

EXCITON CONDENSATION IN SEMICONDUCTOR QUANTUM WELLS IN NONUNIFORM ELECTRIC FIELD

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S u m m a r y

The appearance of a structure in the exciton density distribution in a semiconductor double quantum well with the transverse electric field applied is studied in the case where the metal electrode contains a round window. It is suggested that there exists the exciton condensed phase, the free energy of which can be described by the Landau phenomenological model. To determine the exciton density, we used the traditional theory of phase transitions generalized to the case of the finite exciton lifetime and the presence of a pumping and an inhomogeneity of the system. It is shown that the different types of structures appear at a high exciton density: rings of the exciton condensed phase or a periodic distribution of its islands. The behavior of the structures depending on the pumping, the window size, and temperature is analyzed. The obtained results are in agreement with experimental data.