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Magnetic depth profile of $La_{0.7}Ca_{0.3}MnO_3$ / $YBa_2Cu_3O_{7-\delta}$ trilayers S.G.E. TE VELTHUIS, A. HOFFMANN, Argonne National Laboratory, Argonne, IL, V. PEÑA, D. ARIAS, C. LEON, J.L. MARTINEZ, J. SANTAMARIA, Universidad Complutense de Madrid, Spain, M.R. FITZSIMMONS, B.J. KIRBY, Los Alamos National Laboratory, Los Alamos, NM, M. VARELA, Oak Ridge National Laboratory, Oak Ridge, TN — Recent experiments showed magnetoresistance in excess of 1000% in epitaxial tri- layers containing highly spin polarized $La_{0.7}Ca_{0.3}MnO_3$ (LCMO) manganite and high Tc superconducting $YBa_2Cu_3O_{7-\delta}$ [1]. This large magnetoresistance originates from spin imbalance due to the injection of spin polarized carriers. In a series of trilayers, with varying LCMO layer thickness, polarized neutron reflectometry has determined the detailed magnetization depth profile. For trilayers exhibiting a strong magnetoresistance, differences in the magnetization profiles of the two LCMO layers is observed, providing a mechanism for antiferromagnetic alignment during the magnetization reversal process. Obtained details of the magnetization at the interfaces lead to a better understanding of these variations. [1] V. Peña *et al.*, Phys. Rev. Lett **94** (2005) 057002.

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