Analysis of the effect of amplified spontaneous radiation on a phase-conjugated YAG:Nd laser oscillation at a wavelength of 1.34 um at electro-optical and passive Qswitching of an open multi-loop cavity

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In this work, a comparative analysis of the influence of the amplified spontaneous emission (ASE) at a wavelength of 1.06 μ m on oscillation characteristics at a wavelength of 1.34 μ m for a YAG:Nd³⁺ laser with a phase-conjugated open multiloop cavity at passive and electro-optical Q-switching is presented. At the passive Q-switching, the intense ASE growth is associated with insufficient spectral selectivity of the cavity mirrors having residual reflection at a wavelength of 1.06 μ m of about 4%. At the electro-optical Q-switching, the control by the time delay between the pump pulse and the moment of Q-switch opening made it possible to reduce the ASE power by more than a factor of two.

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