

On reflection and transmission of p- and Sv-Waves phenomena at the interface between solid-liquid media with magnetic field and two thermal relaxation times

ABSTRACT

In this research, we studied the reflection and transmission of thermoelastic wave at a solid-liquid interface under influence of two thermal relaxation times and magnetic field. The governing equations are introduced taking into consideration Green-Lindsay theory and Maxwell's stresses. After solving the governing equations, we found the two reflections and transmission coefficients of incident p-(primary) and SV- (Shear Vertical) waves in the presence of thermal relaxation times and a magnetic field. The boundary conditions at the interface have been applied. The appropriate expressions to find the amplitude ratios for the two incidence waves (p- and SV-waves) have been obtained. A numerical calculation is made for the reflection and transmitted coefficients of the incident waves, in which we study the effect of thermal relaxation times and magnetic field. The results obtained are presented graphically for the effect of magnetic field and relaxation times to display the phenomena physical meaning.

Keyword: Conservation of energy; GL theory; Magnetic field; Reflection; Relaxation time; Thermoelasticity; Transmission