

# Abstract

Present-day experimental methods for analyzing the stress–strain state (SSS) based on interference optical techniques for recording strain or displacement fields are given in the book including coherent optical methods (holographic interferometry, speckle photography, electronic digital speckle interferometry, digital holography), photoelastic techniques, and also the shadow optical method of caustics.

The theoretical framework of the methods and fields of their effective application in modern practice are stated, and also problematics of their future development are characterized.

Definite attention is given to new advanced developments fulfilled in recent years in the field of experimental and computational methods for studying residual stresses, determining parameters of material damage as well as the methods for obtaining characteristics of material deformation.

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