Vibration Control in Periodic Structures

Within the framework of periodic structures, the calibration of RL shunted piezoelectric inclusions is investigated with respect to maximum damping of a particular wave form. A finite element setting is assumed, with local shunted inclusions inside the unit cell. The effect of the shunts is represented for a targeted wave form, characterized by its short-circuited eigenvalue problem and two correction coefficients, representing the influence from residual modes, not addressed by the supplemental damping. Calibration formulae are finally derived for the shunt inductance L and resistance R. The presentation contains dispersion diagrams and vibration amplitude curves for the optimally calibrated RL shunt system in a 1-D periodic structure with local piezoelectric inclusions.

General information
State: Published
Organisations: Department of Mechanical Engineering, Solid Mechanics
Contributors: Høgsberg, J. B.
Pages: 221-224
Publication date: 2017

Host publication information
Title of host publication: Proceedings of the 30th Nordic Seminar on Computational Mechanics (NSCM-30)
Editors: Høsberg, J., Pedersen, N.
Keywords: Waves, Periodic structure, Damping, Piezoelectric shunt, Modal analysis
Electronic versions:
VIBRATION CONTROL IN PERIODIC STRUCTURES
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017