

Spin polarized current in Graphene pumped by a THz-Signal

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Spin polarized transport properties of the Dirac electrons through ballistic mesoscopic device is investigated. This mesoscopic device is modeled as ferromagnetic graphene/ superconducting graphene junction. The transport of electrons through such junction is studied under the effect of both magnetic field and the energy of the induced photons of an AC-field. Both the Andreev and normal reflections probabilities are deduced by solving Dirac-Bogoliubov-deGennes equation analytically. The present results show an oscillatory behavior of the conductance for parallel and anti-parallel spin alignment. These oscillations are due to Fano resonance. Results for spin polarization and giant magneto-resistance show the coherency manipulation of the spin precession in such mesoscopic device. The present result is very important for quantum information processing and quantum computing.

Biography

Aziz N. Mina is an associate professor of theoretical physics, Faculty of Science, Beni-Suef University, Beni-Suef, Egypt. He has published 23 papers in international scientific journals.

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