Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Evaluation of Gilbert damping in half metals CLAUDIA K.A. MEWES, CHUNSHENG LIU, MAIRBEK CHSHIEV, TIM MEWES, WILLIAM H. BUTLER, Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL — According to Kamberský's spin torque correlation model of Gilbert damping [1,2], precessional damping in magnetic systems occurs through a combination of spin-flip exciations and orbital excitations. In half-metallic systems, Gilbert damping is expected to be reduced because of the absence of spin-flip scattering. This makes half-metals interesting potential candidates for information storage technologies especially for use in CPP/GMR read head devices and spin-torque MRAM. Using a combination of first principle calculations to predict the band structure for the half-metal of interest and an extended Hückel tight binding model we calculate and discuss the Gilbert damping within the spin torque correlation model for different half-metallic structures, including the Heusler alloys Co_2MnSi, Co_2MnGe. [1] V. Kamberský, Czech. J. Phys. B **26**, 1366 (1976). [2] B. Heinrich, D. Fraitová and V. Kamberský, Phys. Stat. Sol. **23**, 501 (1967).

Claudia K.A. Mewes
Center for Materials for Information Technology,
The University of Alabama, Tuscaloosa, AL

Date submitted: 06 Dec 2007 Electronic form version 1.4