

A Two-Dimensional Problem Micropolar Thermoelastic Medium under the Effect of Laser Irradiation and Distributed Sources

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Abstract : The present investigation deals with the deformation of micropolar generalized thermoelastic solid subjected to thermo-mechanical loading due to a thermal laser pulse. Laplace transform and Fourier transform techniques are used to solve the problem. Thermo-mechanical laser interactions are taken as distributed sources to describe the application of the approach. The closed form expressions of normal stress, tangential stress, coupled stress and temperature are obtained in the domain. Numerical inversion technique of Laplace transform and Fourier transform has been implied to obtain the resulting quantities in the physical domain after developing a computer program. The normal stress, tangential stress, coupled stress and temperature are depicted graphically to show the effect of relaxation times. Some particular cases of interest are deduced from the present investigation.

Keywords : pulse laser, integral transform, thermoelastic, boundary value problem

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