

Modern trends and new perspectives in numerical modelling of historical masonry structures in seismic areas

Francesco Clementi (Polytechnic University of Marche, Italy) - francesco.clementi@univpm.it

Antonio Formisano (University of Naples Federico II, Italy) - antoform@unina.it

Gabriele Milani (Polytechnic of Milan, Italy) - gabriele.milani@polimi.it

Conservation and preservation of historical buildings in seismic zone are still today scientific research challenges. Within this context, the understanding and prediction of the structural response of heritage constructions subjected to seismic loads play a fundamental role. At the same time, this aspect represents a crucial task due to the complexity of the constituent materials, mostly characterized by masonry. Masonry is a heterogeneous material which behaviour depends on several features: mechanical characteristics of matrix and inclusions, interface properties, in-plane texture, out-of-plane composition, etc. In this perspective, during the last decades the scientific community has developed different approaches, to achieve a consistent description of historical masonry constructions.

The aim of this Special Session is to discuss the new advances in modelling of masonry material with specific applications to historical masonry monuments. Topics to be covered, but not limited to, are:

- New strategies for the preservation of heritage structures (SHM, damage detection, ...)
- Seismic assessment of historical constructions
- Vulnerability analysis
- Non-linear static and dynamic analysis
- Incremental Dynamic Analysis applied to historical structures
- Constitutive models for masonry materials
- Homogenization techniques
- Multi-scale analysis