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MODELLING OF HISTORICAL MASONRY STRUCTURES UNDER EXTREME EVENTS: EARTHQUAKES, IMPACTS AND SOIL MOVEMENTS

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CHIARA CALDERINI[*], MICHELE GODIO[†], MARIALAURA MALENA[*] AND FRANCESCO PORTIOLI[†]

[*] Università degli Studi di Genova, Italy
Via Montallegro 1, Genova, Italy
chiara.calderini@unige.it

[†] Ecole Polytechnique Fédérale de Lausanne (EPFL),
EPFL ENAC IIC EESD, GC B2 495, Station 18, CH-1015 Lausanne, Switzerland.
michele.godio@epfl.ch

[*] Roma Tre University
Via Vito Volterra 62, Rome, Italy
marialaura.malena@uniroma3.it

[†] University of Naples Federico II
Via Forno Vecchio 36, Naples, Italy
fportiol@unina.it

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ABSTRACT

Masonry structures constitute a large portion of the European cultural heritage. These structures are designed to withstand self-weight loads but are much vulnerable to extreme actions such as seismic loading, impacts and soil movements induced by settlements or landslides. In areas prone to seismic and hydro-geological risks, developing modelling approaches that are able to capture the static and dynamic behavior of masonry is therefore essential to quantify the risk and address possible safety interventions. In this perspective, in the last decades the scientific community has developed different computational methods to achieve a consistent prediction of the structural response of historical masonry structures.

The main goal of this Minisymposium is to discuss the latest advances in the modelling of historical masonry by means of detailed modelling approaches. Contributions based on the use of discrete element, finite element, combined discrete/finite element and rigid block models are welcome. The potentials and the challenges brought by these modelling approaches for masonry are discussed. The focus of this Minisymposium is on their applicability in modelling structures under static and dynamic loading conditions mimicking earthquakes, impacts, and soil movement situations.

In a more general perspective, this MS will gather all researchers interested in the non-linear analysis of masonry structures and will serve as a forum to debate present challenges on the mentioned computational strategies.