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Amplitude modulation of two-color radiation at double sound frequency

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For amplitude modulation of two-color optical radiation at a double sound frequency, it is proposed to use a device consisting of two identical acousto-optic (AO) cells operating at the same sound frequency and providing Bragg matching of two optical beams with one acoustic wave. As an AO medium, it is proposed to use a gyrotropic crystal whose eigenwaves are circularly polarized. The modulation is caused by the interference of waves with circular polarizations. The amplitude modulation of two-color Ar laser radiation (λ_1 = 0.488 μm and λ_2 = 0.514 μm) at a frequency of 236 MHz was experimentally obtained using two paratellurite AO cells.

Keywords: acousto-optic diffraction, two-color radiation, Bragg regime, frequency shift, amplitude modulation.

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