

Boundary Value Problems of Thermoelastic Bodies with Microstructure and Microtemperatures

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The purpose of this paper is to investigate Dirichlet and Neumann boundary value problems of the theory of thermoelasticity of microstretch materials with microtemperatures and microdilations in the steady state oscillations case. The system of differential equations, describing the properties of this kind of thermoelastic materials with microstructure and microtemperatures have been proposed in [1]. We construct explicitly, in terms of elementary functions, fundamental matrices of solutions to the system of differential equations. The corresponding Green's formulas are derived and the integral representation formulas of solutions are constructed by means of generalized single layer, double layer and Newtonian potentials. We formulate the basic boundary value problems in appropriate function spaces and prove the uniqueness theorem. We employ the potential method to prove the existence and regularity theorems for basic boundary value problems.

References

1. Iesan, D. *Thermoelasticity of Bodies with microstructure and microtemperatures*. International Journal of Solids and Structures, 2007.