

Abstract Submitted
for the CAL12 Meeting of
The American Physical Society

Magneto Optical Kerr Effect Measurement of Double Exchange Spring System¹ HANMING YUAN, JIYEONG GU, Department of Physics and Astronomy, California State University, Long Beach — Magnetic property of the symmetric Double Exchange Spring System, soft(S)/hard(H)/soft(S) magnetic layers Glass/NiFe (bottom Py)/SmFe/NiFe (top Py), was investigated using Magneto Optical Kerr Effect (MOKE) measurement. In order to produce a symmetric non-collinearity in magnetization, the thicknesses of the two Py layers are controlled to be the same during the deposition. Due to the finite skin depth of the laser used in MOKE measurement magnetic hysteresis loop for each Py layer can be measured separately by adjusting the right thickness of the layers. First of all, we found the magnetic hysteresis loops for the bottom and the top Py layers are not the same. Moreover, we found that the coercivity of the bottom Py measured from MOKE is closer to the coercivity of the first switching measured from Alternating Gradient Magnetometer (AGM) and is much smaller than that of the top Py from MOKE; the coercivity of the top Py from MOKE is closer to that of the second switching from AGM. These show that the non-collinearity provided by the two soft layers is not symmetric in reality even with a symmetric structure. The experimental observations might be due to the difference in the growing environment between the bottom Py layer and the top Py layer.

¹This project is supported by the 2011-2012 Mini Grant from California State University, Long Beach

Hanming Yuan
Department of Physics and Astronomy,
California State University, Long Beach

Date submitted: 28 Sep 2012

Electronic form version 1.4