Gioffrè, V. Gusella, C. Pepi, C. Cerbai, F. Bianconi, et al.
Reliable experimentally-informed predictive models for masonry structures strengthened with Composite Reinforced Mortar **I. Boem,** N. Gattesco	From crack to code to craft: digital repair and fabrication heritage **L. Crouzet,** A. Leander Pöllinger, S. Langenberg	Historic buildings and monuments in North Macedonia - Chronology of managerial and retrofitting aspects **V. Shendova**	Dynamic assessment and model calibration of a historic masonry villa with structural discontinuities **L. Sbrogio**

Day 2 - Tuesday September 16th

Sessions (Time slot starts 11:30 - ends 12:30)

Parallel sessions	E-2: Numerical modelling & structural analysis	E-5: Repair and strengthening techniques	CE-4: Interdisciplinary case studies	CE-2: Vernacular constructions: history, inspection, analysis, and conservation
Chairs	P. Roca, R. Bento	T.M. Ferreira, L. Garcia-Ramonda	Sinan Acikgoz, Els Verstrynge	P. Garnier, S. Sharma
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Painting the strains: a new machine learning approach for analysis and design of masonry structures	Experimental and numerical assessment of lateral in-plane response of an unreinforced masonry wall with arch-type openings	Performance and analysis of historic mass masonry forts and their components in hurricanes	Structural characteristics for heritage residential buildings in the Kingdom of Saudi Arabia
Authors	**B. Ghiassi**	**F. Orduz,** E. Ortega-Guamán, L. Pérez-Pinedo, C. Sandoval	**H. Elsayed,** E. Frye, M. Horst	**A. Osman**
Title	Seismic behavior of scaled-down dry-stone retaining walls: a 3D numerical study	Shake table tests on a large-scale structure retrofitted with UNI-CAM: a novel seismic strengthening technology for fair-faced rubblestone masonry	Integrating geosciences and earthquake engineering for the conservation of historic monumental buildings in Old Cairo: CoReng perspective	A review at earthen buildings in the historic centers of Cartago and Santo Domingo de Heredia in Costa Rica
Authors	**H. Osman,** E. Vincens, N. Savalle, S. Hans	**S. De Santis,** D. Liberatore, I. Roselli, A. Vari, O. Alshawa, G. De Felice	M. Fasan, **C. Bedon,** H. E. Abdel Hafiez, M. F. Funari, H. M. Hassan, M. Dilena, F. Romanelli	I. Hernández-Salazar, **M. Guevara-Murillo**
Title	Comparison of experimental results and numerical simulations to assess the relevance of geometrical imperfection and local behavior in the failure of masonry arches on spreading supports	Dynamic testing of a masonry bell tower equipped with AMD system and strengthened with FRCM	Roadmap to seek an interdisciplinary solution for Kuelap Fortress	Building on tradition: optimizing dry stone masonry for earthquake resistance in Pakistan
Authors	**O. Gaspar,** V. Paris, I. Sajtos	**L. Albanesi,** N. Eren, A. Orgnoni, D. Bolognini, L. Grottoli, A. Penna, P. Morandi	V. Moreno, **G. J. Zavala,** M. A. Pando, R. Aguilar	**I. Tomic,** A. Naseer, M. Ashraf, I. Ahmad, Z. Khan, S. Khan, H. Shakeel, K. Beyer
Title	Analysis of historical dry-joint masonry structures using upper bound limit analysis and homogenization	Pull-out tests of steel anchors and spikes installed to solid brick masonry walls	Geotechnical investigation of the April 2022 south wall collapse at Kuelap Fortress using limit equilibrium analyses	Recommendations for the construction of land terraces with stone walls in earthquake-prone zones in the Andes
Authors	**N. Grillanda,** V. Mallardo	E. Garbin, **M. Panizza,** N. Verlato, F. da Porto, G. Artioli	M. A. Pando, R. Aguilar, **S. Aucca,** G. Zavala	**S. Santa-Cruz,** J. C. Alcántara, V. Ramos, D. Daudon, M. Blondet

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SS-01: Sustainable repair, rehabilitation and retrofit of existing masonry structures: design, testing, and analysis	SS-05: Exploring digital tools for the maintenance and repair of historic structures: innovations and applications	SS-10: Seismic assessment and retrofit of cultural heritage buildings in Balkan region	E-1: Inspection methods, non-destructive techniques and laboratory testing
B. Pulatsu, S. Degli Abbati	M. Brenner, A. Pöllinger	M. Uroš, J. Atalić, I. Tomić	A. M. D'Altri, M. Haindl
Room 4BC	Room 5A	Room 5B	Room 5C
Seismic strengthening of masonry piers with the FRCM system – Comparison of experimental and numerical results **I. Hafner,** T. Kišiček, M. Gams	Advancing built cultural heritage conservation: integration of Industry 5.0 principles and enabling technologies **A. Jiménez Rios,** R. Ramirez, M. Petrou, V. Plevris, M. Nogal	Reconstruction of the Nin Bridges **A. Buzov,** A. Mlinar, L. Pavić, A. Borovina	Rank aggregation of fundamental frequency estimation laws for historic towers A. Crocetti, R. Betti, **R. Ceravolo,** H. I. Moghaddam, G. Miraglia, S. Russo, L. Scussolini
In-plane cyclic behavior of unreinforced masonry walls with arch openings retrofitted with TRM **E. Ortega-Guamán,** F. Orduz, L. Pérez-Pinedo, C. Sandoval	Integrated IFC protocols for sustainable conservation and energy efficiency of historic buildings T. Zanni, A. P. Rocca Vera, O. Roman, **M. R. Valluzzi,** E. M. Farella, F. Remondino, P. D'Agaro	Seismic assessment of typical medieval stone masonry buildings in West Balkan **M. Hrasnica,** S. Medić	Structural assessment of existing structures based on multi-modal data – The ARGUS project **T. Nagata,** K. Beyer, S. Saloustros
Strain-hardening geopolymer composites for strengthening historical brickwork masonry **E. Garbin,** M. Panizza, S. Tamburini	The Lausanne Cathedral seen through XR: structure and materials **R. Maia Avelino,** Y. Patankar, W. Yang, C. Tennenini, N. Mahamaliyev, A. Weichbrodt, R. Flatt	Identification of seismic deficiencies in cultural heritage buildings using finite element analysis: A case study of Castle Trakošćan (Croatia) **A. Uzair,** I. Qayyum, L. Abrahamczyk, D. Penava	Dynamic Identification of Gopurams in South Indian Temples using Operational Modal Analysis **R Sharika,** A. Menon
Role of crystalline admixtures and silica fume on the self-healing effectiveness of lime-based TRM systems **N. Trochoutsou,** L. Ferrara		Seismic behavior of masonry minaret: a nonlinear analysis of the Tabačica Mosque Minaret using Extreme Loading for Structures software **F. Trešnjo,** N. Ademović, M. Humo, S. Kulukčija	3D distinct element model updating of a masonry bell tower F. C. Stan, **P. Meriggi,** S. De Santis, A. Montabert, G. de Felice

