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Mesoscopic Anisotropic Magnetoconductance Fluctuations in Ferromagnets SHAFFIQUE ADAM, MARKUS KINDERMANN, SAAR RAHAV, PIET W. BROUWER, Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, NY 14853-2501 — The conductance of a ferromagnetic particle depends on the relative orientation of the magnetization with respect to the direction of current flow. This phenomenon is known as "anisotropic magnetoresistance." Quantum interference leads to an additional, random dependence of the conductance on the magnetization direction. These "anisotropic magnetorestance fluctuations" are caused by spin-orbit scattering, which couples the electron motion to the exchange field in the ferromagnet. We report a calculation of the dependence of the conductance autocorrelation function on the rotation angle of the magnetization direction.

Shaffique Adam
Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, NY 14853-2501

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