Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Current induced Spin Torque in a nanomagnet XAVIER WAINTAL, CEA-Saclay. FRANCE, OLIVIER PARCOLLET, CEA-Saclay. FRANCE — In a nanomagnet (whose total spin $S_0 \leq 1000$), very small polarized currents can lead to magnetic reversal. Treating on the same footing the transport and magnetic properties of a nanomagnet connected to magnetic leads via tunneling barriers, we derive a closed equation for the time evolution of the magnetization. The interplay between Coulomb blockade phenomena and magnetism gives some additional structure to the current induced spin torque. In addition to the possibility of stabilizing uniform spin waves, we find that the system is highly hysteretic: up to three different magnetic states can be simultaneously stable in one region of the parameter space (magnetic field and bias voltage).

Olivier Parcollet
CEA-Saclay. FRANCE

Date submitted: 08 Dec 2004 Electronic form version 1.4