A new method for analyzing second-order phase transitions applied to the ferromagnetic transition of a polaronic system JOHN J. NEUMEIER, Montana State University, Y-K. YU, National Center for Biotechnology Information, NIH, J. A. SOUZA, Universidade de São Paulo, H. TERASHITA, Montana State University, R. F. JARDIM, Universidade de São Paulo — A new thermodynamic method for analyzing second-order phase transitions in condensed matter systems is presented. It utilizes heat capacity and thermal expansion data simultaneously and predicts the critical temperature's pressure dependence. Application to the polaronic system $La_{0.7}Ca_{0.3}MnO_3$ reveals second-order behavior with an unusually large critical exponent.

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