The dispersion relation of flexural waves in a magnetoelastic anisotropic circular cylinder,

The objective of this paper is to investigate some aspects of dispersion relation of flexural waves propagation in a transversely isotropic hollow circular cylinder of infinite extent placed in a primary magnetic field. A frequency equation appropriate to the hollow circular cylinder is obtained by using the lame (Helmholtz) potentials for arbitrary values of the physical parameters involve as well as the primary magnetic field. Numerical calculations have been carried out when the cylinder is made of the material of Zinc Oxide. This study shows that waves in a solid body propagating under the influence of a superimposed magnetic field can differ significantly from those propagating in the absence of the magnetic field. Also, one may see that the effect of the primary magnetic field is to increase the values of the materials constants. Finally the results are given for different values of the primary magnetic field and presented graphically. The standard results of the previous investigations have also been deduced as particular cases.