

Session ID: BCI-5

Title

LARGE-SCALE SIMULATIONS FOR VULNERABILITY AND RESILIENCE ANALYSES OF CRITICAL INFRASTRUCTURES

Convenors

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Description

The functionality and productivity of large urban communities are heavily dependent on critical facilities and infrastructures. The complexity of such communities, coupled with the high population density, can lead to an increase in their vulnerability to seismic and other types of hazards. Large-scale models and virtual testbeds are essential to analyze the vulnerability and resilience of critical systems. The goal of these large-scale analyses should be implementing new design and retrofit strategies to improve the robustness, sustainability, and recovery capabilities of urban communities.

The scope of this Technical Session is to present new techniques and approaches that can be used to model critical facilities and infrastructures and evaluate their seismic vulnerability and resilience. Numerical models and virtual testbeds can be effective in testing new and existing vulnerability and resilience frameworks, but additional aspects such as agent-based modeling, social dimension, decision analytical tools, sustainable practices, should be further explored and integrated. Additionally, emergency management is another challenging aspect that could benefit from novel critical facilities models such as hospitals. This technical session welcomes contributions from academic staff, researchers, post-graduate students and professional engineers dealing with topics related to:

- Large-scale modeling of critical facilities and infrastructures;
- Resilience and vulnerability analyses of structures, infrastructures, communities;
- Health care facilities and hospital networks;
- Approaches and frameworks aimed at improving the sustainability of the built environment against earthquakes;
- Social dimension of seismic resilience;
- Evacuation and emergency response models;
- Probabilistic risk analysis and decision making;
- Multi-hazard analyses;
- Resilient design and retrofit.

Invited Speakers

J. Baker ⁴, E. Taciroglu ⁵, A. Alipour ⁶, A. Sextos ⁷, O. Kammouh ⁸, A. Cardoni ¹

Affiliations

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