

## **Computational modeling of masonry structures: innovative approaches and open challenges**

Scientific area: Computational Solids And Structural Mechanics

Masonry structures represent a conspicuous part of the cultural and architectural heritage of many European countries. However, these are often more vulnerable and more exposed to damage risk than other constructions due to their old building period and the peculiar mechanical properties of the masonry material.

The scientific community has developed various methods to describe the mechanical response of such structures under ordinary and complex load conditions. However, some open issues that require the development of innovative modeling strategies must still be addressed. The goal of this minisymposium is to present the latest advances in computational modeling of masonry structures, ranging from the analysis of the response at the material scale to that of entire large-scale constructions. Topics to be covered, but not limited to, are:

- Constitutive models for masonry material
- Discretization strategies (Finite Element, Discrete Element, Isogeometric and Finite Difference analysis)
- Homogenization techniques and multiscale analysis
- Limit analysis techniques
- Nonlinear static and dynamic analysis
- Seismic assessment
- Comparisons of different approaches for structural modeling of masonry
- Damage detection, localization, and quantification
- Structural health monitoring
- Computational modeling of repair, strengthening and retrofit strategies
- Numerical methods for form finding and structural optimization
- Other innovative strategies for masonry structural analysis

Keywords: Masonry, Historical Heritage, Structural Assessment, Computational modeling, Nonlinear Analysis

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