

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Voltage-Induced Ferromagnetic Resonance in Magnetic Tunnel Junctions JIAN ZHU, University of California, Irvine, JORDAN KATINE, Hitachi Global Storage Technologies, GRAHAM ROWLANDS, YU-JIN CHEN, ZHENG DUAN, University of California, Irvine, JUAN ALZATE, PRAMEY UPADHYAYA, University of California, Los Angeles, JUERGEN LANGER, Singulus Technologies, PEDRAM KHALILI AMIRI, KANG WANG, University of California, Los Angeles, ILYA KRIVOROTOV, University of California, Irvine — We demonstrate excitation of ferromagnetic resonance in CoFeB/MgO/CoFeB magnetic tunnel junctions (MTJs) by the combined action of voltage-controlled magnetic anisotropy (VCMA) and spin transfer torque (ST). Our measurements reveal that GHz-frequency VCMA torque and ST in low-resistance MTJs have similar magnitudes, and thus that both torques are equally important for understanding high-frequency voltage-driven magnetization dynamics in MTJs. As an example, we show that VCMA can increase the sensitivity of an MTJ-based microwave signal detector to the sensitivity level of semiconductor Schottky diodes.

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Date submitted: 11 Nov 2011

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