

Abstract Submitted
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Localized and Resonant elastic sagittal modes in one-dimensional phononic crystals¹ L. CASTRO-ARCE, Department of Research in Physics, University Sonora; Department Physics, Mathematics and Engineering, unity Regional Sourth, Navojoa Sonora Mexico, F. RAMOS-MENDIETA, Department of Research in Physics, University of Sonora, Hermosillo, Sonora Mexico — By incorporating a defect Zn layer in an Epoxi/Sn one-dimensional phononic crystal we found transmission peaks associated to localized longitudinal and transverse elastic states. The same localized modes of orthogonal polarizations are excited by incident longitudinal or transverse waves; thus, the transmission spectrum of localized vibrations does not depend on the polarization of the incident wave. The phenomenon can be explained on basis of mode conversion. In addition, resonant modes with frequencies lying inside a bulk band were also found. It is interesting that as function of both the size of the phononic sample and the angle of incidence, the polarization of the transmission resonant peaks change; for example, for a sample of seven cells with the defect at the center, the mode can change from quasitransverse to quasilongitudinal when the angle of incidence changes from 30 to 40 degrees. The variation of polarization is also independent of the polarization of the incident wave.

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