Angular dependence of diffraction efficiency of a dynamic hologram in a reversible photochromatic medium

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Abstract

Angular characteristics of a dynamic hologram, recorded by a “fan” of plane waves in a reversible photochromatic medium, are studied under various correlations between the intensities of these waves. It is shown that the maximum increase of the relative diffraction efficiency with the increase of the angle between the reference and object waves is observed for thin holograms. There is such a PCM thickness beginning from which the relative dependence of the hologram diffraction efficiency upon the angle ceases to depend upon the PCM thickness, reaching some maximum distribution. Coincidence is shown of the angular characteristics of the holograms, recorded under the condition that the reference wave intensity is much greater than the object wave intensity, and of the holograms, recorded by a “fan” of plane waves of equal intensity. The hologram diffraction efficiency change is studied under the readout wave deviation from the Bragg angle.

Keywords: diffraction efficiency, dynamic hologram, photochromatic medium, object wave, PCM, Bragg angle.

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Access full text (in Russian)

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