Erratum: Synthetic magnetic fluxes and topological order in one-dimensional spin systems **[Phys. Rev. A **91**, 063612 (2015)]**

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Our paper considers a spin chain with nearest-neighbor and next-nearest-neighbor interactions. To generate artificial magnetic fluxes, complex phases for every second nearest-neighbor interaction are chosen. The definition of these phases made in Fig. 2 of our paper is inconsistent with the performed numerical calculations. While Fig. 2 defined the phases on the horizontal links as $e^{i\pi\frac{p}{q}}, e^{2i\pi\frac{p}{q}}, e^{3i\pi\frac{p}{q}}$, all calculations were made with a different choice: $e^{i\pi\frac{p}{q}}, e^{3i\pi\frac{p}{q}}, e^{5i\pi\frac{p}{q}}$ (see the corrected version of Fig. 2 here). Accordingly, the phase definition in the main text should read $\varphi_{i+1,i} = \pi i(p/q)\delta_{(i+1)\bmod 2,0}$. With this redefinition, all results in the main text are correct as published, in particular the single-particle band structure shown in Figs. 3 and 4, the corresponding Chern numbers in Table I, and the many-body results presented in Fig. 5.

We note that the new definition doubles the flux per square plaquette $\Phi = 2\pi\frac{p}{q}$. The Harper-like equation (A1) in the Appendix of our paper has to be adapted accordingly. It should read

$$H = -J \sum_{k,v} \left[e^{i(k+2\pi v\frac{p}{q})} (\sigma_{kv1}^+, \sigma_{kv2}^+) \begin{pmatrix} e^{i\theta} & 1 \\ 0 & e^{i\theta} \end{pmatrix} \begin{pmatrix} \sigma_{kv1}^- \\ \sigma_{kv2}^- \end{pmatrix} + (\sigma_{kv1}^+, \sigma_{kv2}^+) \begin{pmatrix} 0 & 0 \\ e^{-i\pi\frac{p}{q}} & 0 \end{pmatrix} \begin{pmatrix} \sigma_{k(v+1)1}^- \\ \sigma_{k(v+1)2}^- \end{pmatrix} \right] + \text{H.c.} \quad (\text{A1})$$

The wave number k is defined in $[0, 2\pi/q]$. Therefore, $\sigma_{kv\ell}^\pm = \sigma_{k(v+q)\ell}^\pm$ and v takes values from 1 to q . As already stated in our paper, this leads to $2q$ energy bands.

We thank Ralf Blattmann for making us aware of this inconsistency within our paper.

FIG. 2. (Color online) Corrected version of Fig. 2 in our paper. The phases on the blue bonds have been modified.