

SEISMIC ANALYSIS AND RISK FOR ARCH BRIDGES

ABSTRACT:

Arch bridges, either historical masonry ones or modern reinforced concrete ones, are crucial in infrastructure systems, providing transportation in their region. While some are of recent construction, others, due to ageing and deterioration, become increasingly vulnerable, as demonstrated by recent bridge collapses. These aspects also tend to be exacerbated by climate change, raising awareness to the need for structural assessment, health monitoring, and seismic retrofitting by public institutions and infrastructure management entities. This Session aims to showcase state-of-the-art approaches and advances to seismic design, assessment and retrofit of arch bridges. The presented studies should target risk reduction and resilience enhancement, through detailed or simplified seismic analysis. Contributions including novel research proposals, case studies or advanced discussions are welcome, related to:

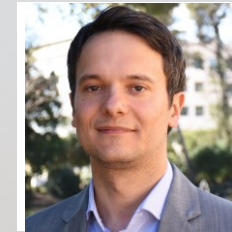
- Seismic arch bridge risk and resilience assessment frameworks;
- Seismic structural response modelling and simulation, including ageing, structural degradation, and cumulative damage;
- Seismic fragility and vulnerability assessment of arch bridges;
- Life-cycle structural analysis under seismic hazard (or multiple hazards) and/or climate change;
- Performance-based design and retrofit under seismic hazard;
- Risk-based prioritisation schemes for large-scale detailed assessment and intervention on arch bridge structures.

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from preservation of historical legacy to new forms

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