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## Spin flip conductance of quantum nanocontacts

Useinov A., Useinov N., Tagirov L.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

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### Abstract

The theory of nanosize point contacts made of ferromagnetic metals is developed. A general quantum scattering theory is applied to calculate conductance of the nanocontact with domain wall located in the constriction. Exact solution of the electron motion in the potential of the linear domain wall is used as a zero-order approximation. Spin-conserving and spin-flip conductivities are calculated by perturbation theory up to the second order in difference between the model and actual potentials of the domain wall. The spin-flip conductivity imposes natural limitation on magnetoresistance of a point contact, which otherwise diverges in the regime of quantized conductance through the contact.

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