TWO-DIMENSIONAL EXCITONS IN A STRONG PERPENDICULAR MAGNETIC FIELD AND PROPAGATION HANLE EFFECT OF QUADRUPOLE POLARITONS

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S u m m a r y

We discuss two aspects of the theory of exitons interacting with a magnetic field. The first concerns two-dimensional excitons in a strong perpendicular magnetic field, when only two levels of the Landau quantization of electrons and holes n_e, $n_h = 0; 1$ are taken into account. They give rise to four types of excitons characterized by four combinations of two quantum numbers (n_e, n_h) as follows: (0,0), (1,1), (1,0), and (0,1). Their wave functions and eigen- energies are determined, correspondingly, in the first and second order of perturbation theory in the nondiagonal Coulomb electron-hole interaction. The second aspect is devoted to the propagation Hanle effect with the participation of quadrupole polaritons in crystal Cu_2O in the Faraday geometry. The propagation time of two polariton wave packets with the same group velocity is supposed to be smaller than the dephasing time. The periodic dependence of the intensity of the light arrived to the rear side of the sample on the magnetic field is characterized by the period inversely proportional to the length of the effective propagation way.