Day 2 - Tuesday September 16th

Sessions (Time slot starts 14:30 - ends 16:00)

Parallel sessions	SS-15: Challenges and possible directions toward harmonized guidelines for the modelling of unreinforced masonry addressed to the seismic safety assessment according to Codes	E-5: Repair and strengthening techniques	CE-4: Interdisciplinary case studies	SS-04: Challenges for the mechanical characterisation of masonry material
Chairs	S. Cattari, P. B. Lourenço	M. Panizza, B. Ghiassi	L. Sorrentino, I. Božulić	S. Acikgoz, L. Pelà
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Introduction on the purpose of the round table and the key questions to be addressed	Design and test of stainless-steel rebars to repair and reinforce masonries	Preservation and enhancement of Tibetan Aga soil roofing: deterioration and application evaluation based on laboratory analysis and in-situ monitoring experiments	Mechanical properties of masonry structures in Portugal: new analytical curves for structural assessment
Authors	**S. Cattari**	B. Hortigon, F. Ancio, J. M. Gallardo, T. Aguilar, M. Kunowsky, **E. Rodriguez-Mayorga**	S. Hu, Y. Cai, W. Dai, S. Feng, F. Lu, **X. Ding**	A. Simões, R. Bento, **T. M. Ferreira**
Title	Harmonizing computational methods for the seismic assessment of unreinforced masonry structures: the Dutch case	Numerical analysis of shape memory alloys strengthening of historical masonry	Challenges and experiences in design of roof covering structures for protection of two archaeological sites in Mexico: Teotihuacán and Templo Mayor	Numerical investigation about the orthotropic shear strength of a periodic masonry arrangement
Authors	**F. Messali**	**K. Wasilewski**, A. Zbiciak	**O. Minor García**, H. Mendoza Olivares, G. Alavez Perez, , et al.	**L. S. Rainone**, L. C. Martins Da Silva, G. Uva, S. Casolo
Title	Key lessons from the Italian ReLUIS "Benchmark project": comparing different nonlinear modeling approaches for the seismic assessment of URM buildings	Enhancing durability and structural performance through Reticulatus reinforcement using titanium wires	Heritage interventions: toward an interdisciplinary approach of structural conservation	A comparison between experimental outcomes and discrete element modelling for the evaluation of failure modes of masonry under shear actions
Authors	**S. Cattari**, F. Parisse, E. Acconcia, V. Buonocunto, M. Postiglione, et al.	**A. Borri**, M. Corradi, A. Dudine, A. Giannantoni, A. Zampa, J. Adkins	**I. Kirizsán**, M. Székely, A. Tudoreanu-Crișan	**N. Priya Thatikonda**, D. Baraldi, G. Boscato, A. Cecchi
Title	Round table - Part 1	Tensile characterization of basalt FRCM composite in double-layer applications	Integrated tools for cultural heritage conservation: application at the Monastery of Batalha	Experimental validation of a detailed micro-model with shear triplet tests
Authors	R. Bento, K. Beyer, L. Pelà, D. Malomo, J. Ingham, P. B. Lourenço	T. Baroni, F. Ferretti, **C. Mazzotti**	**I. Bourgeois**, V. Ferreira, H. Rodrigues	**K. Falkjar**, J. Kubica
Title	Perspectives from the professional engineering community in New Zealand	Mechanical performance of a thermally enhanced nature-based CRM system for integrated seismic and energy retrofitting	Modern methods for investigating Romania's historic churches after earthquake consolidations	Parametric study on the influence of core capping in assessing the compressive properties of historical masonry
Authors	**J. Ingham**	**L. Penazzato**, R. Illampas, D. V. Oliveira	M. Mosoarca, **M. Fofiu**, F. Casarin, Y. Endo	**N. Vafa**, U. Jain, R. Esposito, P. Korswagen Eguren, J. Rots
Title	Perspectives from the professional engineering community in Italy	Retrofit of full-scale laterally damaged prestressed concrete girder using externally bonded CFRP composite: an experimental study	The rehabilitation and reuse of The Polytechnic's Old Canteen – case study	
Authors	**S. Cattari**	**H. Abdelmalek**, F. Ashun, M. ElGawady	**C. M. Bocan**, D. Giurea, C. Blidariu	
Title	Round table - Part 2			
Authors	G. Magenes, R. Bento, K. Beyer, L. Pelà, D. Malomo, J. Ingham, P. Lourenço, F. Messali, J. Rots			
Title	Concluding remarks and future actions and open discussion			
Authors	**S. Cattari**			

