Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Hysteresis effect in ^{55}Mn NMR of $TbMn_2O_5$ SEUNG-HO BAEK, ANDREW HARTER, ARNEIL REYES, National High Magnetic Field Lab, SANG-WOOK CHEONG, N. HUR, Rutgers University — ^{55}Mn zero-field NMR has been performed on antiferromagnetic magnetoelectric multiferroic compound $TbMnO_5$ from 60 K to 1.8 K. The broad and complex spectrum is distributed between 240 MHz and 280 MHz implying a superposition of NMR lines arising from the several inequivalent Mn ions due to the amplitude-modulated spin structure. When external perturbing field up to 3 T is applied, a dramatic change in the first moment and the signal enhancement is observed which are hysteretic in nature. The behavior is attributed to antiferromagnetic domain walls which are coupled to ferroelectric domains similar to that observed in weakly ferromagnetic α-Fe_2O_3. The nature of strong coupling of magnetic and electric ordering and its subsequent effect on its multiferroic behavior are discussed.

Seung-Ho Baek
National High Magnetic Field Lab

Date submitted: 29 Nov 2005 Electronic form version 1.4