

Abstract Submitted  
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**Magnified Spin-Motive Forces in MRAM Magnetic Tunnel Junctions** STEWART BARNES, Physics Department, University of Miami — In the Slonczewski 2005 theory [1] for spin-torque-transfer (STT) of a magnetic tunnel junction (MTJ) the tunnelling magneto resistance (TMR) and Gilbert damping parameter  $\alpha$  are of key importance. However the observed critical voltage from the switching of STT-MRAM implies a  $\alpha$  ten times that measured by ferromagnetic resonance (FMR). In addition the TMR is strongly voltage dependent while the STT effect is not. This along with the weak dependence of the critical current on switching direction are inconsistent with the tunnelling model and have never been properly explained. Here will be described a circuit model based upon SU(2) theory for a MTJ for which the basic SMF of about  $10\mu\text{V}$  is magnified to a 200mV shift between the parallel P and anti-parallel AP branches of the IV characteristic. It is implied that the TMR has for origin an SMF. [1] J. C. Slonczewski Phys, Rev. B71, 024411 (2005)

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