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E-2: Numerical modelling & structural analysis	E-4: Structural health monitoring	SS-21: Seismic assessment and retrofit projects in Switzerland	E-1: Inspection methods, non-destructive techniques and laboratory testing
L. Macorini, Q. Wang	N. Cavalagli, L. Garcia-Ramonda	F. Braune	G. Vasconcelos, S. Saloustros
Room 4BC	Room 5A	Room 5B	Room 5C
Effect of dynamic load for the slopes of the Gediminas Hill **Š. Skuodis,** M. Daugevičius, J. Medzvieckas, A. Šneideris, Ai. Jokūbaitis, J. Rastenis, J. Valivonis	Integration of structural health monitoring technologies and digital twins within the intelligent circular resilience framework applied to the seismic evaluation of heritage buildings H. Aroquipa, **A. Hurtado,** C. Angel	Seismic assessment of cultural-historical buildings in Switzerland - practical experience on organization, procedure, methodology and calculation **Y. Mondet,** P. Hannewald, F. Löbbecke	Wall size effect on the seismic response of unreinforced hollow clay brick masonry walls **E. Inzunza Araya,** S. Saloustros, K. Beyer
Structural features and preliminary FE modelling of the Coccoliera building of San Leucio historical site in Caserta, Italy **E. Aminifar,** M. Ciano, M. Zizi, C. Chisari, G. De Matteis	The Garisenda tower in Bologna: assessing damage evolution over five years of SHM using nonlinear FEM, fiber optical strings, and the AE technique **P. Marin Montanari,** G. Lacidogna, S. Invernizz, A. Di Tommaso	Refurbishment of the Leuenhof in Zurich **A. Galmarini,** W. Kübler, T. Tilla	Direct identification of softening constitutive properties of brittle materials from full-field strain measurements **M. Sangirardi,** M. R.W. Judd, S. Acikgoz
Numerical modelling and seismic strengthening of a stone masonry 14th Century tower: The Galata Tower İstanbul B. Güneş, M. Akgül, M. Selim Ökten, **B. Balaban Ökten**	On the digital twinning of cultural heritage structures: The Garisenda tower in Bologna, Italy **A. Maria D'Altri,** G. Castellazzi, S. Quqa, G. Bertani, L. Patruno, F. Ubertini, C. Dellacasa, S. de Miranda	Museum für Gestaltung, Zürich **N. Köller,** M. Deuring, R. Tropeano	Pull-out test of a historical iron tie rod anchorage system **M. Petrou,** D. Charmpis
Finite element analysis of the effect of cladding on historic timber covered bridges **M. I. Fayle,** E. Carroll Painter	Traffic-induced vibrations and cultural heritage: the monuments in Rome **D. Rinaldis,** P. Clemente, G. Bongiovanni, G. Buffarini	Restoration and seismic retrofitting of the SBB rotonde Brig **W. Borgogno,** T. Eggenberger, S. Eyyi	Laboratory tests for the characterisation of a sedimentary arenaceous limestone used in the architectural heritage of Northern Italy **G. Cardani,** M. Rossi, D. Bournas
Research on the stability mechanism and reinforcement measures based on the analysis model of an ancient wooden pagoda **J. Liu,** J. Ge, X. Yong, X. Liu, X. Wang, Z. Ling	Proposal of energy harvesting from metro-induced vibrations in historic cities **Y. Endo,** E. Kusunoki, K. Nomoto, C. Cornadó, R. Dilla Martí, K. Machino, R. Kato, A. Ramon Tarragona	Discussion All participants	Fracture properties of marble. The case study of Carrara Bianco and Proconnesio **M. Cvetković,** S. Russo
Computational fluid dynamic analysis of wind pressure action on historic monuments: A case study of Ruins of St. Paul's K. Chon Lei, **C. Chiu Lam,** M. On Wong	Threshold effect in the Fiedler eigenvalue used as collapse signal for a masonry building during a seismic test **V. Fioriti,** E. V. Petrei Castelli, A. Colucci, I. Roselli		Structural performance of restored marble after collapse **M. Cvetković,** S. Russo

Day 2 - Tuesday September 16th

Sessions (Time slot starts 16:30 - ends 18:30)

Parallel sessions	SS-18: Round-table on grouting application methodology and its impact on the efficiency of the intervention. Session in the memory of Prof. Giorgio Macchi	E-5: Repair and strengthening techniques	C-1: Digitalization for documentation and management	SS-14: Strategies and challenges in quantifying uncertainties for predicting the response of masonry buildings
Chairs	A. Miltiadou-Fezans, M. R. Valluzzi, E. Vintzileou	G. Vasconcelos, C. Chiu Lam	M. Funari, F. Ferretti	K. Beyer, M. Haindl, I. Tomic
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Design and application of hydraulic grouts to the Cappella Guariniana Della Sindone, Torino	The structural analysis and strengthening of the chapel of St. John Nepomucene in the Sarny Castle	Proposed solutions for the automated evaluation of laser scan data	Evaluating uncertainties in rocking models: the case of the Dickson chimney in Montreal
Authors	G. Macchi, S. Macchi, A. Miltiadou, **E. Vintzileou,** A. Kalagri	**K. Raszczuk,** J. Jasieńko, P. Frąckiewicz, A. Marek	G. Siedler, **S. Vetter**	**G. Destro Bisol,** D. Malomo
Title	Injection techniques on stone masonry walls to improve mechanical properties and evaluation of its effectiveness through non-destructive sonic test	A next step toward improving the state of the practice for heritage structures in a seismic context	Methodological proposal for the analysis of large scale ribbed vaults from point clouds	Bayesian classification of damage modes in existing masonry buildings from descriptive vulnerability factors
Authors	**M. Alaboz,** F. Casarin, et al.	**T. Paret**	**A. Costa-Jover,** A. Nuñez Andrés, F. Buill Pozuelo, S. Coll Pla, D. Moreno Garcia	C. Dori, L. Sbrogiò, **M. R. Valluzzi**
Title	Reinforcement and grout injection of the Altgeld Hall bell tower	A review of challenging structural restoration decisions for the New Mosque (Yeni Cami) in Malatya, Turkey	ReVault: a parametric tool for the geometrical analysis of historical vaulted structures	On the required number of records for the estimation of the "true" mean seismic demand of masonry building typologies
Authors	**G. D. Ogden, D. W. Harvey, M. K. Ruth**	**A. Turer**	**M. Häcki,** M. Pfister, L. Vandenabeele	**D. Caicedo,** I. Tomić, S. Karimzadeh, V. Bernardo, K. Beyer, et al.
Title	Influence of the nature of binding agents and fillers on the stability and effectiveness of lime-based grouts	Rescue of ruined structures. Case studies in timber	Applying AI/ML to the assessment of earthquake damage to heritage structures	Floor response spectra for the verification of secondary elements in masonry buildings
Authors	**I. Papayianni**	**A. Tudoreanu-Crişan,** I. Kirizsán	**S. S. Rihal,** H. Assal	**T. M. Viazzi,** S. Degli Abbati, S. Cattari, S. Lagomarsino
Title	Round table discussion	Conservation experimental study project in the Holy Land - Application of hot lime mix in the Knight Templars Fortress inner wall	An integrated methodology of digital measurement for heritage architecture - case of Chinese masonry pagoda	Dynamic response of masonry aggregate buildings with different degrees of connection and floor deformability
Authors	A. Miltiadou-Fezans, E. Vintzileou, M.R. Valluzzi, L. Baltazar, G. Cardani, F. Casarin, P. Lourenço, M. Kržan, M. Lutman, C. Mazzotti, I. Papayianni, C. Pasiano, M. Schuller1	**N. Maklada,** Y. Asscher, A. Mashiah	**J. Shang**	**S. Villar,** F. Di Trapani, M. Di Benedetto, M. Petracca, G. Camata
Title		Seismic performance of historical masonry structures reinforced with FRP exposed to Kahramanmaraş earthquakes	Domain Expert 2.0: AI-driven documentation of domain expertise in built heritage	Toward shake table testing: preliminary numerical study on seismic retrofit interventions for masonry buildings
Authors		M. Selim Ökten, B. Balaban Ökten, **Y. Arıcı Üstüner**	I. Khatri, **Y. Patankar,** R. Bischof, B. Bickel, R. Flatt	M. Di Benedetto, S. Villar, **F. Di Trapani,** A. Marini, et al.
Title			Use of information technologies and historical building information modelling (HBIM), Harran example	Mechanics-based modelling of the seismic out-of-plane dynamic response of unreinforced masonry gables
Authors			**O. C. Özdemir,** O. Ogut, S.Yüzgül	**Z. Dai,** S. Sharma, N. Damiani, F. Graziotti, F. Messali
Title			Virtual reconstruction for heritage conservation: integrating geometric digital twins at ribnica fortress	
Authors			**N. Jelenić**	
Title				
Authors				

