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The One-dimensional Problem of Unsteady-related Elastic Diffusion Layer

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The problem of determining the stress strain state of an elastic medium, taking into account the structural changes caused by the presence of diffusion fluxes. The influence of diffusion processes on the stress-strain state of the environment is taken into account by using the locally equilibrium model of thermoelastic diffusion, which includes the coupled system of equations of motion of an elastic body and the equations of heat and mass transfer. For solutions used decompositions of the unknown functions in Fourier series and then applying the integral Laplace transform with respect to time. We construct a fundamental solution of the problem. For examples the cases where the diffusion flux at the boundary is constant, or decays exponentially are considered.

Key words: elastic diffusion, time-dependent problems, Fourier series, Laplace transform.

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