Erratum: Evidence for a low-spin to intermediate-spin state transition in $LaCoO_3$ [Phys. Rev. B 66, 020402 (R)(2002)]

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(Received 16 December 2004; published 31 January 2005)
DOI: 10.1103/PhysRevB.71.019902 PACS number(s): 75.80.+q, 65.40.-b, 99.10.Cd

The expression given for the scaling factor C between thermal expansion α and susceptiblity χ in Eq. (4) is erroneous. The correct expression is

$$C = \frac{N_A g^2 \mu_B^2}{3k_B} \frac{S(S+1)}{d}.$$

Thus C does not depend explicitly on the orbital degeneracy ν. Consequently, the values for the scenarios with $\nu=3$ have to be multiplied by 3. Moreover, a more detailed analysis of the susceptibility data (see Ref. 1) yields a somewhat smaller background susceptibility, which leads to a larger g factor of $g=2.28$ instead of $g=2.13$ in the respective fit. This causes a 15% increase of the scaling factors of all four scenarios and Table I should therefore read as noted below.

The smaller background susceptibility causes a similar increase for the experimental value C_{exp} of the scaling factor to $C_{\mathrm{exp}}=195$ emuK/mole. Therefore, our conclusion is unaffected because the very good agreement between the experimental result and the expected value for the LS/IS scenario with $\nu=1$ remains unchanged and the deviation from the other scenarios is as large or even larger than before.

TABLE I. Parameters d and Δ of the fits of the anomalous thermal expansion $\Delta\alpha$ of $LaCoO_3$ (see Fig. 2) obtained for a LS/IS and for a LS/HS scenario with ($\nu=3$) and without ($\nu=1$) orbital degeneracy of the excited IS (HS) state. The respective scaling factors C of Eq. (4) are given in the last row. Experimentally we find $C^{\mathrm{exp}}=195$ emuK/mole.

	LS/IS: S=1		LS/HS: S=2	
	$\nu=1$	$\nu=3$	$\nu=1$	$\nu=3$
d (%)	0.66	0.44	0.55	0.38
Δ (K)	185	265	205	256
C (emuK/mole)	190	290	690	1000

[1] J. Baier, S. Jodlauk, M. Kriener, A. Reichl, C. Zobel, H. Kierspel, A. Freimuth, and T. Lorenz, Phys. Rev. B **71**, 014443 (2005).

