

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Bias dependent oscillations in spin polarized tunneling¹ CASEY MILLER², Physics Dept., Univ. Calif. San Diego, JOHAN AKERMAN, Dept. of Materials Physics, Royal Institute of Technology, Electrum 229, 164 40 Kista, Sweden, ZHI-PAN LI, Physics Dept., Univ. Calif. San Diego, IVAN K. SCHULLER, Physics Dept., Univ. Calif. San Diego, 9500 Gilman Dr., La Jolla CA 92093 — We investigated the bias dependence of spin polarized tunnelling in (pinned)CoFeB/MgO/(free)CoFeB and (pinned)CoFeB/MgO/(free)NiFe tunnel junctions as a function of temperature and applied field angle. The differential magnetoresistance (MR) exhibits oscillations about zero MR when the free layer of the asymmetric devices is above +0.7 V; no oscillations were observed for negative bias. Oscillations were not observed for any bias in the symmetric devices. The zero-crossing voltages were independent of temperature and relative magnetization angle between the two ferromagnetic layers. A model using spin-split free electron energy bands in the ferromagnets and a trapezoidal tunnel barrier demonstrates qualitative agreement with the experimental data.

¹Supported by US Department of Energy. In collaboration with Freescale Semiconductor.

²cmiller@physics.ucsd.edu

Casey W. Miller
Univ. Calif. San Diego

Date submitted: 30 Nov 2005

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