Erratum: Fidelity of a sequence of SWAP operations on a spin chain [Phys. Rev. B 102, 035439 (2020)]

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We have discovered that some of our numerical results were in error. None of our conclusions in the original paper change as a result of these revised figures. We present here the corrected versions of the results in question.

The corrections that we wish to make to our results are as follows.

In doing our calculations in which we initialize the leftmost spins in the singlet state, $|S\rangle = \frac{1}{\sqrt{2}}(|\uparrow\downarrow\rangle - |\downarrow\uparrow\rangle)$, we in fact performed an additional SWAP gate at the end that interchanges the leftmost two spins. Ideally, this would only result in an overall minus sign on the state, but it still affects the fidelity of the real sequence.

We also found that the right panels of Figs. 3 and 4 of our original paper were incorrect; we present here the corrected figures. The results that we had presented instead initialized the leftmost two spins in a *triplet* state, $|T\rangle = \frac{1}{\sqrt{2}}(|\uparrow\downarrow\rangle + |\downarrow\uparrow\rangle)$, rather than the intended singlet state.

FIG. 3. Corrected version of the right panel of Fig. 3.

FIG. 4. Corrected version of the right panel of Fig. 4.

FIG. 5. Corrected version of the right panel of Fig. 5. Note the lower values of σ_J/J_0 that we use compared to the original figure.

FIG. 6. Corrected version of the right panel of Fig. 6. Note the lower values of σ_J/J_0 that we use compared to the original figure.

FIG. 7. Corrected version of the right panel of Fig. 7. Note the lower values of σ_J/J_0 that we use compared to the original figure.

FIG. 8. Corrected version of the right panel of Fig. 8. Note the lower values of σ_J/J_0 that we use compared to the original figure.

FIG. 9. Corrected version of the right panel of Fig. 9. The curves now cover $\sigma_J/J_0 = 0-0.01$ in steps of 0.002, with the black curve being $\sigma_J = 0$ and the red curve being $\sigma_J/J_0 = 0.01$.

Finally, our figures showing our results with noise, Figs. 5–9 of our original paper, were in error; we present here the corrected figures.

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