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# Influence of Resonant Optical Phonons on Intersubband Magnetoabsorption in Nanowires

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The investigation concerns the influence of the electron-phonon interaction on the form of bands of the intersubband absorption of a weak electromagnetic wave in quantum wires in a transverse magnetic field. The interaction of the electrons with the long-wavelength acoustic vibrations is taken into account using the relaxation time approximation; the interaction with the optical vibrations is considered in the resonance approximation (the energy of an optical phonon is the difference of the energies of the electronic states between which the transition occurs). In the paper the case of low temperatures is considered, when only the processes with an emission of a non-dispersion optical phonon are realized. It is shown that under these conditions the magnetoabsorption peak splits into two: the half-width of the long-wavelength peak is almost entirely determined by the interaction of electrons with the acoustic vibrations, and the half-width of the short-wavelength peak mainly depends on the interaction of electrons with the optical vibrations. The coefficients of the intersubband absorption of a weak electromagnetic wave for various polarizations were calculated. The influence of polarization of the electromagnetic wave on its absorption was analyzed.