

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Approach towards full Heusler alloy based CPP-GMR: from Ag and non-magnetic Heusler to binary intermetallic spacers** OLEG MRYASOV, University of Alabama, Department of Physics, SERGEY FALEEV, S.V. KARTHIK, University of Alabama, MINT — Recently, it has been demonstrated that GMR response can be significantly enhanced by incorporating high spin polarization ferromagnetic (FM) full Heusler alloy into spin valve nano-structures. Experimental results for two types of non-magnetic spacers (i) elemental metal [1] and (ii) non-magnetic Heusler alloy spacers [2] deserve careful comparison. More practical (110) textured combination of  $\text{Co}_2\text{MnGe}$  (CMG) and non-magnetic Heusler alloy  $\text{Rh}_2\text{CuSn}$  (RCS) [2] have been used to build test hard disk drive [3]. In this work, we investigate the mechanism of spin dependent interface scattering for (001) CMG/Ag/CMG (Case1) and (110) CMG/RCS/CMG (Case2) models on the basis of ab-initio electronic structure calculations. We find that in both cases GMR has significant contribution from the spin dependent interface scattering. We propose new binary intermetallic spacer materials  $\text{Al}_2\text{Au}$  and  $\text{Cu}_3\text{Sn}$  as an alternative to Ag and RCS spacers.

[1] T.Iwase et.al. Appl.Phys.Express, **2**, 063003 (2009).

[2] K. Nikolaev et.al. App.Phys. Lett., **94**, 222501 (2009)

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Date submitted: 28 Nov 2010

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