

Hollow circular cylinder: application to non destructive testing

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Abstract : Advanced research into non destructive control of industrial pipe works provides several acoustical methods for inspection of their structural integrity. The use of guided waves is one possible solution to detect and identify different flaws. In this paper, we are studying the propagation of guided waves in a tube and the correlation of these last by defects of surface. The dispersion curves of symmetrical modes (longitudinal and torsion) and asymmetrical mode (inflection) have been established. The mode chosen to generate it the second longitudinal mode, for this mode the radial element of displacement is very weak in front of the axial element in the point produced frequency thickness equal to 0.99 MHz.mm where from a weak attenuation, according to our experimental results the L (0, 2) mode is sensitive to the depth variation and the defect circumference.

Keywords : guided waves, Hollow cylindre, NDT