Erratum: Zero-frequency transport properties of one-dimensional spin- $\frac{1}{2}$ systems **[Phys. Rev. B **68**, 134436 (2003)]**

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In this Erratum, we correct five mistakes in our article.

First, there is a typographical error in Eq. (10) ($E_n - E_m$ in the denominator of the second term). The equation should correctly read

$$D_s^{II}(N, T) = \frac{\pi}{N} \left[\langle -\hat{T} \rangle - \frac{2}{Z} \sum_{\substack{m,n \\ E_m \neq E_n}} e^{-\beta E_n} \frac{|\langle m | j_s | n \rangle|^2}{E_m - E_n} \right].$$

The correct expression was used in the numerical analysis.

Second, on p. 5, we state that *Dimerization and frustration which spoil the integrability of the XXZ model also lead to $[H, j_{\text{th}[s]}] \neq 0$ (except for $\Delta = \alpha = 0$)*. This incorrectly implies that $[H, j_s] = 0$ for the dimerized spin- $\frac{1}{2}$ XY chain. The spin current of the dimerized spin- $\frac{1}{2}$ XY chain is not conserved since it incorporates interband transitions. Yet, the presence of a trivial Drude weight for the free dimerized chain ($\Delta = \alpha = 0$) remains valid simply by virtue of Eqs. (45) and (50) because the intraband current is conserved. See also the inset of Fig. 15 of the original paper where numerical data are compared to Eq. (50), showing agreement. Our quantitative results for the spin Drude weight of this model are not affected.

Third, on p. 15 below Eq. (49), we give an expression for a spin-current operator of the dimerized spin- $\frac{1}{2}$ XY chain that is conserved. In the sentence “Obviously, the spin current $j_s = \sum_k v_k (a_{k,+}^\dagger a_{k,+} - a_{k,-}^\dagger a_{k,-})$ is conserved . . .,” the symbol j_s needs to be replaced by j_s^{diag} , denoting the conserved spin current that accounts only for intraband transitions to distinguish it from the spin-current operator derived in Eq. (24).

Fourth, the numerical data for the spin Drude weight D_s^I for $\Delta = 0.5$ and $N = 8$ presented in Fig. 5(a) of the original paper has a small error due to neglecting accidental degeneracies on this system size. Figure 1 of this Erratum shows Fig. 5 of the original paper including the correct data for D_s^I computed for $N = 8$ in panel (a). This error does not affect the extrapolation of the infinite-temperature Drude weight shown in the inset of Fig. 5 of the original paper.

FIG. 1. This figure replaces Fig. 5 of the original paper and includes the corrected data for D_s^I computed for $N = 8$.

Fifth, there is a typographical error in the dispersion relation of a dimerized spin- $\frac{1}{2}$ XY chain quoted on p. 15 below Eq. (49) (missing the power of 2 for the cosine). The correct expression is as follows:

$$\epsilon_k = J\sqrt{(1 - \lambda)^2/4 + \lambda \cos^2(k)}.$$

The correct expression was used in the calculation of the spin Drude weight from Eq. (50) of the original paper.

All these corrections do not affect the discussion and conclusions in the original paper.

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