Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Muon spectroscopy as a probe for multiferroic materials CARLOS ARISTIZABAL, ALAN DREW, DONNA ARNOLD, FINLAY MORRISON, LAURA NUCCIO, VISWANATHAN MOHANDOSS, ANDREI ROTARU, NICOLA MORLEY, FRANCIS PRATT, SEAN GIBLIN, MICHAEL CARPENTER, None — Multiferroic magnetoelectrics are materials that exhibit both, ferromagnetic and ferroelectric ordering in the same phase. Thus, they have a spontaneous magnetization that can be manipulated with an applied magnetic field, a spontaneous ferroelectric polarization that can be switched by an applied electric field, and in some cases, there exist some form of coupling between the two order parameters. Such coupling is of great technological importance as it offers the possibility of new multifunctional devices such as transducers, actuators, sensors and memories [1]. Muon spectroscopy (MS) [2] has shown itself to be an extremely versatile and powerful probe of magnetic properties of materials as well as a flexible technique in terms of experimental set up to be able to show magnetic behaviour under an applied electric field. By means of MS and other complementary techniques, I will present, in an entirely new tetragonal tungsten bronze (TTB) class of multiferroic material, a direct coupling in the form of an internal magnetic field that varies hysteretically with an applied electric field. [1] N. A. Spaldin et al., Science 309, 391 (2005) [2] S. J. Blundell, Contemp. Phys. 40, 175, (1999).

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None

Date submitted: 09 Nov 2012 Electronic form version 1.4