Abstract Submitted for the MAS15 Meeting of The American Physical Society

Pseudo-gap to band gap transition in La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub> (LSMO) observed by optical reflectivity/absorption<sup>1</sup> GUERAU CABRERA, ROBBYN TRAPPEN, MIKEL HOLCOMB, West Virginia University, Y-H CHU, National Chiao Tung University, Taiwan — Thin film La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub> (LSMO) is a prime candidate for highly spin-polarized magnetic-tunnel-junction memories. Due to its magnetic properties, it is also a good candidate for applications utilizing electrical control of magnetism when grown adjacent to a ferroelectric layer such as Pb(Ti/Zr)O<sub>3</sub> (PZT). Recently, Wu and others have seen the emergence of a band gap (1eV) in LSMO thin films, when grown adjacent to PZT. Currently, it is understood that LSMO is a half-metal, with a pseudo-gap due to a low desity of states (DOS) near the Fermi level. The transition from pseudo-gap to band gap is not yet fully understood. It is therefore our aim to investigate the emergence of this band gap through optical reflectivity/absorption and thickness dependence experiments.

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Date submitted: 02 Oct 2015

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