Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Magnetocapacitance in surface-reconstructed $LaMnO_3/SrTiO_3$ multilayers RAINER SCHMIDT, JAVIER GARCIA-BARRIOCANAL, NORBERT NEMES, Universidad Complutense de Madrid, Fac. CC. Fisicas, GFMC, MAR GARCIA-HERNANDEZ, Instituto de Ciencia de Materiales de Madrid - Consejo Superior de Investigaciones Cientficas (ICMM-CSIC), CARLOS LEON, JACOBO SANTAMARIA, Universidad Complutense de Madrid, Fac. CC. Fisicas, GFMC — We report on large magnetocapacitance (MC) effects in $LaMnO_3/SrTiO_3$ multilayer structures. Frequency, temperature and magnetic field dependent dielectric spectroscopy was employed using in-plane and out-of-plane measurement set-ups to investigate multilayers of $LaMnO_3$ (15 u.c.) and $SrTiO_3$ (2 u.c.) with a repetition rate of 8: (LMO 15/STO 2)$_8$. Such multilayer structures have been identified previously to display an electron transfer across the epitaxial interface from LMO to STO, orbital reconstruction and a considerable Ti^{3+} magnetic moment near the LMO/STO interface [Garcia-Barriocanal et al. Adv. Mater. 22 (2010) p.627]. We demonstrate moderate in-plane magnetocapacitance (MC) of up to -5 % associated with an intrinsic magneto-electric coupling (MEC) effect originating from magnetic STO layers. Massive out-of-plane MC of up to -52 % was ascribed to current path changes due to magnetically active STO pin-holes and current path meandering.

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Date submitted: 07 Jan 2013 Electronic form version 1.4