

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Electronic transport in ferromagnetic conductors** CHRISTIAN WICKLES, WOLFGANG BELZIG, University of Constance — We theoretically study ferromagnetic conductors using the Stoner model to describe the interaction between electron spin and magnetization. The latter can, in general, depend on time and space. We include impurity scattering processes for the electrons that lead to momentum relaxation, spin-flip and spin-dephasing. Utilizing Keldysh theory, we derive transport equations which allow to access interesting quantities such as domain wall resistance, electronic contribution to the magnetization damping coefficients and forces induced by non-equilibrium electron distributions in the presence of current flow. On the other side, a magnetization that shows temporal and spatial variation can induce current flow in the electron system.

Christian Wickles  
University of Constance

Date submitted: 21 Nov 2008

Electronic form version 1.4