

Beam Parameters Control and Increase of Chemical Oxygen-Iodine Laser Efficiency at Using of Unstable Resonator with a Hole-Coupled Mirror

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The perspectives of unstable resonators with a hole-coupled mirror and injection of controlling beam for using in COIL are considered. It is shown that considerable increment of output power and brightness of laser beam can be achieved at using of such resonators. These resonators are especially important for medium-power oxygen-iodine lasers, where usual unstable resonators are not effective because of small magnification coefficients. It is possible to control COIL output beam parameters by using low-power injection of tunable semi-conductor laser with fiber amplifier.

Unstable resonators with a hole-coupled mirror are real alternative to existent resonator schemes for medium power chemical oxygen-iodine lasers for continuous and pulse-periodical work. The using of such resonators allows to control COIL beam parameters at realization of optical scheme “master oscillator – power amplifier”. In this case master oscillator is tunable semi-conductor laser and power amplifier is COIL.

At using resonators with a hole-coupled mirror it's possible to increase optimal magnification coefficient of unstable resonator for output power and laser beam brightness increase. In the Fig.1 the dependence of laser beam brightness on magnification coefficient is shown for traditional unstable resonator and unstable resonators with a hole-coupled mirror.

Efficiency of unstable resonators with a hole-coupled mirror depends on injection hole and injected beam power.

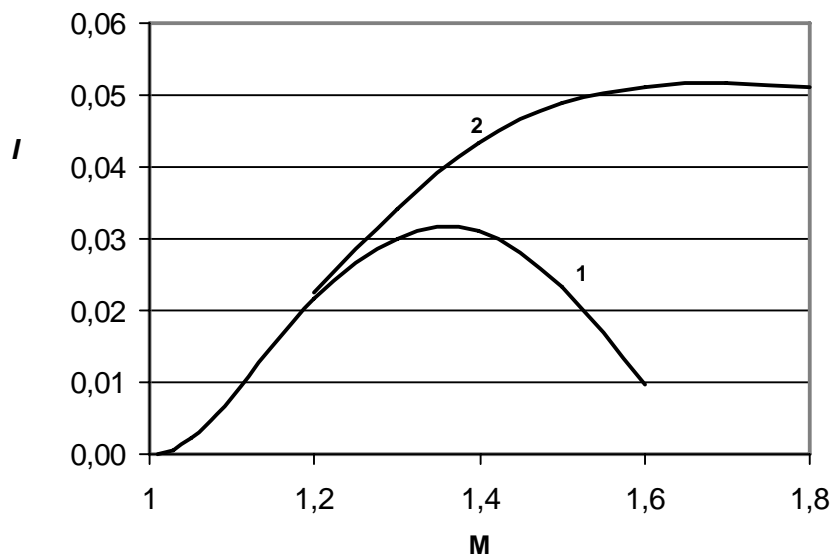


Fig. 1. Dependence of laser beam brightness on magnification coefficient for usual unstable resonator and unstable resonators with a hole-coupled mirror.

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