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Entanglement of magnetic impurities via electron scattering with asymmetric coupling constants GUILLERMO CORDOURIER-MARURI, ROMEO DE COSS, Cinvestav Unidad Mérida, YASSER OMAR, Technical University of Lisbon — We study the entanglement generated by electron scattering between two fixed magnetic impurities, located in a 1-D quantum wire. The impurities were considered distant and only interact through the spin of a scattered electron. We analyzed the asymmetric case produced by the effect of considering different exchange coupling electron-impurity factor for each impurity. We used the quantum waveguide theory approach to find the probability of electron transmission for each espinorial configuration of the system, taking into account the possible changes in the directions of the impurities and electron spins. We find resonance behavior in the evolution of the probability of electron transmission with respect to the impurities separation. We show results for the cases where the average and the difference of the exchange coupling electron-impurity factor are constant. From the probabilities of electron transmission the entanglement is calculated using the von Neumann entropy. We show that the entanglement can be maximized changing the initial conditions of the system, like the impurities separation distance and the ratio of the electron-impurity exchange coupling factor.

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