Erratum: Doping dependence of spin dynamics in electron-doped $Ba(Fe_{1-x}Co_x)_2As_2$ [Phys. Rev. B 82, 054515 (2010)]

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(Received 12 January 2011; published 15 February 2011)

DOI: 10.1103/PhysRevB.83.059901 PACS number(s): 74.70.Xa, 74.72.Ek, 75.40.Gb, 78.70.Nx, 99.10.Cd

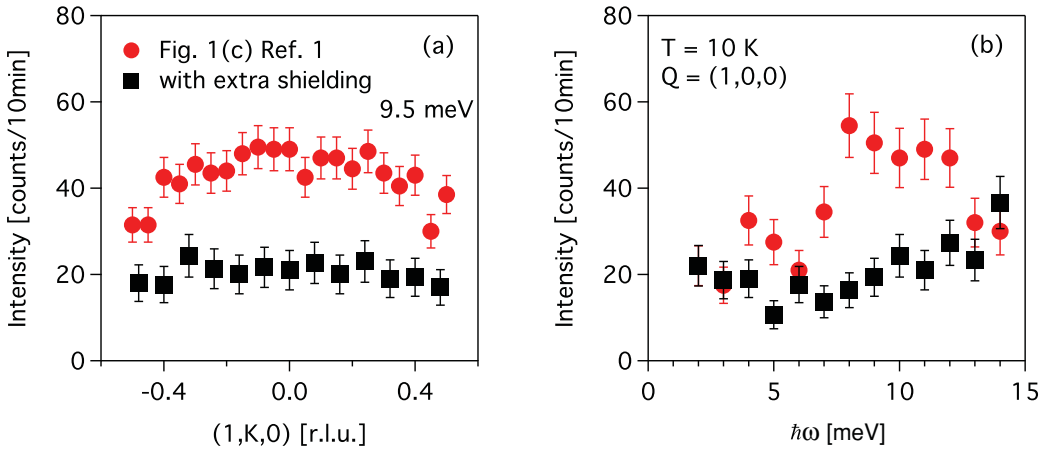

FIG. 1. (Color online) (a) Constant-energy and (b) constant-Q scans were measured on the $x = 0.14$ sample. The data taken with the extra shielding are shown by black squares, and red circles show the data taken from Figure 1(c) in Ref. 1.

We have recently become aware of spurious scattering observed at the triple-axis spectrometer GPTAS, one of the spectrometers used to study magnetic fluctuations in $Ba(Fe_{1-x}Co_x)_2As_2$ reported in Ref. 1. This spurious scattering is due to the alignment of the detector in the direction of the main beam and affects the data taken on the overdoped ($x = 0.14$) sample, shown in Figs. 1(c), 4(e), and 4(f) in Ref. 1. Figure 1(a), which is to be compared with the inset of Figure 1(c) in Ref. 1, shows constant-energy scans at $\hbar\omega = 9.5$ meV with and without the extra shielding. This extra shielding prevents neutrons from the main beam from directly entering the detector. With the extra shielding, the broad scattering intensity around $Q = (1,0,0)$ is absent. In addition, Figure 1(b), which is to be compared with the main panel of Figure 1(c) in Ref. 1, shows constant-Q scans at $Q = (1,0,0)$ with and without the extra shielding. The result shows that with the extra shielding, the peak intensity around $\hbar\omega = 9.5$ meV disappears. Both of these results attest to the fact that the scattering at $Q = (1,0,0)$ and $\hbar\omega = 9.5$ meV, which we have incorrectly identified as being due to magnetic fluctuations in the overdoped regime, does not come from the sample but rather from the main beam. The observed temperature dependence shown in Figure 1(c) in Ref. 1 is due to a combination of statistical fluctuations and erroneous normalization of the data, which constitutes a 10% difference between the high-temperature (100 K) and low-temperature (10 and 30 K) data shown in Fig. 4(e) in Ref. 1. In addition, we have confirmed that the extra shielding does not affect the magnetic scattering at $Q = (1,0,0)$ observed in the parent ($x = 0$) compound, as shown in Fig. 2.

Therefore, our discussion of magnetic fluctuations in the overdoped regime in Sec. III C in Ref. 1 is invalid. This correction, however, does not affect the conclusion of our work in the undoped, optimally doped, and heavily overdoped regimes since those measurements were performed on different spectrometers and at different momentum transfers.

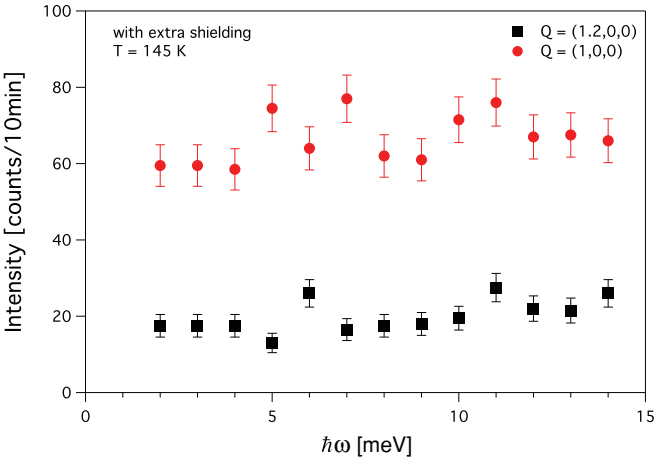

FIG. 2. (Color online) Constant-Q scans were performed on the parent ($x = 0$) compound at 145 K with the extra shielding. The data shown by the red circles were taken at $Q = (1,0,0)$, where we observed magnetic-fluctuation scattering, and the data shown by the black squares were taken at $Q = (1.2,0,0)$ away from the peak.

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