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Induced ferromagnetism in $La_{0.7}Sr_{0.3}MnO_3/LaFeO_3$ interfaces and its role on magnetic tunnel junctions[1] FLAVIO Y. BRUNO, C. VISANI, CNRS, France, A. RIVERA-CALZADA, J. TORNOS, N.M. NEMES, Universidad Complutense de Madrid, Spain, S. VALENCIA, R. ABRUDAN, Helmholtz-Zentrum-Berlin für Materialen und Energie, Germany, Y. LIU, J.W. FREELAND, S.G.E. TE VELTHUIS, Argonne National Laboratory, USA, M. GARCIA-HERNANDEZ, ICMM, Spain, M. VARELA, S.J. PENNYCOOK, Oak Ridge National Laboratory, USA, J. SANTAMARIA, Universidad Complutense de Madrid, Spain, J.E. VILLEGAS, M. BIBES, A. BARTHELEMY, CNRS, France — Magnetic tunnel junctions with antiferromagnetic barriers have so far been poorly studied. We have investigated $La_{0.7}Sr_{0.3}MnO_3$ (LSMO)/$LaFeO_3$ (LFO)/LSMO magnetic tunnel junctions(MTJ) where LFO is an antiferromagnetic tunnel barrier. We examined the tunneling magnetoresistance (TMR) behavior of junctions as a function of temperature finding a 30% maximum at 100K. If the top ferromagnetic electrode is replaced by a non-ferromagnetic metal (Au) we still observe a TMR effect, which we attribute to spin filtering. We will show that this effect is connected to the presence of an induced (ferro)magnetic moment in the nominally antiferromagnetic LFO barrier at the interface with LSMO, which was detected by XMCD measurements. Finally, we will conclude discussing the new opportunities offered by such type of interfaces to obtain large spin filtering effects.

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