Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

All-oxide inverse superconducting spin switch JACOBO SANTAMARIA, GFMC, Fisica Aplicada III, Universidad Complutense de Madrid, 28040 Madrid, Spain, NORBERT NEMES, ICMM-CSIC, 28049 Cantoblanco, Spain, CRISTINA VISANI, JAVIER GARCIA-BARRIOCANAL, ZOUHAIR SEFRIOUI, DIEGO ARIAS, CARLOS LEON, GFMC, Fis. Aplicada III, Univ. Complutense Madrid, Spain, MAR GARCIA-HERNANDEZ, ICMM-CSIC, Cantoblanco, Spain, SUZANNE TE VELTHUIS, AXEL HOFFMANN, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, USA — In proximity coupled ferromagnet/superconductor/ferromagnet (F/S/F) structures the critical temperature is modulated by the relative orientation of the magnetization in the F layers (superconducting spin switch- SSS-). A larger T_c with antiparallel (AP) compared to parallel (P) magnetizations results from the averaging of the exchange field over the coherent volume. Recent reports have shown an SSS behavior in F/S/F structures with strong ferromagnets, where superconductivity is favored for P orientation of the adjacent magnetizations. Its origin is a subject of debate. While some reports suggest enhanced pair breaking by spin-polarized quasiparticles in the AP configurations, others emphasize the effect of stray fields in depressing the superconductivity. Comparing data of bilayers and trilayers, we show that the SSS effect of our epitaxial LCMO/YBCO/LCMO structures is governed by spin transport with limited influence of stray fields.

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Date submitted: 03 Jan 2008 Electronic form version 1.4