THE EFFECT OF DUAL PHASE LAG MODEL ON A TWO-DIMENSIONAL PROBLEM OF A MODE I CRACK IN A FIBRE-REINFORCED THERMOELASTIC MEDIUM

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Abstract

The dual-phase-lag model (DPL) proposed by Tzou is applied to the study the influence of reinforcement on the total deformation for an infinite space weakened by a finite linear opening mode **I** crack. The material is homogeneous isotropic elastic half space. The crack is subjected to prescribed temperature and stress distributions. The normal mode analysis is used to obtain the exact expressions for displacement components, force stresses, and temperature. The boundary of the crack is subjected to a prescribed stress distribution and temperature. The normal mode methods are used to obtain the exact expressions for the considered variables. Some particular cases are also discussed in context of the problem. The numerical results are presented graphically and compared it in the different theories of thermoelasticity and discussed the differences due to the presence of dual phase lags and reinforcement.