🔊 Listen ▶
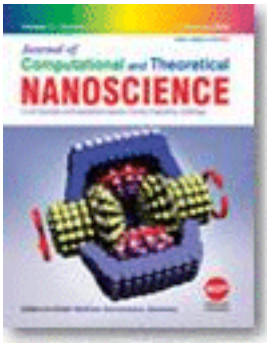
On the Initial Stress, Magnetic Field, Voids and Rotation Effects on Plane Waves in Generalized Thermoelasticity

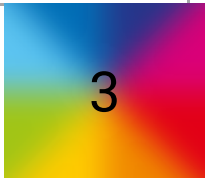··· **Abstract**   🔖 References   💬 Citations   ☰ Supplementary Data   ◑ Article Media   📈 Metrics   ⊕ Suggestions

In this work, we study the effect of the magnetic field, rotation, thermal field, and the initial stress and also voids on the reflection of P-wave with one relaxation time. The formulation is applied to generalization, the Lord–Shulman theory with one relaxation time. The electromagneto-thermoelastic interactions in perfectly conducting plane is subjected to a uniform axial magnetic field with voids and rotation. It is shown that there exist four plane waves; P_1-, P_2-, P_3- and P_4-. In addition, the reflection coefficients from insulated stress-free surface for the incident P-wave are obtained. Finally, numerical values of the complex modulus of the reflection coefficients are visualized graphically to display the effects of magnetic field, initial stress, rotation, thermal relaxation time and voids parameters and displayed graphically. In the case of neglecting the effect of the magnetic field, and made clear the impact of other variables on the reflection coefficients, which is considered a special case of this study and displayed graphically.

Keywords: INITIAL STRESS; MAGNETO-THERMOELASTICITY; REFLECTION; RELAXATION TIME; ROTATION; THERMOELASTICITY; VOIDS

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