

Plane Waves in Generalized Thermo-microstretch Elastic Solid with Thermal Relaxation Using Finite Element Method

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Abstract

The propagation of plane waves in a thermo-microstretch elastic solid half-space as proposed by Lord–Shulman as well as the classical dynamical coupled theory are discussed. The problem has been solved numerically using a finite element method. Numerical results for the displacement components, force stresses, temperature, couple stresses, and microstress distribution are obtained. The variations of the considered variables through the horizontal distance are given and illustrated graphically. Comparisons are made with the results predicted by the theory of generalized thermoelasticity for different values of the relaxation time.

Keywords

Dynamic coupled theory Finite element method Lord–Shulman theory

Thermo-microstretch elastic solid

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