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# Vibration Control of Structures Under Multiple Hazards

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## Abstract

There are significant chances of damages and loss of lives from the aging and vulnerable structures, coupled with wind, wave, and seismic hazards. In general, structures and the infrastructure such the buildings, bridges, offshore may experience catastrophic damages while subjected to forces from multi-hazard. Mostly, in the past, individual hazard studies have been conducted and it was argued that an individual hazard would be more significant. However, due to the rapid growth of the population and the economic developments, exposure to multiple hazards (primary, secondary, etc.) have greatly increased. Unfortunately, even for structures built in the regions where more than one hazards are present, the design codes and hazard mitigation strategies treat such forces completely independent. This fact does not account for the increased risk posed to such structures. Accordingly, the performance of vibration control of structures using different methodologies is necessary for the safety and serviceability of the infrastructure under multi-hazard loads, if single strategy fails in meeting the performance requirements. Therefore, it is very important to assess the response control of structures subjected to multi-hazard loads.

**Keywords:** vibration control, wind, wave, seismic hazards

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