EFFECT OF NONLINEAR ELECTRON-ELECTRON INTERACTION ON ELECTRON TUNNELING THROUGH AN ASYMMETRIC TWO-BARRIER RESONANCE TUNNEL STRUCTURE

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S u m m a r y

The quantum-mechanical theory for the transmission coefficient and the positive and negative conductivities of a monoenergetic electron flux through an open plane asymmetric two-barrier resonance tunnel structure, which can serve as an active element in quantum cascade lasers or quantum cascade detectors, has been developed in the framework of effective-mass and rectangular-potential models. The dependences of the transmission factor and the conductivity in such a structure on the electron energy and the frequency of an electromagnetic field are found. It is shown that the properties of the active conductivity can be used for the experimental evaluation of resonance energies and resonance widths of quasistationary electron states.