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E-2: Numerical modelling & structural analysis	E-3: Seismic vulnerability & risk	SS-21: Seismic assessment and retrofit projects in Switzerland	E-1: Inspection methods, non-destructive techniques and laboratory testing
J. V. Lemos, V. Sarhosis	S. Lagomarsino, D. D'Ayala	F. Braune, I. Haupt, Y. Mondet	A. Penna, A. M. D'Altri
Room 4BC	Room 5A	Room 5B	Room 5C
Out-of-plane dynamic analysis of masonry façades interacting with sidewalls: comparison of discrete macro-element and rigid-block modelling L. Giresini, B. Pantò, C. Casapulla	Assessment of seismic vulnerability of masonry churches through a comparison between territorial and global analyses G. Longobardi, **A. Formisano**	Interdisciplinary guidelines for "better" retrofitting solutions of historic buildings in Switzerland **F. Braune**	World heritage historic construction as narratives of climate change: from historical to structural analyses G. Pappalardo, S. Andreoni, M. Armiero, **C. Chisari,** et al.
Numerical parametric investigation of pounding between adjacent unreinforced masonry façades using the discrete element method **Y. Azhari,** A. I. Giouvanidis, J. M. Ingham	Digital platform for multi-hazard vulnerability assessment of heterogeneous ur-ban historical centres. Application to the city of Valparaíso (Chile) **M. Hurtado,** B. Jiménez	Seismic retrofitting of a listed corner building with a 500-year-old history **R. Dietschweiler,** A. Oliveira, M. Zimmermann, S. Schuerch, S. Wülser, A. Latak	Data-driven seismic assessment: efficiently estimating demand and compliance for existing buildings **Y. Reuland,** A. Hauenstein, P. Martakis
A discontinous model for the selection of ground motion records for the out-of-plane shake table campaign on masonry structures **D. Vecchio,** B. Ilyas, N. Mendes, P. B. Lourenco	An integrated approach to seismic and coastal flood risk assessment for historical buildings **Ž. Nikolić,** T. Kekez, E. Benvenuti	Seismic assessment and avoided retrofit of historical URM Building in Zurich, Switzerland **J. Pernstich**	Seismic assessment of ancient heritage structures using structure-from-motion photogrammetry. Application to San Juan Bautista Church built on Inca foundations **E. Cuadros-Rojas,** S. Saloustros, et al.
In-plane anisotropic homogenization of brittle, irregular masonry using FEM with cohesive zone joint elements **M. Chalhoub,** A. Pouya	Multi-hazard fragility assessment of cultural heritage structures using Bayesian networks L. Ierimonti, F. Ávila, E. García-Macías, I. Venanzi, **N. Cavalagli,** F. Ubertini	Discussion All participants	Integrating geoinformatics and finite element modelling for structural assessment of a cultural heritage monument **N. Kyriakides,** R. Votsis, O. Marangos, D. Skarlatos, et al.
Calibration of DEM models: some useful benchmarks **E. Šamec,** P. Gidak, A. Jaguljnjak Lazarević, D. Lazarević	Integrated methods and technologies for the safeguarding of parish churches in the Lunigiana **M. Colapietro,** V. Bonora, B. Pintucchi		Integrated strategies for the structural evaluation: the ancient columns of the Basilica of St. Peter and Paul in Agliate **A. Saisi,** M. Previtali
Calibration of DEM models: some useful benchmarks **Elizabeta Šamec,** Petra Gidak, Antonia Jaguljnjak Lazarević, Damir Lazarević	Challenges, tools, and strategic approaches for the evacuation plan design **L. Mancini,** G. Cianchino, G. Brando, M. G. Masciotta, E. Spacone		Comparative study of unreinforced masonry walls using experimental and average mechanical properties **A. Kumar,** K. Pallav
Towards an integrated software tool for 3D and 2D rigid block analysis of historical masonry structures **F. P. A. Portioli**	Risk-based seismic rehabilitation of existing bridges: application to an existing bridge in Switzerland **A. Tsiavos,** N. Bender, B. Stojadinovic		
Local failure mechanisms in unreinforced masonry buildings: a sensitivity analysis of the activation load factor L. U. Argiento, F. Ceroni, **C. Casapulla**	Seismic fragility assessment of masonry building aggregates prototypes of a typical historical centre in the Basilicata region of Italy **R. Di Chicco,** A. Formisano		
Stability assessment of masonry retaining walls under dynamic loads: an advanced yield design approach with displacement evaluation **H. Cherifi,** A.-S. Colas, D. Garnier, B. Terrade, S. Antczak			

Day 3 - Wednesday September 17th

Sessions (Time slot starts 10:00 - ends 11:00)

