

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Quantum correlations of magnetic impurities by a multiple electron scattering in carbon nanotubes DIDIER GAMBOA ANGULO, Universidad Autnoma de Yucatn, GUILLERMO CORDOURIER MARURI, ROMEO DE COSS GMEZ, Centro de Investigacin y de Estudios Avanzados del IPN — In this work we analyze the quantum correlations and polarizations states of magnetic impurities spins, when a multiple electron scattering was taken place. A sequence of non-correlated electrons interacts through scattering producing quantum correlation which will have an impact on the electronic transmission. We consider a short range Heisenberg interaction between ballistic electron and static impurities. We analyze the cases when the electron scattering is produce by one and two impurities, obtaining the electronic transmission rates. Concurrence and fidelity calculations are performed to obtain the level of quantum entanglement and polarization correlations. We also discuss the possible application of this model to metallic and semiconductor carbon nanotubes, which could have important implications on spintronics and quantum information devices.

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Date submitted: 24 Nov 2015

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