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**Electronic and magnetic properties of the  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{SrTiO}_3$  interface from first principles calculations** HAND ZENIA, Department of Physics, Georgetown University, USA, GILLIAN GEHRING, Department of Physics and Astronomy, University of Sheffield, UK, WALTER TEMMERMAN, Daresbury Laboratory, Daresbury, Warrington, UK — We present results of first principles calculations of the electronic and magnetic properties of the  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{SrTiO}_3$  interface. We are interested in the changes with respect to the bulk as concerns ferromagnetism and half-metallicity. The bulk calculations give a nearly half-metallic ground state for the manganite. In transport the system is predicted to be totally half-metallic. This latter property is preserved at the interface only if the magnetic coupling between the interface region and the bulk is ferromagnetic. We have looked at the two possible interface terminations between  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  and  $\text{SrTiO}_3$  and found that one of the interfaces preserves the bulk properties of  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  whereas the other type of termination suppresses them. Reducing the number of holes at the interface by introducing  $\text{LaMnO}_3$  restores ferromagnetism. Hence the possibility of engineering interfaces to improve the Tunneling Magneto-Resistance yield in the  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{SrTiO}_3/\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  tunnel junctions.

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