Parallel sessions	E-2: Numerical modelling & structural analysis	C-3: History of construction and building technology	C-5: Management of heritage structures and conservation strategies	E-1: Inspection methods, non-destructive techniques and laboratory testing
Chairs	S. Cattari, P. Zampieri	L. Cantini, F. Greco	M. Mosoarca, E. Macchioni	M. Stepinac, B. Jiménez
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Numerical modelling of a masonry cross-vaulted church bay for defining the test setup of ERIES project "REVAULTs"	A typo-structural exploration on the monumental portals of Sinan's 16th-Century Ottoman mosques in Istanbul	Principles of sustainable conservation of archaeological sites in river valleys	Preliminary results of non-destructive testing for quality control of glued wooden prostheses in conservation engineering
Authors	**C. Cirabisi,** C. Calderini, N. Mendes	**B. Elagöz Timur**	M. Drdácký, **T. Drdácký**	**M. Núñez-García,** G. Íñiguez-González
Title	Seismic assessment of an unreinforced and reinforced with TRM masonry cross-vault using the applied element method	Characterization and comparison of red and yellow bricks from Czech historic structures	The need for guiding lines in restoration and heritage coherence in Romania	Vibration measurements of timber floors in heritage buildings and serviceability requirements
Authors	**M. Cogliano,** C. Casotto, G. Grecchi, M. Moratti, G. M. Calvi	**P. Bauerová,** D. Frankeová, M. Hemala, P. Náhunková, Z. Slížková	**C. A. Drăghici (Bureșin),** I. Onescu	**K. Ozdemir,** E. Smyrou, I. E. Bal
Title	Determining the limit load and collapse mechanism of masonry vaults and domes with non-linear FEM-based model	Brick manufacturing in Barcelona during the 19th and 20th centuries and its influence on residential structures	From structural diagnosis to a public plan of valorisation: the ancient village of Vogogna (Val d'Ossola, Italy)	Application of X-ray computed tomography in architectural monuments on the example of the study of structural elements of the wooden buildings of the German Nazi concentration and extermination camp at Majdanek.
Authors	**K. R. Varga,** T. Ther	A. Cabané, **C. Cornadó**	**L. Bolondi,** L. Cantini, M. Previtali, R. D. De Ponti	**W. Korycinski,** P. Kozakiewicz
Title	Prediction of modal features for different damage stages and retrofit methods of a masonry building	Comparative study of stones from an ancient Roman temple and two quarries in Turkiye	Is a heritage structure protected against demolition when listed on a register of monuments? - case study of a masonry viaduct	A digital image correlation (DIC) study of crack evolution in dou components under vertical compression
Authors	**M. Baniček,** M. Shaqfa, S. Vaing, J. Atalić	**E. Erdogmus,** E. Aktas, J. Freedland, E. Turker Uzun	**A. Kwiecień,** Ł. Bednarz, M. Skłodowski, B. Boba-Dyga, Ł. Hojdys, P. Krajewski, F. Pachla	**P. Liu,** S. Yeo, F. Hiroatsu

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

E-1: Inspection methods, non-destructive techniques and laboratory testing	SS-9: MSc SAHC 2023-2025 graduates & poster competition	C-2: Climate change: adaptation & mitigation	C-1: Digitalization for documentation and management
A. Saisi, C. Bedon	D. Oliveira, P. B. Lourenço	M. Hurtado, T. Choudhury	G. Cardani, Y. Endo
Room 4BC	Room 5A	Room 5B	Room 5C
Evaluation of hygrothermal and thermographic behavior in a heritage earth building: a case study in the architecture of the historic center of Lima - Peru **M. Diaz-Santivañez**	Evaluation of the Broumov parish house failure, its causality, and some ideas of remediation **A. Papadiamanti,** P. Kabele, M. Valek	Climate change impacts on cultural heritage: open challenges and lessons learned **M. Riggio,** R. Napolitano, A. Curmi, T. M. Ferreira, L. Pecchioli, C. Ferrero, S. Vallis, X. Chen, Q. Dong, et al.	Development of an interactive digital application to manage vernacular built heritage **J. Arias Tapiero,** H. Pires, J. Ortega, G. Vasconcelos
Analysis of full-scale experiments on masonry structures using a motion capture system and digital image correlation **S. Léonard,** J. Archez, A.-S. Colas, D. Garnier	Taxonomy of structural failures triggering progressive collapse of masonry arch bridges: The case study of a multi-ring arch bridge **A. Dalianis,** L. Garcia-Ramonda, P. Roca, L. Pelà	Pro-active adaptation of existing masonry buidings in response to the climate change induced risk of subsidence **B. Balzano,** S. Sharifi, J. Sweeney, G. Thompson	Methodology of constructing a 3D database for historic village renovation **D. Hu**
Vibrometric investigation of museum artifacts and exhibition-cases under the influence of local traffic by means of magnified motion **E. V. Petrei Castelli,** V. Fioriti, M. Lamonaca, L. Sorrentino	Structural investigation of Sao Bento da Vitoria Church using non-destructive tests and numerical analysis A. Feizolahbeigi, M. Pranjic, J. Oreb, **D. Aguado,** K. Degermenci, D.Oliveira	Addressing climate change in historical urban built environment: a holistic approach to derive dynamic flood risk in open spaces T. M. Ferreira, G. Bernardini, **G. Sparvoli,** E. Quagliarini	Virtual heritage journeys: exploring digital conservation of Fujian Tulou and Sangiran **Q. Xu,** S. Adiba
Subsurface defect detection in concrete elements using infrared thermography **L. Malepati,** S. Prakash S, V. Hoskere, N. Ganapathy		Assessing the effectiveness of moss- and herb-based natural capping on the Northern Ming Great Wall of China **X. Jiang,** S. Yeo	

Day 3 - Wednesday September 17th

Sessions (Time slot starts 11:30 - ends 12:30)

