

Abstract Submitted
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Magnetic field control of the linear and nonlinear optical absorption in two-dimensional quantum nanorings OLEG OLENSKI, KAIN, King Saud University, Riyadh, Saudi Arabia — Linear and nonlinear optical absorption coefficients of the two-dimensional quantum nanoring in the perpendicular magnetic field \mathbf{B} are calculated within independent electron approximation. Characteristic feature of the energy spectrum are crossings of the levels with adjacent nonpositive magnetic quantum numbers m as the intensity B changes. It is shown that the absorption coefficient of the associated optical transition is drastically decreased at the fields corresponding to the crossing. Proposed model of the Volcano disc allows to get simple mathematical analytical results which allow clear physical interpretation. An interplay between positive linear and intensity-dependent negative cubic absorption coefficients is discussed; in particular, critical light intensity at which additional resonances appear in the total absorption dependence on the light frequency, is calculated as a function of the magnetic field and levels' broadening.

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