1.3.83. ULTRASONIC WAVE PROPAGATION IN MATERIALS WITH MECHANICAL STRESSES

Ivanova Y., Mihovski M., Institute of Mechanics-BAS, Sofia, Bulgaria;
Partalin T., Sofia University, Faculty of Mathematics and Informatics, Sofia, Bulgaria

Knowing of the spreading of ultrasonic waves in stressed media is a potential tool for estimating of the stress states and properties in materials. The present paper deals with acoustoelasticity in stressed and deformed metal materials during the bending loads. To evaluate the change of the ultrasonic velocities in media under stress, a experiment and modeling were performed. The variations of the phases and spectra of the ultrasonic impulses in deformed media were under study. As additional investigation on acoustoelastic behavior on bending load, we proposed the use of signal processing methods. The correlation technique was used to obtain an accurate estimation of the propagation time of ultrasonic waves. The experimental study was achieved by means of measurement set up composed of an ultrasonic bench and device for bending of the materials.