

MAR08-2008-020486

Abstract for an Invited Paper
for the MAR08 Meeting of
the American Physical Society

From spinwaves to Giant Magnetoresistance (GMR) and beyond

PETER GRUENBERG¹, Institut fuer Festkoerperforschung Forschungszentrum Juelich

Standing spinwaves and surface waves in layered magnetic structures can be used for the detection and quantitative evaluation of interlayer exchange coupling (IEC). Using this method antiferromagnetic IEC has been found in Fe/Cr/Fe layered structures. This was applied to switch the alignment of the magnetizations of the Fe films in an external field from antiparallel to parallel whereby the Giant Magnetoresistance (GMR) effect was discovered. Currently the interest focusses on “Current Induced Magnetic Switching” (CIMS) which can be understood as inverse GMR effect. For all three effects, IEC, GMR and CIMS there are many interesting applications.

¹Presented as Nobel lecture in Stockholm on 8th December, 2007