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Finite Element Model of Plate with Shunted Piezoelectric Patches

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ABSTRACT

The need for passive damping techniques arises from the complexities, added weight, and energy requirements associated with the implementation of various active control techniques. A novel passive damping approach for the attenuation and localization of the vibration of plates is presented in this study. The introduction of distributed piezoelectric patches with passively shunted circuits is presented. A numerical model that describes the coupling of shunted circuit with flexible plates is developed using spectral finite element approach.
In this work , the finite element model of a plate element with surface-bonded piezoelectric patches will be derived. The element's interpolation functions will be exponential functions instead of the traditionally-used polynomial functions.

Keywords: *vibration of plates, composite plate, piezoelectric*

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