SURFACE TIME DOMAIN AXISYMMETRIC WAVE IN TRANSVERSELY ISOTROPIC MEDIUM

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A transversely isotropic material in the sense of Green is considered. Using a series of potential functions proposed in [1], the torsionless axisymmetric coupled wave equations are transformed to a forth order partial differential equation. The solution of this equation for a half-space under surface load is obtained in the Laplace-Hankel domain. The solution is investigated in detail in the special case of a surface point force varying with time as Heaviside function. Using Cagniard-De Hoop method [2], the inverse Laplace transforms of the waves at the surface of the half space are then obtained in the form of integrals with finite limits. For validity of the results, the final formulations are simplified for an isotropic material and compared with the existing formulation. The present approach is then verified by comparing the displacements at the surface with the solutions obtained by Pekeris [3], which shows an exact agreement.

References

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