Special Issue

Advances in Seismic Hazard Analysis: From Hazard Assessment to Structural Disaster Prevention

Message from the Guest Editor

This Special Issue seeks to foster cross-disciplinary exchange and to present cutting-edge solutions for advancing earthquake resilience:

- Advanced probabilistic and physics-based seismic hazard analysis.
- Integration of machine learning and big data techniques in seismic hazard assessment and ground-motion prediction.
- Site-specific hazard analysis incorporating site effects, basin effects, and nonlinear soil behavior.
- Seismic hazard inputs for performance-based engineering: ground-motion selection, modification, and hazard-consistent scenarios.
- Structural fragility, vulnerability, and risk assessment informed by refined hazard characterization.
- Resilience-based design and retrofitting strategies for new and existing structures under probabilistic seismic demands.
- Multi-hazard interactions (e.g., earthquake-tsunami, earthquake-landslide, soil liquefaction) and their implications for structural disaster prevention.
- Development and application of advanced monitoring, early warning, and rapid post-earthquake damage assessment systems.
- Case studies and lessons learned from recent earthquakes, emphasizing the link between hazard analysis and structural performance.

Guest Editor

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About the Journal

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.

Editor-in-Chief

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