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First principles calculations of anisotropic magnetoresistance in ferromagnetic nanocontacts D. JACOB, J. FERNANDEZ-ROSSIER, J.J. PALACIOS, Dpto. de Fisica Aplicada, Universidad de Alicante, Spain — Here we present *ab initio* transport calculations of ferromagnetic nanocontacts [1] including the spin-orbit (SO) coupling for the very first time. Due to the SO coupling the conductance of the nanocontact changes with the direction of the magnetization giving rise to the so-called anisotropic magnetoresistance (AMR). We investigate the magnitude of the AMR effect while going from the atomic contact regime (BAMR) [2] to the tunneling regime (TAMR) [3]. Our work is motivated by recent experiments on ferromagnetic nanocontacts [4,5] which report much larger AMR values than those usually obtained for bulk materials in agreement with recent electronic structure calculations of ideal monatomic Ni chains [2].

References:

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David Jacob
Dpto. de Fisica Aplicada, Universidad de Alicante

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