Session ID: CMS-9

Title
LOCAL MECHANISMS IN EXISTING MASONRY STRUCTURES: NUMERICAL AND EXPERIMENTAL ASSESSMENT, RETROFITTING

Convenors
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Description
Our society is generally not pro-implementing appropriate measures for the adaptive reuse of existing assets because of their weak seismic performance. Recent post-earthquake surveying underlined how existing masonry structures are prone to brittle out-of-plane localised failure mechanisms, particularly when a lack of connections between structural elements is present. Such mechanisms may cause not only loss of human lives, but even severe damage to the built cultural heritage producing a physical loss of artistic and historical material and an immaterial loss of memory and cultural identity for the people to whom that legacy belongs. To define a fair economic investment aimed at preserving the structural integrity of existing structures, increasing attention should be devoted to strengthening interventions by either traditional or innovative strategies, even on a large scale, without neglecting sustainability as the driving principle.

Much work has been done in this direction in Italy after the earthquakes of the last two decades by the ReLUIS university consortium, which led some of the conveners to propose this technical session. Original research articles and literature reviews on diagnosis, numerical, experimental and retrofitting approaches are here welcome. Research areas may include (but are not limited to) the following topics:
- Analytical and computational strategies for the identification of local mechanisms
- Rocking response of masonry walls to earthquakes
- Probabilistic approaches in rocking analysis
- Experimental seismic performance of local mechanisms
- Energy dissipators for rocking structures
- Sustainable retrofitting solutions for masonry structures
- Low-impact interventions
- Parametric analyses for the optimisation of effectiveness, costs, impact of interventions
- Consideration of the soil-structure interaction in rigid block models of masonry structures
- Comparison of the effects of traditional and innovative strengthening systems
- Case studies

Invited Speakers
F. Ceroni [4], P. Lourenço [5], J. Atalic [6], S. Spadea [7], L. Giresini [8]

Affiliations
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