# MICROSTRESSES IN SOLID BODY AND METHODS FOR THE DETERMINATION OF MICROSTRESSES

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Mechanical treatment causes the deformation of solid materials, leading to a change in the structure of the sample and the formation of microstresses, balanced within individual crystals, and can be both oriented and unoriented in the direction of the force that produced the plastic deformation.

The existing methods for determining the microstress are divided into mechanical ones, which are based on the principle of elastic discharge by cutting a sample and physical, based on a change in the properties of the sample.

One of the most common physical methods for determining microstresses is X-ray analysis. The use of X-rays to study the stress state in metals and alloys is based on the phenomenon of X-ray diffraction when passing through the crystal lattice of the material under study. The advantage of the X-ray method is the possibility of its application in the study of stresses in small areas of parts of complex configuration without their destruction. The disadvantages of this method are the use of complex equipment and the relative processing time of the data obtained [1].

A non-contact electrostatic method for estimating the stress-strain state of solids based on the experimentally established relationship between the given state of solid and the magnitude of the electric field of the analyze object [2]. The holographic method for determining stresses is a contactless method. The wide application of this method is limited in connection with the requirements of vibration isolation of both the investigated objects and the holographic apparatus used [3]. The use of existing methods for determining quantitative data on the magnitude of microstresses will allow us to predict the strength characteristics of the material, increase its durability and work efficiency.

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