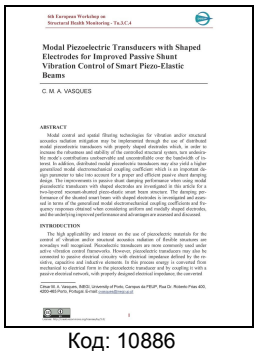

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Modal Piezoelectric Transducers with Shaped Electrodes for Improved Passive Shunt Vibration Control of Smart Piezo-Elastic Beams

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Modal control and spatial filtering technologies for vibration and/or structural acoustics radiation mitigation may be implemented through the use of distributed modal piezoelectric transducers with properly shaped electrodes which, in order to increase the robustness and stability of the controlled structural system, turn undesirable mode's contributions unobservable and uncontrollable over the bandwidth of interest. In addition, distributed modal piezoelectric transducers may also yield a higher generalized modal electromechanical coupling coefficient which is an important design parameter to take into account for a proper and efficient passive shunt damping design. The improvements in passive shunt damping performance when using modal piezoelectric transducers with shaped electrodes are investigated in this article for a two-layered resonant-shunted piezo-elastic smart beam structure. The damping performance of the shunted smart beam with shaped electrodes is investigated and assessed in terms of the generalized modal electromechanical coupling coefficients and frequency responses obtained when considering uniform and modally shaped electrodes, and the underlying improved performance and advantages are assessed and discussed.

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Ключевые слова:

Содержание