

# Analysis, testing, monitoring and retrofitting of historical masonry bell towers

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The Italian landscape includes many masonry bell towers, which, mainly due to the lack of appropriate monitoring and retrofitting measures, have, in the past, suffered sudden collapses and exhibited inadequate structural behaviour under seismic actions. Actions aimed at safeguarding such iconic structures are therefore crucial and must be developed considering the general challenges of cultural heritage, such as lack of documentation, difficulties in conducting destructive testing and the need to account for past events in assessing their current condition, as well as the structural and mechanical characteristics specific to towers. This session welcomes contributions that advance the state of the art in the analysis, testing, monitoring, and retrofitting of historical masonry bell towers, including, but not limited to, the following fields:

- large scale vulnerability and risk analysis;
- numerical and analytical methods for structural assessment;
- effect of pre-existing damage and degradation on materials and structures;
- earthquake modelling for masonry bell towers;
- destructive and non-destructive testing;
- advanced survey methodologies;
- structural Health Monitoring techniques;
- effect of climate change on the structural behaviour of bell towers;
- compatible and reversible retrofitting actions;
- case studies.