

Peculiarities of Absorption and Emission in Defective Cholesteric Liquid Crystal Cells

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We investigated peculiarities of absorption, emission and photonic density of states of a cholesteric liquid crystal with an isotropic defect layer inside. The influence of the defect layer position on absorption and emission in the system was studied. It was shown that for non-diffracting circularly polarized incident light absorption/emission is maximum if the defect is in the centre of the system; and for diffracting circularly polarized incident light absorption/emission is maximum if the defect is shifted from the centre of the system to its left border from where light is incident. We also investigated influence of the defect layer thickness and those parameters which characterize loss and gain on absorption and emission. The influence of anisotropic absorption in the cholesteric liquid crystal layer on photonic density states was investigated. The influence of pump laser intensity on absorption and emission peculiarities was investigated, too.