UDC 539.3

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OSCILLATION OF ANISOTROPIC STIFFENED CYLINDRICAL SHELL WITH FLOWING FLUID LOADED BY AXIAL COMPRESSIVE FORCE

The research aim is to study oscillation of an anisotropic cylindrical shell stiffened by the longitudinal ribs with the flowing fluid in motion in loading by an axial compressive force. The least action Ostrogradsky-Hamilton principle, the method of Fourier series are used. Free oscillation of the cylindrical shell stiffened by the longitudinal ribs in the contact with the flowing fluid in motion in axial compression is studied. The motion equations are derived. In the study of the fluid motion the expression for the potential of the fluid is used. The frequency equation for the stiffened cylindrical shell in contact with the fluid in motion is derived. The numerical analysis of this problem is examined. The calculation results are presented in the form of graphs of the dependence of the frequency parameter on a relative velocity, the winding angle of the anisotropic-shell fiber and a compressive force at different relations of material elasticity moduli for an anisotropic shell.

Keywords: *oscillation, anisotropic shell, axial compressive force, fluid.*

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