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Effect of electronic reconstruction on the superconducting properties in high T_C superconducting spin valve structures[1] YAOHUA LIU, L.Y. ZHU, A. HOFFMANN, S.G.E. TE VELTHUIS, Argonne National Laboratory, USA, N.M. NEMES, C. VISANI, J. TORNOS, C. LEON, J. SANTAMARIA, Universidad Complutense de Madrid, Spain, M.R. FITZSIMMONS, M. ZHERNENKOV, Los Alamos National Laboratory, USA — We have studied the angular dependence of the magnetoresistance (MR) and magnetization alignment in $La_{0.7}Ca_{0.3}MnO_3$ (LCMO)/$YBa_2Cu_3O_{7-\delta}$ (YBCO)/LCMO trilayers in the superconducting transition region. The top and bottom LCMOs have different easy-axis coercivities (H_C's) so that the mutual alignment between the two LCMO's magnetizations is tunable with in-plane rotation of the magnetic field. When the amplitude of the applied field is between the two H_C's, the MR shows a quasi-four-fold symmetry, an angular hysteresis between clockwise and anticlockwise rotations, and a unidirectional offset along the initial saturation direction. We find that the MR is not correlated with the LCMO's magnetization alignment. More interestingly, the angular dependence of the MR is understandable by the alignment between the applied magnetic field and the (exponential tail of the) induced exchange fields in YBCO, the latter of which originate from the electronic reconstruction at the LCMO/YBCO interfaces. Our results support the scenario recently proposed by Salafranca and Okamoto [Phys. Rev. Lett. **105**, 256804 (2010)], which explains the inverse superconducting spin switch effect in this system.

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Yaohua Liu
yhliu@anl.gov
Argonne National Laboratory, USA

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