

Nanocomposites и nanomaterials

About of possibility of entangling for identical particles at their simultaneous crossing of quantum field of nanoirregularity

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The questions of the dynamics of coherent states formation or destructions of coherency usually are not examined, by virtue of their briefness, however for some applications, for example in tomography, at constructing of nanodevices, they are of interest undoubtedly.

The possibility of display of dynamic effects can be determined proceeding from the change of parameters of identical particles by quantum field of nanoirregularity.

It is theoretically considered the simultaneous passing by identical particles of a field of nanoirregularity, approximated by quantum barriers or quantum wells at their movement towards each other. Herewith the exchange interaction of identical particles is taken into account.

It is shown that the exchange interaction of identical particles in a field of quantum nanoirregularity changes the quantum characteristics of particles, passed through field of the nanoirregularity, - their phase and energy parameters; the time of passage of these nanoirregularity changes also. Change of energy parameters in case of tunneling identical particles through a rectangular barrier is equivalent to tunneling of usual particles through a barrier with the changed value of its potential.

For the first time it is shown that the delay by time of passage by particles quantum nanoirregularity concerns possible processes of entangling of quantum states of particles during their exchange interaction. In that case, the change of energy parameters of particles, passed through field of the nanoirregularity and additional increase in time of passage by particles of a quantum wells means that the processes of entangling also are characterized by the certain time and energy ratio.

1. Martseniuk L.S. *The effects of entangling and the interference transitions in quantum systems.* Lap Lambert(Germany),-2015. -100 p.