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Estimation of ultrasonic wave parameters in materials under bending force

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Abstract : this paper presents the use of prism technique todetermine the longitudinal and transversal wave parameters in materials under simple bending forces. The weak number of studies on acoustoelastic behavior and the evolution of measurement methods led us to propose a complete feasibility study on measurements of longitudinal and shear waves for different mediums subjected to uniaxial compressive stresses.The expectation maximization algorithm is employed for parameters estimation those are amplitude, phase, time of flight, frequency and bandwidth. These parameters allow the verification of the parameter values modification resulting from the effect of bending stresses.

Keywords : Ultrasonic, prism technique, expectation maximization algorithm