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Lasers with intracavity doubling of frequency of the generation

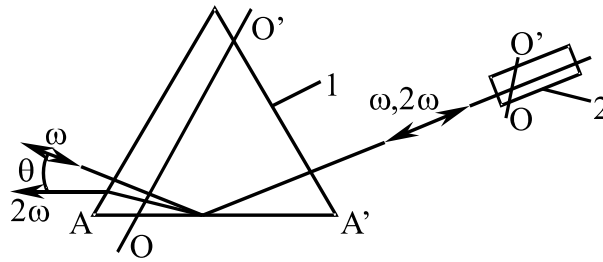
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One of ways of increase of efficiency of transformation of frequency of radiation of lasers by methods of nonlinear optics is intracavity transformation of frequency, when nonlinear crystal for transformation of frequency is placed inside the resonator. We use the dispersive-polarization device for the output of radiation of the second harmonic. The laser on YAG with use of a special prism CaCO_3 made from a monocrystal was offered for the solution of this problem.

The direction of propagation of interacting waves in a prism is shown in a Figure.

The separation of beams of the basic radiation of the laser and radiation of the second harmonic occurs by means of reflection from a facet AA' , and the angle θ between beams is equal $\approx 12^\circ$.



Using of a crystal CaCO_3 is caused by a significant anisotropy and transparency of a crystal. The phase synchronism of interacting waves in a nonlinear crystal is carried out by moving of a prism 1 toward an optical axis OO' . The peak efficiency of transformation in created optical system makes $\sim 80\%$, that allows to use such type of the schemes in laser systems.