Critical Exponents and Pressure Dependence of $T_c$ of La(Ca)MnO$_3$. JOSE A. SOUZA, B. D. WHITE, J. J. NEUMEIER, Montana State University, Y.-K. YU, National Center for Biotechnology Information, C. A. M. DOS SANTOS, Montana State University and Escola de Engenharia de Lorena — Measurements of heat capacity and thermal expansion for La$_{1-x}$Ca$_x$MnO$_3$ with $x = 0, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45,$ and 1 are reported. Using a model proposed previously (Souza et al. Phys. Rev. Lett. 94, 207209 (2005)), which utilizes both heat capacity ($C_P$) and thermal expansion coefficient ($\mu$) data, the pressure dependencies of $T_c$, $dT_c/dP$, are obtained for all samples. $dT_c/dP$ decreases as the Ca doping increases. Critical behavior using both $C_P$ and $\mu$ is evaluated for the samples. The critical exponent $\alpha$ increases from 0.13, for LaMnO$_3$ to 0.97 for $x = 0.30$. As Ca content is increased further, $\alpha$ drops reaching 0.11, for CaMnO3.

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