

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Exchange coupling induced antiferromagnetic-ferromagnetic transition in $\text{Pr}_{0.5}\text{Ca}_{0.5}\text{MnO}_3/\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ superlattices. W. PRELLIER, P. PADHAN, CNRS/ENSICAEN — Superlattices built from two antiferromagnetic (AFM) charge/orbital order compounds, $\text{Pr}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ and $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$, have been studied as the thickness of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ (LCMO) varied. High structural quality thin films were obtained on LaAlO_3 substrates using the pulsed laser deposition technique. An antiferromagnetic-to-ferromagnetic transition, in addition to an enhancement of the coercivity, are observed as the LCMO layer thickness increases. The small shift in the origin of the field-cooled hysteresis loop along the field axis indicates the presence of ferromagnetic and antiferromagnetic phases in the superlattices. We attribute these features to the AFM spin fluctuations at the $\text{Pr}_{0.5}\text{Ca}_{0.5}\text{MnO}_3 / \text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ interfaces resulting from the strain effects.

W. Prellier
CNRS/ENSICAEN

Date submitted: 15 Nov 2004

Electronic form version 1.4