Propagation of plane waves in a transversely isotropic micropolar piezoelectric medium

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ABSTRACT

The present paper is concerned with the propagation of plane waves in a transversely isotropic micropolar piezoelectric medium. There exist four plane waves in x-z plane. Reflection of these plane waves from thermally insulated stress free surface is studied. The relevant boundary conditions are applied at free surface and a non-homogenous system of four equations in reflection coefficients is obtained. For numerical computations of speed and reflection coefficients, a particular material is modelled as transversely isotropic micropolar piezoelectric solid half-space. The speeds of plane waves are computed against angle of propagation to observe the effects of various micropolar and piezoelectric parameters. Reflection coefficients of various reflected waves are also computed against angle of incidence to observe the effects of various material parameters.

Key Words: Transverse isotropy, Micropolar piezoelectric solid, Plane waves, Reflection, Reflection coefficients.