TRANSPORT THROUGH A KONDO QUANTUM DOT ASYMMETRICALLY COUPLED TO MAGNETIC LEADS

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Using the numerical renormalization group method [1,2] we study the spin-dependent transport through a single-level quantum dot coupled to ferromagnetic leads in the Kondo regime. In particular, we analyze the dependence of linear response conductance and tunnel magnetoresistance on the asymmetry between the coupling to left and right leads. In the parallel configuration of leads' magnetizations, the Kondo resonance is suppressed due to an effective exchange field that splits the dot level [2]. In the antiparallel configuration, on the other hand, the magnitude of the exchange field depends on the asymmetry factor, which gives rise to a nontrivial dependence of both the linear conductance and tunnel magnetoresistance on the asymmetry between the left and right junction. Generally, the Kondo effect in the antiparallel configuration is suppressed for asymmetric coupling. It is shown that external magnetic field can restore the unitary limit of the conductance not only in the parallel, but also in the antiparallel magnetic configuration.

9.7 cm

[1] K. G. Wilson, Rev. Mod. Phys. **47**, 773 (1975).

[2] O. Legeza, C. Moca, A. Tóth, I. Weymann, and G. Zaránd, *Manual for the flexible DM-NRG code*, arXiv:0809.3143v1 (2008); http://www.phy.bme.hu/~dmnrg/.

[3] M. Sindel, *et al.*, Phys. Rev. B **76**, 045321 (2007).

13.4 cm

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