

Special Issue

Wind-Induced Vibration of High-Rise Buildings

Message from the Guest Editors

Wind-induced vibration remains a critical research frontier due to the complex interplay between aerodynamic forces and structural dynamics; for high-rise buildings, these interactions are further complicated by vortex shedding, aeroelastic instabilities, and multi-modal resonances, which can compromise structural safety, serviceability, and occupant comfort. Risks may escalate when wind loads coincide with other environmental or operational hazards, underscoring the need for resilient design. This Special Issue aims to advance engineering solutions for mitigating wind-induced vibrations in tall structures, bridging theory and practice across the lifecycle of wind-resistant design—from aerodynamic modeling and control to construction-phase optimization and long-term monitoring. Contributions may include wind load estimation, innovative vibration mitigation, aerodynamic and aeroelastic studies, structural performance enhancement, multi-hazard resilience, and novel systems to optimize structural or aerodynamic response. We welcome technical and non-technical papers that align with this aim, as well as related research opening new avenues.

Guest Editors

Dr. Bei Chen

Dr. Yuji Tai

Dr. Weilin Li

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Buildings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
buildings@mdpi.com

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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

Prof. Dr. David Arditi

Construction Engineering and Management Program, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology, 3201 South Dearborn Street, Chicago, IL 60616, USA

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