Influence of gravity and mechanical strip load on a micropolar thermoelastic theory with two-temperatures

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Abstract

A new model of two-temperatures for a generalized micropolar thermo-elastic medium has been established in this paper. A medium is affected by a gravitational field and two types of mechanical strip load (continuous load and impact load). The technique called Laplace Fourier transform has been utilized to obtain the analytical expressions of variables under deliberation. The numerical and graphical illustration of the results has been carried out to indicate the differences among one temperature model, the classical dual-temperature model, and the hyperbolic dual-temperature model upon the Lord and Shulman theory, also, in the case of Coupled Theory (CT) and Lord and Shulman theory (L-S), we discussed the effect of the gravitational field and mechanical strip load. The most significant points are highlighted. The current investigation has led us to deduce some particular cases of special interest. When it comes to heat conduction's new general model then this study will be extremely beneficial in developing a better understanding of the ingrained features.

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