

INTRASUBBAND PLASMONS IN A FINITE ARRAY
OF QUANTUM WIRES PLACED INTO
AN EXTERNAL MAGNETIC FIELD

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S u m m a r y

The paper deals with the theoretical investigation of intrasubband plasmons in an array of quantum wires, consisting of a finite number of quantum wires (QWs) arranged at an equal distance one from another and placed into an external magnetic field. Two types of the arrays of QWs are under consideration: an ordered array of QWs with equal electron densities in all QWs and a weakly disordered array of QWs which is characterized by the fact that the density of electrons of one defect QW is different from that of other QWs. For the ordered array of QWs placed into an external magnetic field, the nonmonotone dependence of the plasmon frequency on the $1D$ density of electrons in QWs is predicted. For a high magnetic field, the existence of $1D$ electron density ranges, in which plasmon modes do not exist, is shown. For a weakly disordered array of QWs, the existence of the local plasmon modes, whose properties differ from those of usual modes, is found. At high magnetic fields, the disappearance of the local plasmon modes at certain ranges of the $1D$ electron density in a defect QW is shown.