Abstracts

A Laser Resonator with a Selector for a Higher Transverse Mode (Correspondence)

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A new laser resonator is proposed in which a specified higher order Hermite-Gaussian mode becomes the lowest loss mode. The two reflectors in the resonator are blocked in the vicinity of the characteristic zeros of the mode and the edge (i.e., |x|, |y| --> /spl infin/). In such a configuration the mode volume is enhanced, and mode selection is improved as compared with a conventional resonator in which a Gaussian mode is the dominant one. We have specialized to TEM/sub 22/ mode. The solutions to the integral equation for the eigenmodes and eigenvalues of the resonator are obtained on a digital computer. The computed eigenfunctions and mode selection show several interesting characteristics, and the loss mechanism for a few low-loss modes are elucidated. The computational results show that the location and the width of the blocking structure are closely related to the mode competition phenomenon and therefore mode selection.

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