

Session ID: SHR-4

Title

UNCERTAINTY QUANTIFICATION AND RELIABILITY METHODS FOR REGIONAL SEISMIC RISK ASSESSMENT

Convenors

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Description

Seismic risk assessment is a crucial field that aims to assess the potential damage that earthquakes may inflict upon structures and infrastructure within a particular region. This technical session will concentrate on the latest advancements in uncertainty quantification and reliability analysis for regional seismic risk. Three main topics will be covered in the session. The first topic will center on methods for quantifying uncertainty and variability in regional seismic risk assessment. This will include a detailed discussion of Bayesian methods, Monte Carlo simulation, and sensitivity analysis. These methods will be demonstrated with the latest applications in the field of seismic risk assessment. The second topic will be focused on strategies for managing uncertainty in decision-making processes for regional seismic risk assessment. The presentations will include discussions on decision analysis, risk assessment, and optimization techniques. The significance of accounting for uncertainty in decision-making will be highlighted, which will provide valuable insights on how to develop effective risk management strategies for earthquakes at a regional scale. The third topic will focus on real case studies that exhibit successful applications of uncertainty quantification and reliability analysis in regional seismic risk assessment. These case studies will cover a broad range of topics, such as engineering, infrastructure planning, and disaster response. The practical value of uncertainty quantification and reliability analysis in real-world problems will be demonstrated, which will highlight the potential for further advancements in the field. Overall, this technical session will serve as a valuable platform for researchers and practitioners to exchange ideas and share the latest advancements in uncertainty quantification and reliability analysis for seismic regional risk.

Invited Speakers

P. Gardoni ⁴, I. Iervolino ⁵, I. Tien ⁶, S. Esposito ⁷, S. Parolai ⁸, L. Danciu ⁹, C. Nardin ¹, L. Bodenmann ¹⁰, B. Stojadinovic ¹⁰, J.-E. Byun ¹¹

Affiliations

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