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Sagittal acoustic waves in phononic crystals: the k - dependent polarization BETSABE MANZANARES-MARTINEZ, División de Ciencias e Ingeniería, Unidad Sur, Universidad de Sonora, FELIPE RAMOS-MENDIETA, Departamento de Investigación en Física, Universidad de Sonora — We have studied the longitudinal and shear contributions to the sagittal vibrations in phononic crystals of one and two dimensional periodicity. As is well known, pressure and shear waves couple to form the sagittal oscillations. The question that guides our work is which of the two vibrations predominates in these waves. We demonstrate numerically that the contributions depend on the wave vector, in addition to the structural and material parameters. For calculations we have used a criterion of strain energy balance; the average of the pressure and shear contributions within the unitary cell is obtained. We present the polarization map of sagittal waves in an Epoxy/Sn superlattice and the band polarization for two arrays of cylindrical holes in epoxy. As we shall see the mixed modes can be either predominantly transverse or predominantly longitudinal.

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