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Physical damping processes in Co-Cr granular films.[1] SANGITA KALARICKAL, PAVOL KRIVOSIK[2], NAN MO[3], CARL PATTON, Colorado State University, Fort Collins, CO, STELLA WU, Seagate Technology, Fremont, CA —
Recent ferromagnetic resonance (FMR) results on metallic ferromagnetic alloy films have shown that a simple one parameter Gilbert damping description is inadequate for most systems. New FMR results have been obtained on Co-Cr granular films with the columnar microstructure amenable to perpendicular media applications. The nominal 17.3 GHz FMR field and linewidth vs. the out-of-plane field angle was measured and analyzed for a 16 nm thick granular film with a relatively low effective anisotropy field of 1 kOe and a nominal grain size of 8 nm or so. The analysis reveals a three component linewidth comprised of a small Gilbert term with an α-value of 0.003 that is consistent with intrinsic processes, a large two magnon term that derives from the grain-to-grain anisotropy variations, and an inhomogeneity broadening term due to anisotropy dispersion and grain size variations.

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