RECENT ADVANCES IN COMPUTATIONAL MODELING OF MASONRY MATERIAL AND STRUCTURES

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ABSTRACT

Masonry structures constitute an invaluable part of the world architectural and historical heritage, while also serving as a cornerstone of modern construction in many countries. However, such structures are often vulnerable and exposed to damage risk due to their old building period and the distinctive mechanical properties of masonry.
Several approaches have been proposed and applied by the scientific community for the analysis of both historical and modern masonry structures [1,2]. Nevertheless, developing high-performance innovative modeling strategies or improving existing procedures, especially in light of advanced material testing methods, still presents several challenges to be addressed.
The aim of this mini-symposium is to gather recent research contributions on masonry computational modeling, discussing the current issues and exploring future developments, from the material to structural scale.
The topics to be covered include, but are not limited to: nonlinear constitutive models; homogenization and multiscale modeling techniques; numerical strategies for structural analysis; structural response under static and dynamic loads, e.g. seismic, settlements, flood, landslide and environmental actions; structural health monitoring, digital twins, and preservation against natural and anthropic risk; damage detection, localization, and quantification; restoration, requalification, and retrofitting strategies; form finding and structural optimization; artificial intelligence and machine learning techniques applied to the analysis of masonry structures.

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