

AIMETA 2019 Mini-Symposium

Masonry constructions: from material to structures, modelling and analysis approaches

Masonry constructions are a large part of the world civil and architectural heritage and the assessment of their safety is a very interesting and relevant task.

Two- and three-dimensional models are commonly used for masonry structures relying on different scale approaches. Accordingly, these can be grouped as follows: macromechanical continuum models based on phenomenological constitutive laws, often derived on the basis of damage mechanics and plasticity theory; micromechanical approaches, where the actual masonry constituents geometry, arrangement and constitutive response are taken into account; multiscale procedure, representing a fair compromise between detailed modelling and computational burden; discrete block models; macro-element formulations. All these approaches resort to analytical or numerical procedures and non-linear solution algorithms.

In case of masonry structural elements characterized by complex shapes and geometry, such as arches and shells, proper analytical and computational tools are introduced, most of them based on limit analysis theory. Among the most effective approaches, it is worth mentioning network models and rigid blocks models. More enhanced tools rely on FEM modelling techniques combined to homogenization procedures and various constitutive models.

Aim of this mini-symposium is to gather and disseminate the most recent contributions to the field of masonry constructions analytical and numerical modelling and analysis.

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