

MULTI-OBJECTIVE OPTIMIZATION OF VIBRATION CONTROL WITH VISCO-ELASTIC DAMPING

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Abstract:

Visco-elastic damping is one of the passive control methods in structural vibration. Multilayer visco-elastic patch is preferred due to high level of damping and easy implementation. In order to obtain an economical design, many objectives must be considered and this concept leads to solving multi-objective optimization problem. Genetic algorithm (GA) is an effective tool in such case. This study shows how optimal solutions derived from NSGA algorithm can be. A simple plate coupling with a cavity is considered. Multi-objective optimization is simulated with many variables regarding geometry and material properties.

Key words: Vibroacoustic; Vibration control; Visco-elastic patches; Multilayer plate; Multi-objective optimization; Genetic algorithm.