

# KONDO CORRELATIONS IN THE PRESENCE OF RASHBA EFFECT IN DQD-AB RING SYSTEM

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A device composed of double quantum dots (DQD) placed in the arms of Aharonov-Bohm (AB) ring is investigated theoretically in the presence of Rashba effect. One of the dot, strongly coupled to the leads, is in the Kondo regime. The second QD, whose charging energy is smaller than its coupling to the leads, can be considered as non-interacting. The system is mapped onto Anderson model with Kondo impurity embedded in the "host metal" possessing nonconstant, energy and flux dependent density of states. Due to the Rashba field this generalized density of states becomes spin-dependent and this dependence can be controlled electrically by applying an external gate. Depending on the combined action of the AB field and Rashba field the Kondo level of the first quantum dot is split as if the Zeeman field were present. Moreover, due to the geometry of the device, spin-dependent quantum interference between single particle level of the non-interacting dot and the effective Kondo channel in the interacting dot takes place. The spectral density of the Kondo dot and the phase shift as a function of the Rashba field are investigated as well as the possibility of spin filtering in conductance through the device.

9.7 cm

13.4 cm

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