

**Session ID:** ASR-11

**Title**

ADVANCES AND OPEN CHALLENGES IN SEISMIC VULNERABILITY ASSESSMENT OF URM BUILDINGS IN AGGREGATE

**Convenors**

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**Description**

Seismic vulnerability assessment of unreinforced masonry (URM) buildings in urban contexts poses many open challenges, given that they are, in the majority of cases, not independent structures. URM buildings in aggregate result from an urban growth phenomenon, leading to complex structural systems, which may differ in geometry, materials and construction techniques. Both the features of the single structural unit (SU) and the shape of the aggregate may change significantly varying the urban settlement dimension, making it challenging to standardize their seismic assessment. The first challenge that arises from this is how properly assess the effects of interactions with adjacent structures in an effective way, also without modelling the entire aggregate. This is relevant both for the vulnerability assessment in the as-built state of SU and even more for proactive strengthening strategies. In Italy, in the aftermath of the 2009 Aquila earthquake, which hit several small historical settlements, the first recommendation document on this specific topic was issued by the ReLUIS university consortium. Besides the research effort made in Italy, this topic has been faced by many researchers worldwide over the last two decades, providing numerous tools covering a large set of approaches, from mechanical-analytical or heuristic methods to very detailed modelling strategies.

This technical session aims to share research experiences worldwide, showcase current knowledge, and outline future research directions on the topic.

The invited speakers will share their insights on how to approach this issue, discussing the questions on necessary knowing data, the methods suitable for large seismic assessment and detailed modelling strategies.

Convenors encourage other participants to complement those presentations and submit contributions sending in advance examples of most recurring URM buildings in aggregate to provide an overview from different countries at the beginning of the TS.

**Invited Speakers**

C. Carocci <sup>4</sup>, G. Milani <sup>5</sup>, M. DeJong <sup>6</sup>, R. Vicente <sup>7</sup>

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