

The study of impedance control of cylindrical rod

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ABSTRACT

Vibration problem for the structure and mechanical equipment has always been there, how to restrain or reduce the vibration, and no reduce structural strength is an important topic. This will wave propagation and impedance mismatch theory control structure of vibration energy wave transfer, for the impedance analysis and control of wave propagation and study the control of longitudinal and flexural vibration of the energy wave transfer. Experiment method is to inserts different stuff through a variety of length and Young's modulus of the inserts, comparing the reduce vibration to the change of the insert length, which contains material Young's modulus and the placement to explore the changing conditions brought about by the reduce vibration effect. The use of finite element analysis, theory and experiment of each other compared. The experiment results showed that longitudinal part of the first mode of energy wave transmission, with inserts stuff Young's modulus, length, location and distribution of placement changes, the restrain vibration effect of both are positive. The flexural part of the third mode, whether the material or length change of in the energy wave reduce showed its effectiveness.

Keywords : Wave propagation、Impedance mismatch、Reduce vibration

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