

SPATIAL ANALYSIS OF ISOTROPIC
AND ANISOTROPIC DIFFRACTIONS
OF LIGHT BY TRANSVERSE ACOUSTIC
WAVES IN BARIUM BETA-BORATE CRYSTALS

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S u m m a r y

The indicative surfaces of the effective photoelastic (PE) constant p_{eff} and the acousto-optic (AO) figure of merit M_2 have been constructed, and their extreme values have been determined for both isotropic and anisotropic diffractions of light by transverse acoustic waves in β -BaB₂O₄ crystals. The relevant spatial analysis of the AO interaction has been carried out. The largest value of the AO figure of merit $M_2 = 40.1 \times 10^{-15} \text{ s}^3/\text{kg}$ for β -BaB₂O₄ crystals has been found in the case of anisotropic diffraction of light by a transverse acoustic wave with lower velocity. The specimen geometry and the corresponding positional relationship of interacting AO components have been determined for the most efficient use of β -BaB₂O₄ crystals in AO devices.