

The Method of Solving of Non-Stationary Coupled Problems of the Theory Thermal-Plasticity for the Rotation Shells

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The new effective method for numerical solving of two-dimensional non-stationary coupled problems of the theory of thermoplasticity for the case of nonsteady loading of the rotation shells is proposed. The numerical solving of these problems is reduced to the solution of the systems of differential equation in partial derivatives of the second order, consisting of five equations of motion (equilibrium), nine geometrical correlations, six equations of physic state and equation of thermal conduction. This system is solved by means of new version of the oncomponent splitting method of higher accuracy. Unknown values (the components of the vector of velocity displacements, specific efforts and specific moments, deformations, shifts, angles of rotations and temperature) for each step by time are found in the spline-function form (cubic B-splines, strained splines). The offered method has allowed to receive the fourth order of approximating of the method on coordinates. To increase the accuracy of calculations on time the iterative procedure has been developed. The convergence theorem has been proved. The numerical examples of implementation of the method are presented.

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