Abstract Submitted
for the TSF06 Meeting of
The American Physical Society

Landau-Lifshitz or Gilbert Damping of Ferromagnetic Magnetization WAYNE SASLOW, Department of Physics, Texas A&M University — Two apparently equivalent ways of incorporating damping of the magnetization in ferromagnets were given by Landau-Lifshitz and by Gilbert. With the advent of spin-transfer torque in a non-uniform magnet there is now a way to distinguish between them. We present arguments and derivations in support of L-L and against Gilbert: (1) if, as widely believed, the spin-torque is adiabatic, then only L-L can fit the data; (2) irreversible thermodynamics supports L-L; (3) Gilbert's derivation will be shown to have a number of basic flaws and assumptions; (4) simple Fokker-Planck-like derivation of the damping shows it to be L-L.

Abstract APS

Date submitted: 25 Sep 2006 Electronic form version 1.4