Abstract

Directional Emission from a Microdisk Resonator with a Linear Defect[1]

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A microdisk resonator with a linear defect at some distance away from the circumference is studied theoretically. We demonstrate that the presence of the defect leads to (i) enhancement of the output efficiency, and (ii) directionality of the outgoing light. The dependence of the radiative losses and of the far-field distribution on the position and orientation of the defect are calculated. The angular dependence of the far field is given by a lorentzian with a width that has a sharp minimum for a certain optimal orientation of the defect line. For this orientation the whispering-gallery mode of a circular resonator is scattered by the extended defect in the direction normal to the disk boundary.

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