

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Nonequilibrium Green's function calculations for antiferromagnetic metal spintronic nanocircuits ALVARO NUNEZ, REMBERT DUINE, PAUL HANEY, ALLAN MACDONALD, The University of Texas at Austin — In this talk I will present results of nonequilibrium Green's function calculations on toy-model heterostructures containing antiferromagnetic elements that are intended to illustrate some generic aspects of their spintronic properties. Using this formalism we calculate the nonequilibrium spin density of the electrons which, in a microscopic picture of spin transfer, gives rise to spin transfer torques. The main result is that, unlike the case of ferromagnets to ferromagnets, the spin transfer acts throughout the entire antiferromagnet, making current a very effective way to induce collective magnetization dynamics. Preliminary results on the influence of disorder and surface roughness will be presented.

Rembert Duine

Date submitted: 30 Nov 2005

Electronic form version 1.4