Erratum to: Uncertainties in constraining low-energy constants from ^3H β decay

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In our article the low-energy constant c_D in the two-body currents was used incorrectly. The correct definition, which is consistent with the c_D coupling in the leading three-nucleon forces, gives for eq. (5)

$$d_R = -\frac{1}{4A_\chi g_A} c_D + \frac{1}{3}(c_3 + 2c_4) + \frac{1}{6m_N}. \quad (5)$$

As a result the c_D dependence of the Gamow-Teller matrix elements has changed. Here we provide the corrected figs. 2–6. While the curves change significantly due to the $-\frac{1}{4}$ change in the c_D part of the two-body currents, we emphasize that the discussion provided in our original manuscript remains qualitatively correct, as there is still a strong dependence of the results on the value of c_D .

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Fig. 2. (Color online) Ratio of calculated and experimental Gamow-Teller matrix elements as a function of c_D for different cutoff values and regulators in the two-body currents, based on the EM 500 MeV N^3LO potential of ref. [44]. The solid (dotted) lines show results for nuclear states including 3N forces at N^2LO using the 3H binding energy constraint of fig. 1 for a local (non-local with $n = 2$, see eq.(8)) regulator in the two-body currents. For comparison, we also show results based on NN interactions only (dashed lines) and with 1b currents only. The width of the shaded band denotes the 2σ experimental uncertainty.

Fig. 3. (Color online) Ratio of calculated and experimental Gamow-Teller matrix elements as a function of c_D based on the EMN potentials at order N^2LO of ref. [55]. We show results for the 2b current cutoff $\Lambda_{2bc} = 400$ MeV (dashed lines) and $\Lambda_{2bc} = 1000$ MeV (dash-dotted lines) using a non-local regulator (see eq.(8)) with $n = 2$, whereas the solid lines show the cases when using the same cutoff values in the regulators for the interactions and currents. The width of the shaded band denotes the 2σ experimental uncertainty.

Fig. 4. (Color online) Ratio of calculated and experimental Gamow-Teller matrix elements as a function of the cutoff Λ in the non-local regulator ($n = 2$, see eq. (8)) for a set of chiral interactions, using different fitting observables: the results labeled “EM” are based on NN plus 3N interactions, for which the c_D and c_E values are fit to the binding energy of 3H and the charge radius of 4He (see ref. [26] for details). The results labeled “EGM” are based on NN plus 3N forces fitted to the binding energy of 3H and the neutron-deuteron scattering length [59]. The width of the shaded band denotes the 2σ experimental uncertainty.

Fig. 5. (Color online) Energy per nucleon of symmetric nuclear matter as a function of nucleon density obtained within the self-consistent Green's function approach [60]. Results are based on the NN EM 500 MeV at $N^3\text{LO}$, including normal-ordered 3N interaction contributions at $N^2\text{LO}$. The curves correspond to different c_D and c_E values obtained according to figs. 1 and 2. The box describes the range for the empirical saturation point provided by mean-field calculations [61].

Fig. 6. (Color online) Same as fig. 5 but showing results based on the EMN potentials at $N^2\text{LO}$. The curves correspond to different c_D and c_E values obtained according to figs. 1 and 3. The different lines correspond to 2b currents cutoffs equivalent to the interaction (solid), $\Lambda_{2bc} = 400$ MeV (dashed), and $\Lambda_{2bc} = 1000$ MeV (dash-dotted) as shown in fig. 3.