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Proximity effect induced magnetoresistance hysteresis loops in a topological insulator/YIG heterostructure MOHAMMAD MONTAZERI, MURONG LANG, Dep. of Electrical Engineering, University of California, Los Angeles, CA 90095, MEHMET C. ONBASLI, Dep. of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, XUFENG KOU, LIANG HE, Dep. of Electrical Engineering, University of California, Los Angeles, CA 90095, CAROLINE A. ROSS, Dep. of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, KANG L. WANG, Dep. of Electrical Engineering, University of California, Los Angeles, CA 90095 — We experimentally demonstrate the proximity effect induced hysteretic magnetoresistance in an 8 quintuple layers of Bi2Se3 films grown on Gallium Gadolinium Garnet (GGG) (111) substrates with a 50 nm Yttrium Iron Garnet (YIG) buffer layer by molecular beam epitaxy. With in-plane and out-of-plane magnetic field, square wave shaped and butterfly shaped resistance hysteresis loops can be observed up to 25 K, respectively. The relationship between the hysteretic MR curves and the magnetic switching of the YIG will be discussed in the context of a proximity effect between the YIG and the TI.

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