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Passive Vibration Control of Bridges: A State-of-the-art Review

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Abstract

Bridges are the most crucial components of infrastructural systems and are susceptible to severe damage when subjected to environmental and man-made hazards. In recent years, vibration control has emerged as an important technique for reducing structural damage. The present paper provides a systematic review of the various vibrational control techniques reported in the literature for response reduction in bridges. The review is carried out under the different categories of passive control strategies and methods are compared, broadly highlighting their advantages and drawbacks. From the review, it is observed that the general trend is progressing towards different combinations of passive systems over the conventional passive systems, as they possess the advantageous versatility of different passive systems. It is also found that the non-linear technique of passive vibration control has a superiority over the linear vibration control technique.

Keywords: Bridges, Vibration control, Passive control, Combination of passive systems, Non-linear technique