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Dependence of electronic conductance of a carbon nanoring on the position of contacts and the applied magnetic field

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Abstract

In this paper, we studied the electronic conductance of a carbon nanoring using Green's function method at the tight-binding approach for different positions of contacts in the presence and absence of magnetic field. The results show that as the conductors approach in the nanoring, the tunneling conductance in the gap region improves. Moreover, applying the magnetic field dramatically influences the conductance spectrum of the nanoring so that the existence of the magnetic field causes the configurations with coinciding conductance to be disarticulated. The study of the carbon nanoring including binary benzene rings indicates that the variation of the position of these benzene rings in the nanoring shifts the positions of anti-resonances in the conductance spectrum.

Keywords: carbon nanoring , electronic conductance, magnetic flux, tight-binding

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