Simulation of spin-valve regime for asymmetrical FS nanostructures in external magnetic field

M. Avdeev[a], Yu. Proshin[a], M. Khusainov[b], and S. Tsarevskii[a]

[a]Theoretical Physics Department, Kazan Federal University, Kazan 420008, Russia
[b]Kazan State Energy University, Kazan 420066, Russia

The proximity effect for the asymmetrical trilayers F_1SF_2 and F_1F_2S systems is theoretically investigated in the presence of external magnetic field H parallel to the boundary plane. The F_1 and F_2 layers may possess different parameters (magnitudes of exchange field, spin stiffness and free path lengths, correlation lengths, etc.). Our calculations are valid for arbitrary interface transparencies. The behavior of critical temperature, critical magnetic field and current distribution are simulated in the "dirty limit" including triplet superconducting channel. The mutual orientation of the magnetizations of the F layers can be changed by the external magnetic field which also suppresses a superconductivity of the contact. The influence of all these factors is very important for possible application of asymmetrical FS trilayers to the FS spin-valve, which are controlled by external magnetic field.
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