Abstract Submitted
for the 4CF11 Meeting of
The American Physical Society

Damping Constant in Perpendicular Recording Media LEI LU, MICHAEL KABATEK, MINGZHONG WU, DEPARTMENT OF PHYSICS, COLORADO STATE UNIVERSITY TEAM — Understanding the damping of magnetization precession in real magnetic recording media is of both fundamental and practical importance. In practical terms, the relaxation processes in media not only set a natural limit to recording data rates, but also play a critical role in microwave-assisted switching. This presentation reports on the damping in a commercial-like perpendicular media disk. The sample consists of a granular media layer and a soft capping layer and shows a coercivity of 5.2 kOe and a squareness of 0.97. The damping constant was determined through temperature- and frequency-dependent ferromagnetic resonance (FMR) measurements. The temperature-dependent FMR measurements were carried out with a 9.48 GHz cavity and magnetic fields oriented in a direction opposite to the remanent magnetization in the film. The temperature range was 110-320 K. The linewidth-temperature data were fitted with three models, the spin-flip magnon-electron scattering model, the breathing Fermi surface model, and inhomogeneity-associated line broadening. The fitting yields a α range of 0.07-0.15. The frequency-dependent FMR measurements were performed with a co-planar waveguide over a frequency range of 27.5-49.5 GHz. A linear fit to the linewidth-frequency data indicates a α value which is within the range determined from the temperature-dependent measurements.

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Date submitted: 14 Sep 2011 Electronic form version 1.4