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**Foundations of the ultrasonic non-destructive method of  
determination of stresses in near-the-surface layers of solids**

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The ultrasonic non-destructive method under consideration is intended for measurements of uniaxial and two axial stresses in the near-the-surface layers of relatively rigid materials (metals, alloys and similar material). This method is intended for measurements of the actual, assemble, operating, preload prestress and other stresses. Above mentioned stresses must be considered as initial or residual stresses taking into account the theory [1] under consideration. In this case the disturbances (displacements and stresses of the 3-D linearized theory [1] of elastic waves in bodies with initial or residual stresses) arise due to ultrasonic vibrations. Description of the non-destructive method under consideration and information on instruments and devices for measurements are presented. Some examples of non-destructive determination of stresses in near-the-surface layers of materials are presented also as applied to the residual stresses arising at electric welding and to the operating stresses arising at loading. Additional information is presented in monograph [1]. References: 1. Guz A.N. Elastic waves in bodies with initial (residual) stresses. Kiev: "A.C.K." Publishers, 2004. – 672 p. (In Russian).