Parallel sessions	E-2: Numerical modelling & structural analysis	C-3: History of construction and building technology	C-5: Management of heritage structures and conservation strategies	SS-11: Earthquake assessment of historical monuments with arches, vaults, domes, irregularities: Case studies and advances in research
Chairs	S. Cattari, P. Zampieri	L. Cantini, N. Ademovic	M. Mosoarca, E. Macchioni	P. Hannewald, I. Božulić, I. Tomic
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Rotational capacity of masonry vaults as a stability verification	Historical buildings as a source of research on historical length units and proportions in the flow of time	Built cultural heritage: assessing and mapping the vulnerability for preventing loss	Modeling masonry arches using rigid block programming within the OpenSees framework
Authors	**O. Moreno Regan**	**P. Krusinsky,** K. Terao Voskova	**A. Vaccariello**	**I. Božulić,** Q. Wang, F. Vanin, K. Beyer
Title	Performance of calcarenite masonry barrel vaults: experimental investigation and DIC informed refined numerical simulation	Traditional and modern use of rubble stone in cementitious wall construction	An enhanced heritage protection system for built cultural heritage management	An automatic procedure to simplify nonlinear static analysis of curved masonry structures
Authors	F. Campisi, M. Di Leto, M. Di Benedetto, **F. Di Trapani,** C. Cucchiara, L. La Mendola	**J. Oreb,** I. Tomić, K. Beyer	**N. Jurgec Gurnick**	**Alessandro Gandolfi,** Natalia Pingaro, Martina Buzzetti, Gabriele Milani
Title	Structural assessment of the masonry vaults of St. Anne's church in Warsaw	Reviving tradition: the history and techniques of construction with local materials in Morocco's Al-Haouz region	Developing a long-term capacity-building strategy for conservation professionals working in seismic areas	Numerical study on the effect of joint stiffness on the seismic response of dry-joint masonry arches subjected to support displacements
Authors	**K. Grzyb,** Ł. Drobiec, J. Zając, J. Biernacki	**M. Ajari**, N. Bouddount, A. Kariouh	**E. Macchioni,** B. Marcus, A. Sprega, R.I Aguilar, M. Gonzales, P. B. Lourenço, C. Cancino	**C. Ferrero,** F. P. A. Portioli, C. Calderini
Title	Numerical simulation of the structural behaviour of the Pisa Cathedral dome	Correlation of architectural, metrological, and structural analysis: the case of the 13th-Century Cathedral in Chełmża (Northern Poland)	Curating technology: technological navigation of the intangible environment	Comparison between micro- and macro-finite element modelling of masonry arches and vaults
Authors	F. Barsi, R. Barsotti, S. Bennati, M. Girardi, C. Padovani, **D. Pellegrini**	**M. Prarat,** P. Krušinský, K. Raszczuk, K. Wroński	**A. Kochiss,** R. Coffman	**A. Monaco,** S. Faini, L. Facconi, E. Gandelli, F. Venuti, M. Alforno, F. Minelli

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

E-1: Inspection methods, non-destructive techniques and laboratory testing	SS-12: Countable vs uncountable: the impact of construction history, materials and technologies on the structural behaviour of ancient buildings	CE4: Interdisciplinary case studies	C-1: Digitalization for documentation and management
A. Saisi, F. Casarin	E. Coisson, F. Ottoni	M. Stepinac, M. Riggio	G. Cardani, M. Sangirardi
Room 4BC	Room 5A	Room 5B	Room 5C
Towards data-informed modelling of historical masonry structures: a questionnaire-based approach for spatial characterisation of mechanical properties **A. Vuoto,** M. F. Funari, P. B. Lourenço	Restoration of the 20th century with reinforced concrete integrations: knowledge and preservation **M. Schiaffini,** C. Bartolomucci	Structural identification and analysis of historical timber barn frames **M. Hughes,** B. Glisic	The transformation of conservation strategies in a digital era: the case for St Paul's Anglican Pro-Cathedral **C. Jo Darmanin**, G. Dreyfuss, R. Dalli Gonzi, K. Buhagiar
Non-destructive test (NDT) for inspection and diagnosis using remote piloted aircraft systems (RPAS) in heritage buildings M. E. Dzib-Rodriguez, P. Cortez-Lara, **A. A. Torres-Acosta**	The impact of masonry patterns on the structural safety of historic masonry structures S. Szabó, **M. F. Funari,** P. B. Lourenço	The state of preservation and effects of a thorough renovation of a historic, half-timbered church **A. M. Hoła**	Multidisciplinary research methods for the documentation of vulnerable historic structures in Banská Štiavnica M. Marčiš, **K. Terao Vošková,** M. Fraštia
Comprehensive pre-disaster documentation for conservation of 14th–16th-Century Ottoman baths in Seferihisar, Türkiye **Z. Özkaya İlbey,** T. Aydınalp, N. Bulut, T. Uzelli	Design and construction process of small-scale models of masonry cross vaults A. Monaco, F. Venuti, G. Pasquale, C. Ferrero, **M. Alforno,** E. Matta, C. Calderini	Conservation research of the only survived complex of regional timber construction (Umgebindehaus) in Upper Lusatian village Wigancice-Visniova **A. Janas,** M. Żmudzińska-Nowak, J. Kubica, J. Brol	Goed de Tuercqs in Kruisem: a 14th Century hidden hall house in a vernacular farmstead **A. Verdonck,** M. Deceuninck
Experimental study on the behaviour of adobe material treated through ethyl silicate: the case study of Mes Aynak archaeological site (Afghanistan) **A. Lico,** R. Grazzini, S. Rescic, A. Boostani, B. Sacchi, G. Misseri, U. Tonietti, L. Rovero	Impact analysis of medieval masonry towers: a comparative study **L. Goyette,** B. Glišić	Bringing together contruction heritage and structural safety - Wangduephodrang Dzong Utse in Bhutan **A. Galmarini,** D. Gsell, N. Dorji	Potential and limits of pointclouds as an architectural design tool for small sized historic monuments through the case study of modernist Atelier house of Carl and Margrit Roesch in Diessenhofen, Switzerland **M. Roesch**, K. Zinovia Weber, N. Graf

Day 3 - Wednesday September 17th

Sessions (Time slot starts 14:30 - ends 16:00)

