

Diffraction interferometers based on zone plates. Part II. Visualization and measurement of thermal inhomogeneities in the optical thickness of a laser active element

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Abstract

The paper reports on the use of a diffraction interferometer based on a zone plate for the investigation of thermal inhomogeneities of optical thickness of a tubular laser active element. The results of recording the temporal variation of transverse distribution of the inhomogeneity of optical thickness of a potassium gadolinium tungstate (PGT) crystal, appearing after a pump lamp flash, are presented. It is detected that the photoelastic part of phase perturbations arising near the pump lamp is opposite in sign to the thermal change in the refractive index and the linear dimensions of the sample and exceeds them in magnitude, which indirectly indicates the dominant influence of photoelastic effects on the formation of lasing in PGT lasers.

Keywords: diffraction interferometer, potassium gadolinium tungstate, PGT, lamp flash, photoelastic effect, laser.

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[Access full text \(in Russian\)](#)

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