Analytical and Computational Solution of Three-Dimensional Thermoelastic Interactions in Porous Material with Temperature-Dependent Properties

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The present work deals with a new problem of generalized thermoelastic interaction on a porous material with temperature-dependent mechanical properties in the context of Green and Naghdi type II. The surface of the half-space is taken to be traction free and heated by subjected to a time-dependent heat source. The eigenvalue approach techniques under normal mode analysis are used to solve the resulting non-dimensional coupled equations. The effect of the dependence of modulus of elasticity on the displacement components, the stress components, changes in volume fraction field and temperature distribution have been computed and illustrated graphically.

Keywords: Eigenvalue Approach; Green and Naghdi Type II; Normal Mode Analysis; Porous Material; Three-Dimensional Model

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