Parallel sessions	E-2: Numerical modelling & structural analysis	C-3: History of construction and building technology	E6: BIM technologies	SS-11: Earthquake assessment of historical monuments with arches, vaults, domes, irregularities: Case studies and advances in research
Chairs	P. B. Lourenço, G. Vlachakis	P. Roca, E. Erdogmus	C. Chiu Lam, B. Riveiro	P. Hannewald, I. Tomić, Ivana Božulić
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Out-of-plane seismic response of masonry churches through nonlinear static analysis	Medieval and early modern roof structures over rural fieldstone churches in Farther Pomerania and the Neumark, Poland. The case study of the collar beam roof with king posts from 1583 over the church in Mieszewo	Development of digital twins for monitoring heritage structures based on a BIM-FEM framework	Failure mechanisms of arches, vaults and domes in the sacral architecture after the recent earthquakes in continental Croatia
Authors	**F. Del Carlo,** S. Caprili, P. Roca	**U. Schaaf**	**F. Meligeni,** P. Croce, M. G. Bevilacqua, V. Miele, P. M. Hurjui, P. Rechichi	D. Anđić, J. Pojatina, M. Stepinac, **M. Pranjić**
Title	Structural analysis of the 17th century church partially destroyed and rebuilt during World War II	A survey of medieval roof structures on churches of the Diocese of Växjö, Sweden	From point cloud data to digital twin: a semi-automated procedure for generating FEM and BIM models of historical structures	Embedded steel ties – the hidden superpower of historic masonry arches and domes
Authors	J. Kubica, J. Brol, **A. Janas,** B. Kotala, M. Węglorz	**C. A. Johannes Thelin,** K.-M. Melin, M. Hallgren, R. Gullbrandsson	**P. Guarino,** A. Meoni, E. García-Macías, M. Castellani, F. Antonini, F. Ubertini	**J. Pojatina,** D. Anđić, M. Pranjić, I. Manović
Title	Preliminary seismic assessment of Troia Cathedral, Italy	Historic roof structures in the western part of Romania – structural layout and construction techniques	Advancing BIM-to-FEM automation: an enhanced framework for the structural analysis of unreinforced masonry buildings	Earthquake assessment of churches with ribbed cross vaults - practical examples
Authors	**G. Franco,** A. Battisti, O. AlShawa, L. Sorrentino, D. Liberatore, D. Addessi	**A. Keller,** E. Tamas	**M. L. Leonardi,** L. Martinelli, S. Cursi, E. Gigliarelli, M. Azenha, D. Oliveira	**F. Vanin,** P. Hannewald
Title	Preliminary seismic assessment of Santa Maria degli Angeli Church, Civita di Bagno (AQ), Italy	"Passeggiata del Belvedere" - Palazzo Reale: system resistant to variable settings	Leveraging HBIM for multidisciplinary project management of historic earthen buildings: the case of Hotel Comercio in Lima, Peru	Parametric structural investigation of historic masonry domes: case study on Armenia's churches
Authors	F. Pompili, G. Angelucci, **O. AlShawa,** F. Mollaioli, D. Liberatore	**M. Candela,** G. Antoniello, A. Galasso, P. Mascilli	E, Macchioni, R, Aguilar, **M, Gonzales,** C, Yaya, N, Sanchez, M, Soto, D, Torrealva, R, et al.	A. Malazian, **B. Glisic**
Title	The Templar church of San Bevignate in Perugia: investigation and numerical modeling	Mineralogical characterization and strength assessment of masonry from UNESCO World Heritage site (4th–13th Century CE)	An HBIM-based protocol for damage classification and severity assessment through monitoring	Evaluation of strengthening applied to brick and roman concrete masonry vaults in a Renaissance palace in Florence, Italy
Authors	**A. Abbozzo,** G. Castori, E. Speranzini	**V. Singhal,** N. Anand, S. Manohar	**M. Parente,** N. Bruno, F. Ottoni	Y. Endo, **K. Machino,** J. Magi, N. Del Lama, R. Kato
Title				Seismic vulnerability of post-Byzantine domed churches belonging to cultural heritage
Authors				**G. Dănilă,** H. R. Moldovan, V. Petrescu, I. Ganea-Christu, A. Ioniță

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

SS-06: Advancements in conservation practices for historical infrastructure: inspection, monitoring, structural analysis, and intervention	E-4: Structural health monitoring	SS-07: New perspectives in archaeoseismology	SS-16: Interventions on heritage structures: lessons learned from past earthquakes
R. Esposito, F. Messali	R. Ceravolo, A. Menon	N. Tarque, P. Garnier, D. Gandreau	E. Vintzileou, A. Miltiadou-Fezans, Luca Pelà
Room 4BC	Room 5A	Room 5B	Room 5C
Evaluating the relevance of modelling the soil block surrounding masonry earth-retaining structures in their structural assessments under traffic loads **S. Sharma,** M. Longo, F. Messali	Data analysis for heritage structures: the monitoring system of the Dome of Santa Maria del Fiore **F. Marafini,** G. Zini, A. Barontini, M. Betti, N. Mendes, G. Bartoli	Archaeoseismology: origins, perspectives, and multidisciplinary approaches **D. Gandreau**	The effectiveness of recent interventions verified by the facts: churches in Emilia damaged by the 1996 and 2012 earthquakes **E. Zanazzi,** E. Coïsson
Site experimental characterization of the earthen masonry walls of the At-Turaif UNESCO site in Kingdom of Saudi Arabia **A. Alasim,** F. Casarin, D. Fanciullacci, P. Barucco, G. Palumbo, L. Nicolini	Innovative displacement calculation techniques: a comparative analysis of velocity and acceleration data integration for structural monitoring **H. Imani Moghaddam,** S. Russo	Learning from tradition and reverse engineering of local building culture **P. Garnier**	Domino collapse in urban settings: an 19th Century mosque caused collapse during the 2023 Kahramanmaraş Earthquake sequence **A. Aşıkoğlu,** A. R. Dhiandra, P. Korswagen, F. Kuran, Ö. Avşar
Dynamic characterization through ambient vibration monitoring using synchronized trominos – case study of Venice's bridges **H. I. Moghaddam,** S. Russo	Comparison of low-cost structural health monitoring systems in two historic Canadian places of faith **A. R. Carpenter,** T. E. Morrison, S. Burrill, F. Azhari	Challenges of archaeosismology to civil engineering sciences **R. Aguilar**	Constructive features and past reinforcements: a critical analysis of seismic damage in Parma masonry churches **L. Ferrari,** E. Coïsson, C. Privitera
Field monitoring of masonry arch bridges using 2D and 3D DIC techniques Q. Fang, S. Grosman, **L. Macorini,** B. Izzuddin	Satellite observations for linear heritage assets conservation: the case of the Ancient City Walls of Pisa, Italy **L. Vignali,** N. Belcecchi, A. De Falco, R. Marini		
Incremental damage on masonry arch bridges subjected to high cycle fatigue loading **B. Liu,** V. Sarhosis	Vibration monitoring of the Royal Exhibition Building, Melbourne Australia **J. Hettinga,** Dayne Davis, Dan Blake		
Recent studies on the structural integrity and preservation of San Michele Bridge (1889, Italy) **R. Ferrari,** S. Lorenzi, E. Lizzori, T. Pastore, E. Rizzi			

