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INVESTIGATION OF THREE-DIMENSIONAL  
STRESS-STRAIN STATE OF A SMALL THICKNESS  
RADIALLY-INHOMOGENEOUS  
TRANSVERSALLY-ISOTROPIC SPHERE

Abstract

*The three-dimensional stress-strain state of a small thickness radially-inhomogeneous transversally-isotropic sphere is investigated by the method of asymptotic integration of elasticity theory equations.*

*Assuming that the load given on the lateral surfaces is sufficiently smooth, the inhomogeneous solutions are constructed. Then homogeneous solutions are constructed and asymptotic expansions of homogeneous solutions are obtained. The analysis of stress-strain states corresponding to different types of homogeneous solutions is carried out.*

*It is shown that the stress-strain state consists of three types: internal stress state, simple fringe effect, and boundary layer. Some boundary layer solutions have no damping properties and they may cover all the domain occupied by the shell.*