Erratum: Contributions of 2π exchange, 1π exchange, and contact three-body forces in NNLO chiral effective field theory to $^{3}_{\Lambda}$H [Phys. Rev. C 109, 024003 (2024)]

M. Kohno ⬤, H. Kamada ⬤, and K. Miyagawa ⬤

As reported in Ref. [1], errors were found in the expressions of partial-wave matrix elements of the 2π exchange ΛNN three-body force (3BF) [2] in the next-to-next-to-leading-order (NNLO) in chiral effective field theory and also in the numerical code of calculating them during the benchmark work [3] with the Jülich group. The corrections affect the calculated results of the net contribution of the NNLO ΛNN 3BFs [2] to the $^{3}_{\Lambda}$H separation energy presented in the original publication. Although the contributions of the 1π exchange and contact ΛNN 3BFs are unchanged, the result of the net ΛNN effect including the 2π exchange ΛNN 3BF is revised. Figure 4 in the original publication should be replaced by Fig. 1.

It was noted in the original publication that the net effect of the 2π exchange, 1π exchange, and contact 3BFs is small because of the cancellation between the attractive contribution of the 1π exchange 3BF and the repulsive ones of the other 3BFs. Including the matrix element of the 2π exchange 3BF between the s- and d-wave components in the NN pair that was left out in the previous calculations, the 3BF contribution to the $^{3}_{\Lambda}$H separation energy turns out to be attractive of the order of ≈ 100 keV, as seen in Fig. 1, using the tentative assignment of relevant low-energy coupling constants. This amount is comparable to the present experimental uncertainty. The experimental determination of the $^{3}_{\Lambda}$H separation energy with improved accuracy and binding energies of other light Λ hypernuclei are required to narrow down the uncertainties of those coupling constants.
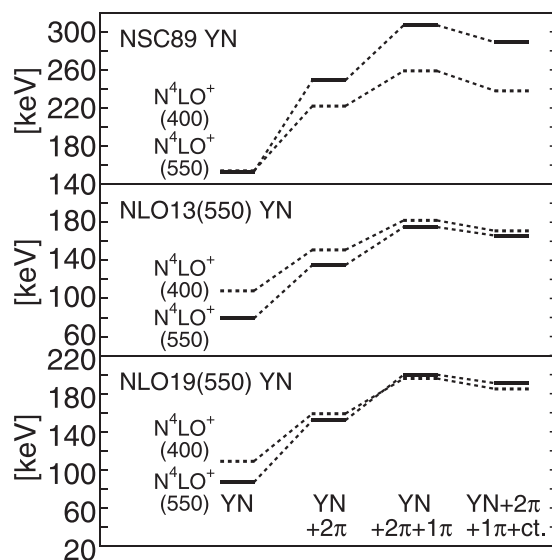

FIG. 1. Results of the $^{3}_{\Lambda}$H separation energy obtained by Faddeev calculations. The NN interactions are the semilocal N⁴LO⁺ interactions [4] with a cutoff scale of 550 and 400 MeV. The lower, middle, and upper panels show the results for the chiral NLO19 [6], chiral NLO13 [5], and Nijmegen NSC89 [7] YN interactions, respectively. The cutoff scale of the chiral YN interactions is 550 MeV. In each figure, the leftmost entry is the calculation with the YN interactions alone. Other entries are results in which the 2π-exchange, 1π-exchange, and contact 3BFs are added consecutively.

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