

Guided Wave in a Cylinder with Trapezoid Cross-Section

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Abstract : The trapezoid rods are widely used in civil engineering as load -carrying members. Ultrasonic guided wave is one of the most popular techniques in analyzing the propagation of elastic guided wave. The goal of this paper is to investigate the propagation of elastic waves in the isotropic bar with trapezoid cross-section. Dispersion curves that describe the relationship between the frequency and velocity provide the fundamental information to describe the propagation of elastic waves through a structure. Based on the SAFE (semi-analytical finite element) a linear algebraic system of equations is obtained. By using numerical methods, dispersion curves solved for the rods with the trapezoid cross-section. These fundamental information plays an important role in applying ultrasonic guided waves to NTD for structures with trapezoid cross section.

Keywords : guided wave, dispersion, finite element method, trapezoid rod

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