Session ID: TNM-3

Title
EARTHQUAKE-DOMINANT MULTI-HAZARD RISK AND RESILIENCE ANALYSES OF STRUCTURES AND INFRASTRUCTURE SYSTEMS

Convenors
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Description
The twenty-first century has witnessed increasing threaten of earthquakes and concurrent/non-concurrent hazards (e.g., liquefaction, tsunamis, hurricanes, winds, landslides, floods, scour) and environmental effects (e.g., corrosion, climate change) over the lifespan of structures and infrastructure systems. The growing frequency and severity of these devastating hazards request a rigorous risk-informed analysis framework for high-confidence performance assessment. Therefore, it is important to address the challenges associated with multi-hazard risk and resilience, and the need for continued research and innovation in the field of earthquake engineering. Furthermore, researchers, practitioners, and decision-makers have identified the gaps, and demonstrate the emerging methodologies and technology to meet growing demands in maintaining the functionality of structures and infrastructure systems following the multiple hazards, which will lead to more effective strategies for mitigating the impact of earthquake-dominant multi-hazard risk.

The technical session aims to bring together a wide range of professionals from academia, industry, and government agencies to share their experience, knowledge and technologies in risk-informed and/or resilience-oriented assessment and management of structures under earthquakes and multi-hazards. The session will explore the following topics, but not limited to:

- Joint occurrence rate estimation model for multiple hazards
- Quantitative and qualitative assessments of the various hazards and their effects
- Mitigation and retrofitting measures for structures against multiple hazards
- Risk and fragility analysis methods for multi-hazard context
- Loss assessment of structures against multiple hazards
- Resilience modeling of structures and infrastructure systems
- Climate change adaptation under progressive and extreme hazards
- Machine learning application in risk and resilience analyses
- Multi-hazard case history analyses

Invited Speakers
M. Nogal-Macho [4], A. O'Connor [5], L. Zhou [6], R. Feng [7]

Affiliations
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