

Session ID: CHH-1

Title

NEW TRENDS IN COMPUTATIONAL AND EXPERIMENTAL DYNAMICS OF HISTORICAL MASONRY STRUCTURES

Convenors

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Description

The Cultural Heritage (CH) of European countries may be seen as the manifesto of their history, with particular reference to masonry buildings and sites that testify both the knowledge and the lifestyle of the populations through the centuries, playing also a key role in economics. Many countries of the Mediterranean area are characterized by a high level of seismicity, which constantly puts at risk CH structures. The damage is usually exhibited with the opening of localized cracks that may evolve under the action of static and dynamical loads, leading to collapse phenomena in the worst case.

A great number of studies were carried out in recent years using different numerical (linear and nonlinear) and experimental methods to identify their vulnerability and to design proper interventions. The results of these studies seem to truly represent the behavior of the building under seismic loads, even though it is necessary that models also replicate the real dynamic characteristics to grant a response that is related to the facts. For this reason, the knowledge of the dynamic performance may be seen as the starting point of the study.

The aim of this technical session is to discuss the new advances in the assessment of masonry structures with specific applications to historical masonry monuments. Topics to be covered, but not limited to, are:

- Seismic assessment of historical constructions
- Nonlinear systems and analysis techniques for structural assessment of CH
- Multi-scale analysis
- Homogenization techniques
- Destructive and non-destructive tests on masonry structures
- SHM of historic buildings in earthquake-prone regions
- Damage detection, localization, and quantification in architectural heritage structures (churches, towers, palaces, bridges, and more)
- Influence of environmental and operational conditions on damage-sensitive features
- Artificial Intelligence and Machine Learning techniques
- Illustrative case studies

Invited Speakers

R. Bento ⁴, M. Mosoarca ⁵, E. Grande ⁶

Affiliations

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