



Challenges in Seismic Analysis and Assessment of Buildings

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Message from the Guest Editor

Protecting the built environment in earthquake-prone regions worldwide necessitates not only the optimal design and construction of new buildings, but also the rehabilitation and upgrading of existing structures. The loss of life and massive expenses caused by major earthquakes in urban regions are important motivators for the scientific and technical community to take urgent action on this problem. Developments in computational methods and the growing availability of experimental test data make it possible to conduct comprehensive seismic analysis to evaluate structural responses even beyond the elastic range.

Existing earthquake engineering analysis methods employ experimental data, computer models, and historical earthquake observations to address seismic hazards at places of interest. They may also include analyses and assessments of conventional or innovative foundation isolation or structural vibration control technologies to limit stresses and deformations with little damage. Important infrastructures, monuments, and cultural heritage sites require more detailed seismic analysis to enable them to withstand extreme shaking with minimal damage.





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Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

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