The effect of rotation of magnetic moment defects on the spin-dependent conductance of a ferromagnetic nanowire

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Abstract
In this paper, we calculate the spin-dependent conductance of ferromagnetic quantum wire in the presence of one or two defects by using Green's function method at the tight-binding approach. We study the effect of rotation of defect magnetic moment on the system conductance. The results show that in the magnetic wire, independent of existence or absence of defect, the allowed energy region shifts with amount of spin exchange parameters with respect to nonmagnetic case. By creation of defect and increasing its number in a ferromagnetic wire, the conductance with (without) spin-flip decreases (increases). Moreover, the conductance strongly depends on the rotation of magnetic moments of defect and this dependence becomes more detectable by increasing the number of defects.

Keywords: ferromagnetic nanowire, defect, Green’s function, spin-dependent conductance

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