

SPECTRAL-POLARIZATION BEHAVIOR  
OF ORTHOGONAL POLARIZED MODES  
OF A He–Ne LASER

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S u m m a r y

The position of the polarization plane (PP) of the orthogonal plane-polarized modes and the beat frequency between these modes (BFM) has been studied on a bimode He–Ne laser with the quasiisotropic resonator. The position of the polarization plane depends on the oscillation frequency, external magnetic field including the Earth magnetic field, cavity thermal conditions, and an asymmetry of heat-evolution. The adjacent modes are rigorously orthogonal only on the symmetric position in the amplification contour. As a consequence of the space tapering of quasiorthogonal polarized modes, the absolute value of BFM depends on the polarization of a HF mode. BFM responds to the appearance of higher-order modes, which may appear spontaneously. The stabilization of gas laser radiation by the characteristic of orthogonally polarized modes and on the basis of the control over BFM is problematic in practice.