Special Issue

Performance-Based Seismic Design, Structural Health Monitoring, and Deformation Prediction for Building Structures

Message from the Guest Editors

Modern building structures must meet strict requirements for seismic safety, durability, and sustainability. Structural health monitoring (SHM) systems and reliable methods for predicting deformation play a critical role not only in early damage detection and proactive maintenance, but also in guiding performance-based design informing strengthening strategies and ensuring long-term structural reliability. We invite contributions that explore experimental studies, analytical approaches, computational techniques, and case studies demonstrating practical applications. Topics of interest include, but are not limited to:

- Performance-based seismic design for buildings of different materials;
- Advanced structural health monitoring (SHM) methods and tools for buildings;
- Predicting deformation in building structures under seismic loading;
- AI and machine learning for seismic analysis, SHM, and deformation prediction;
- Retrofitting and strengthening methods for improved seismic performance.

For further reading, please follow the link to the Special Issue Website at:
https://www.mdpi.com/journal/buildings/special_issues/0R213WT9FF

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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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