Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Spin waves, domain wall, and spin transfer torque interactions MAHDI JAMALI, JAEHYUN KWON, HYUNSOO YANG, National University of Singapore — Magnetic nanostructures have shown many interesting aspects. Recent studies of the interaction of spin waves and domain wall have proposed that the domain wall speed can be controlled by the spin wave amplitude and frequency. One recent report showed that the spin waves can be amplified when the nonadiabatic spin torque is sufficiently large. We studied the interaction effect between spin waves and spin transfer torque on the domain wall motion in magnetic nanowires by using micromagnetic simulation. We found that the amplification gain of spin waves is not constant along the nanowires. The direction of motion of domain-wall depends on the frequency of spin waves. In addition we show that the spin waves can enhance the current induced domain wall motion and the domain wall motion speed is controllable by changing spin wave properties.

Hyunsoo Yang
National University of Singapore

Date submitted: 20 Nov 2009 Electronic form version 1.4