Day 3 - Wednesday September 17th

Sessions (Time slot starts 16:30 - ends 17:30)

Parallel sessions	E-2: Numerical modelling & structural analysis	CE-2: Vernacular constructions: history, inspection, analysis, conservation	E-6: Other topics - engineering	E-1: Inspection methods, non-destructive techniques and laboratory testing
Chairs	D. T. Biggs, A. Tsiavos	M. Stepinac, B. Jiménez	E. Gorun Arun, G. Vlachakis	L. Sorrentino, S. De Santis
Room	Auditorium	Room 3A	Room 3B	Room 3C

Order of presentations*

Title	Exploring structural form: a qualitative computational approach	The architecture forms and spatial configurations of traditional Hani Mushroom-shaped Houses in China	Local architecture of Harran with its conical domed houses and February 6, 2023 Kahramanmaras Earthquake	Experimental investigation of masonry wall panels under combined settlement and tilting: setup and preliminary results
Authors	**J. M. Morales Sanchez**	**S. Huang,** Z. Yuan, Y. Gao, C. Zhou, J. Wang, M. Gong	**F. S. Kuloglu Yuksel**	**E. Vila-Chã,** A. Barontini, S. Acikgoz, P. B. Lourenço
Title	Fatigue assessment of a historic railway bridge type with a detailed loading spectrum	Climate-driven tectonics: rural wooden architecture in Gilan and Shikoku	Post-earthquake investigation of ancient monuments in Antakya (Antioch)	Physical experiments on the fatigue behaviour of brick masonry arches
Authors	**C. Parodi-Figueroa,** D. D'Ayala, W. Sebastian	**S. A. Seyedi,** A. H. Moghtadai, A. Mehan	**B. Bozyigit,** S. Acikgoz, D. Ergenc, I. Bozyigit, H. Viles, H. Pamir	**J. Xie,** S. Grosman, Q. Fang, L. Macorini, B. A Izzuddin
Title	Parametric analysis of archaic steel columns	From botanical geometry to squaring techniques: traditional timber structures between the Montes de Toledo and the Tajo River in Spain	Domed churches in Wallachia. Architectural styles, specific damages and post-earthquake interventions	Experimental study on the bond-slip behavior and material properties of historical reinforced concrete (1912-1949) in China
Authors	**D. Friedman**	**A. del Puerto García**	G. Dănilă, H. R. Moldovan, V. Petrescu, **A. Ioniță,** I. Ganea-Christu	**B. Lin,** Q. Chun
Title	The portals of the former ticket hall at Frankfurt on the Main main station. Examining two engineering masterpieces			Historiography as intervention tool: [Re] building technology of the Isfahan Shah Mosque Eyvan
Authors	**C. Reihl,** L. Wenzel, M. Jagfeld			**A. T. Dinani,** S. Sadeghi, P. B. Lourenço

*Each presentation is expected to last 12 min + 3 min Q&A. Minor variations may occur within a session to manage speaker changeovers, technical setup, and discussion time at the discretion of each session chair.

SS-01: Sustainable repair, rehabilitation and retrofit of existing masonry structures: design, testing and analysis	E-4: Structural health monitoring	CE-3: Durability and sustainability	SS-16: Interventions on heritage structures: lessons learned from past earthquakes
B. Pulatsu, D. Malomo	A. Drougkas, R. Ceravolo	E. Garbin, D. Oliveira	E. Vintzileou, A. Miltiadou-Fezans, Luca Pelà
Room 4BC	Room 5A	Room 5B	Room 5C
Development of design guidelines for innovative retrofit solutions applied to URM buildings **N. Damiani,** L. Albanesi, C. F. Manzini, P. Morandi	Machine learning for detecting foundation settlements in historic masonry buildings using heterogeneous monitoring data **F. Ávila,** E. García-Macías, N. Cavalagli, M. Breccolotti, F. Ubertini	Legal risk assessment of re-using building materials and elements in historic structures **U. Quapp,** J. Tamosaitiene, K. Holschemacher	Learning from damaged historic constructions: recent earthquakes in Turkey **U. Almac,** E. Kishalı, E. Balci, N. Semiz, S. Koç, E. Kambek, A.Türer
Assessing the influence of inclined base hinge on the seismic response of masonry walls: the case study of the San Giuseppe dei Minimi's oratory **L. Giresini,** O. AlShawa, D. Liberatore, L. Sorrentino	Strain-based damage identification in masonry walls using archetypal simulations and deep learning **A. E. Eva,** A. Meoni, V. Giglioni, I. Venanzi, F. Ubertini	Long term assessment of impact of chloride and sulphate ingress on a modern heritage building: a case study of Al Manhal palace T. Bibi, **H. Dankar,** A. Chabbi, Y. Al Rashdi	Assessment of the effectiveness of interventions based on the seismic performance of the structure after their application **A. Miltiadou-Fezans,** E. Vintzileou, E. Delinikola
Seismic retrofitting of existing masonry buildings: how to select the optimal solution **A. Rooshenas,** S. Degli Abbati, S. Lagomarsino	Performance of selected machine learning techniques in detecting wall defects on South African Heritage structures K. Juries, **P. Bukenya,** P. Kumar	Woodcarving decorations in blue orthodox churches of the Podlaskie Voivodeship: heritage value and restoration context **K. Woszczenko**	Impact of the 2020 Beirut blast and 2023 Syria earthquake on the local built heritage: damage analysis, lesson learned, and seismic upgrading **M. Chalhoub,** F. Pires
Finite element modeling of heritage unreinforced masonry walls retrofitted using 3D-printed steel reinforcement A. Georgiou, N. Hadjipantelis, I. Ioannou, O. Kontovourkis, **M. Mavros**	Structural monitoring and analysis of heritage monument in Angkor Thom using NARX neural network **S. Yamada,** M. Fukuda, Y. Iwasaki	Lime mortars with TiO_2 or ZnO nanoparticles for heritage building retrofitting: mechanical analysis and life cycle assessment **M. Brana-Linares,** I. Josa, L. T. Silva Klein, M. Alonso-Martínez, J. J. del Coz-Díaz	

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