

Abstract Submitted  
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**Negative spin polarization in Co|SrTiO<sub>3</sub>|Co magnetic tunnel junctions**<sup>1</sup> J. VELEV, K. BELASHCHENKO, University of Nebraska - Lincoln, D. STEWART, Cornell University, M. VAN SCHILFGAARDE, Arizona State University, S. JASWAL, E. TSYMBAL, University of Nebraska - Lincoln — We perform an *ab-initio* study of spin-polarized tunneling in epitaxial Co|SrTiO<sub>3</sub>|Co magnetic tunnel junctions with bcc Co(001) electrodes. We predict a large tunneling magnetoresistance in these junctions, originating from a mismatch in the majority- and minority-spin bands both in bulk bcc Co and at the Co|SrTiO<sub>3</sub> interface. The intricate complex band structure of SrTiO<sub>3</sub> enables efficient tunneling of the minority *d*-electrons which causes the spin polarization of the Co|SrTiO<sub>3</sub> interface to be negative in agreement with experimental data<sup>2</sup>. Our results indicate that epitaxial Co|SrTiO<sub>3</sub>|Co MTJs with bcc Co(001) electrodes is a viable alternative for device applications. [1] J. Velev et al., Phys. Rev. Lett. **95**, 216601(2005). [2] J. M. De Teresa *et al.*, Phys. Rev. Lett. **82**, 4288 (1999); J. M. De Teresa, *et al.*, Science **286**, 507 (1999).

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