

Abstract Submitted
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Is Electron Doping Possible in Colossal Magnetoresistance Manganites? W.J. CHANG, Department of Electrophysics, National Chiao Tung University, Hsinchu 300, Taiwan, J.-Y. LIN, J.Y. TSAI, Institute of Physics, National Chiao Tung University, Hsinchu 300, Taiwan, J.Y. JUANG, K.H. WU, T.M. UEN, Y.S. GOU, Department of Electrophysics, National Chiao Tung University, Hsinchu 300, Taiwan, J.M. LEE, J.M. CHEN, National Synchrotron Research Center, Hsinchu 300, Taiwan, H.-T. JENG, Physics Division, National Center for Theoretical Sciences, Hsinchu 300, Taiwan — X-ray absorption near edge spectroscopy (XANES) was used to investigate the hole states in $\text{La}_{0.7}\text{Ce}_{0.3}\text{MnO}_3$ (LCeMO) thin films prepared by pulsed laser deposition. A substantial decrease in the spectral weight of the e_g orbital was observed in LCeMO compared to that in the hole-doped $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ (LCaMO) when both are in low- temperature ferromagnetic states. The results of XANES are consistent with those from LDA+U calculations, in that the doping of Ce has shifted up the Fermi level significantly which, in turn, results in marked reduction of hole pockets originally existing in LCaMO. In addition, the calculations also show significant effects originating from the f -electrons of the Ce element. The Hall measurements also indicate that in LCeMO the carriers are indeed displaying the characteristics of holes. This work was supported by the National Science Council of Taiwan, under grants: NSC 93-2112-M-009-015 & NSC 93-2112-M-009-016

W.J. Chang
Department of Electrophysics, National Chiao Tung University, Hsinchu 300, Taiwan

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