Erratum: Limits on tensor coupling from neutron β decay [Phys. Rev. C **88, 048501 (2013)]**

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Errors (mostly in transcription to our manuscript) in some variable definitions affected Eqs. (14), (15), and (18), and the numerical limits from Eq. (11). These problems did not affect the supporting text or conclusions of our paper and produced only modest changes to the quoted limits, including those in the Abstract (which change from $-0.0026 < C_T/C_A < 0.0024$ to $-0.0041 < C_T/C_A < 0.0026$ at the 95% confidence level).

The variable definitions should have been $b_F = -2\text{Re}(C_S/C_V)$, $\tilde{C}_x = 1 + 2\gamma_n\kappa_m R_x$ with $R_S = C_S/C_V$ and $R_T = C_T/C_A$, and $h = (\delta b/\tau_n K) - 2\gamma_n\kappa(C_S/C_V) - 1$. The phase space integral in Eq. 3 should have units of $(m_e c^2)^5$, but, despite this omission, the numerical factor K in Eq. 9 is correct. For the definition of $\tilde{C}_x$, we introduce the variable κ_m , the ratio of phase space integrals for angular correlation measurements, $\kappa_m = \langle I_1(x_1, x_2)/I_0(x_1, x_2) \rangle$. The correct definition for b_F results in the equation $\delta b = 1 - 2\zeta(C_S/C_V)$.

The equations in the text should read

$$3\lambda^2 = \left[\frac{h}{1 + 2\gamma_n\kappa C_T/C_A} \right] = 3 \left(\frac{-1 - \sqrt{1 - A_m^2(3\tilde{C}_T + 2/A_m)\tilde{C}_S}}{3A_m\tilde{C}_T + 2} \right)^2, \quad (14)$$

and

$$C_T/C_A = \begin{cases} -(2 + 3A_m)/(6A_m\kappa_m\gamma_n), \\ (2rh - [3A_m^2(h + \tilde{C}_S) + 2A_mh]\bar{h}) \\ \pm 2h\sqrt{3A_m^2\bar{h}(1-r) - 2A_m r\bar{h} + r^2}) \\ \times (6A_m^2\gamma_n\kappa_m\bar{h}^2)^{-1}, \end{cases} \quad (15)$$

where $\bar{h} = h + r\tilde{C}_S$ and $r = (\kappa/\kappa_m)$ and finally, with $x = (x_f \text{ or } x_I)$,

$$C_T/C_A = \begin{cases} \frac{h(a_m + 1/3) - (1 + 2\gamma_n x \frac{C_S}{C_V} - a_m)}{2\gamma_n [\kappa(1 + 2\gamma_n x \frac{C_S}{C_V} - a_m) + xh]} & \text{(linear),} \\ \frac{h(1 + \frac{1}{3a_m}) - \frac{1}{a_m} + \tilde{C}_S}{2\gamma_n\kappa_m(\frac{r}{a_m} - \bar{h})} & \text{(inverse).} \end{cases} \quad (18)$$

The calculated limits and the curves in Fig. 1 were only influenced by the sign error in b_F and the error in the definition of $\tilde{C}_T$, with the correct limits:

FIG. 1. (Color online) The $2\text{-}\sigma$ limits on C_T/C_A derived from Eqs. (15) and (18) (with $x = x_I = 0.008$) are shown with the current and proposed experimental uncertainties for a and A [1–7].

- (i) from Eq. (11) being $-0.0020 < C_T/C_A < 0.012$ for the PDG 2012/2013 [1] value of λ and $-0.0053 < C_T/C_A < 0.0059$ for $\lambda = -1.2739(19)$;
- (ii) from the physically valid root of Eq. (15) being now $-0.0025 < C_T/C_A < 0.0093$ for $A_{\text{PDG}} = -0.1176(11)$ and $-0.0041 < C_T/C_A < 0.0026$ for $A_{\text{PERKEO II \& UCNA}} = -0.1193(5)$. If we scale the uncertainty in the value of A coefficient derived from $A_{\text{PERKEO II \& UCNA}}$ by the PDG 2012/2013 factor of 2.1 to account for scatter in the β asymmetry data set, the $2\text{-}\sigma$ limit expands to $-0.0060 < C_T/C_A < 0.0045$;
- (iii) from Eq. (18) being now $-0.019 < C_T/C_A < 0.044$ for the linear expression with $x = x_I = 0.008$ and the PDG value for the a correlation, and $-0.012 < C_T/C_A < 0.028$ for the linear expression with $x = x_f = 0.09$ and the PDG value for the a correlation. Note that a rigorous analysis of the PDG limit would require a case-by-case analysis of each experiment contributing to the PDG average value for the a correlation. For a precision of 0.1% in the inverse case, the resulting limit is $\Delta(C_T/C_A) = \pm 0.0025$;
- (iv) for the effective coupling, $g_T \epsilon_T / g_A$, being now $-1.0 \times 10^{-3} < g_T \epsilon_T / (g_A \{1 + \epsilon_L - \epsilon_R\}) < 6.5 \times 10^{-4}$ using the constraints on C_T/C_A derived from Eq. (15) and $A_{\text{PERKEO II \& UCNA}} = -0.1193(5)$.

After writing this paper, we found that B. Holstein had extracted a value for the Fierz interference term in ^{19}Ne decay using an analysis similar to the one we present, with $b_{^{19}\text{Ne}} = -0.008 \pm 0.014$ [8].

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