

عنوان مقاله:

Rayleigh Surface Wave Propagation in Transversely Isotropic Medium with Three-Phase-Lag Model

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خلاصه مقاله:

The present paper is dealing with the propagation of Rayleigh surface waves in a homogeneous transversely isotropic medium. This thermo-dynamical analysis is carried out in the context of three-phase-lags thermoelasticity model. Three phase lag model is very much useful in the problems of nuclear boiling, exothermic catalytic reactions, phonon-electron interactions, phonon scattering etc. The normal mode analysis is employed to obtain the exact expressions of the considered variables. The frequency equations for thermally insulated and isothermal surface in the closed form are derived. Some special cases of frequency equation are also discussed. In order to illustrate the analytical developments, the numerical solution is carried out and the computer simulated results in respect of phase velocity and attenuation coefficient are presented graphically. It is found that the results obtained in the present problem agree with that of the existing results obtained by various researchers. This study may find its applications in the design of surface acoustic waves (SAW) devices, structural health monitoring and damage characterization of materials.

کلمات کلیدی:

Rayleigh waves, Transversely isotropic material, Three-phase-lag model, Frequency equation

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