Abstract

Within the framework of the piecewise homogeneous body model with the use of the three-dimensional linearized theory of elastic wave propagation in the initially stressed body the dispersion of the axisymmetric longitudinal wave in the finite pre-strained compound cylinder is investigated. The materials of the inner and outer cylinders are assumed to be incompressible. The stress-strain relations are given through the Treloar's potential. The numerical results regarding the influence of the problem parameters on the dispersion of the considered wave propagation are presented and discussed. The expressions for the calculation of the wave propagation velocity for long wavelength limit and for short wavelength limit are derived.