

Abstract

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A Mode-I Crack in an Infinite Space in Generalized Thermoelasticity

In this work, we solve a dynamical problem of an infinite space with a finite linear crack inside the medium. The Fourier and Laplace transform techniques are used. The problem is reduced to the solution of a system of four dual integral equations. The solution of these equations is shown to be equivalent to the solution of a Fredholm integral equation of the first kind. This integral equation is solved numerically using the method of regularization. The inverse Laplace transforms are obtained numerically using a method based on Fourier expansion techniques. Numerical values for the temperature, stress, displacement, and the stress intensity factor are obtained and represented graphically.