Erratum: Direct measurement of spin correlations using magnetostriction [Phys. Rev. B 77, 020404(R) (2008)]

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We discovered a non-negligible systematic error in the measurements of the magnetostriction along the crystallographic a axis ($H \parallel c, L \parallel a$) in $NiCl_2$-4SC$(NH_2)_2$ (DTN). It turned out that the measurements performed at the National High Magnetic Field Laboratory in Tallahassee, Florida, with a capacitive dilatometer were accompanied by a significant magnetic torque effect due to motion of the screw on which the sample sits, which dominated the experimental results. In Fig. 1, the correct data (black curve) taken with a second dilatometer cell at the Max-Planck-Institute in Dresden, Germany, for 60 mK temperature in magnetic fields up to 10 T are shown in comparison with the incorrect data previously taken at 42 mK (red dashed line). We also checked the experimental results along the other crystallographic direction ($H \parallel c \parallel L$) in the Tallahassee cell for the same sample, with the torque problem corrected, and with a different sample of DTN in Dresden. All the data agree, so the original ($H \parallel c \parallel L$) data are correct. These results are also displayed in Fig. 1, where the original data (blue line at 27 mK) is compared to Dresden data (green crosses at 93 mK) in magnetic fields up to 4 T. We confirmed by measurements performed at different temperatures (data not shown) that the magnetostriction versus magnetic field does not change much below 100 mK and that the comparison of the data is appropriate.

All conclusions of the previous publication are deduced from the experimental observations for $L \parallel c$. The corrections for $L \parallel a$ presented in this Erratum do not affect the validity of the paper. All conclusions remain scientifically correct.

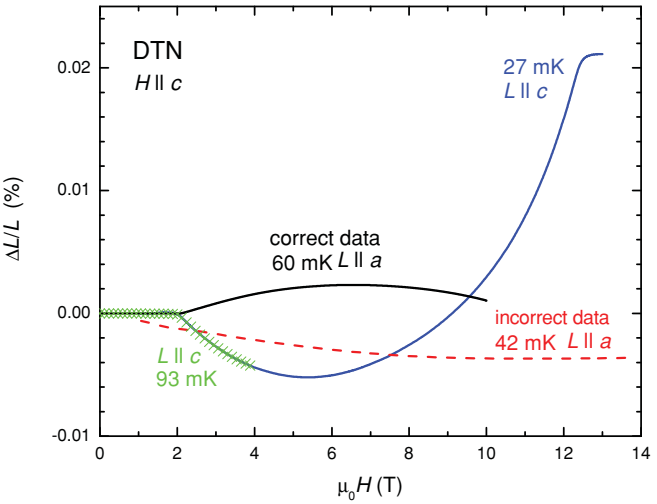

FIG. 1. (Color online) Normalized percentage length change $100\Delta L/L$ as a function of magnetic field measured along the crystallographic c and a axes in $NiCl_2$-4SC$(NH_2)_2$ for temperatures below 100 mK. The blue line and green cross curve were taken with two different dilatometer cells for $L \parallel c$ at 27 and 93 mK, respectively. Both measurements show a perfect analogousness up to 4 T. The incorrect data measured along $L \parallel a$ (dashed red line) at 42 mK deviate significantly from the correct results (black line) obtained at 60 mK.

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