

IIs08-014 Complex dispersion diagram of longitudinal waves in 1-D viscoelastic phononic crystal rods

Oliveira, V.B.S.(1); Miranda Jr., E.J.P.(1); (1) IFMA;

The longitudinal wave propagation in a 1-D phononic crystal rod with viscoelasticity is investigated. This 1-D phononic structure composed by steel and epoxy is capable of filtering the propagation of longitudinal waves over a specified range of frequency, called Bragg-type band gaps. The complex dispersion diagrams are obtained by the extended plane wave expansion (EPWE) considering the simple rod theory. The band gaps are opened up with different values of unit cell wave attenuation. The filling fraction and the viscoelasticity influence significantly the propagating and the evanescent modes. The results can be used for elastic wave attenuation using 1-D viscoelastic periodic structures.