Erratum: Neutrino interactions in a magnetized medium [Phys. Rev. D 65, 013007 (2002)]

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A few inconsistencies crept into our paper because of different conventions for γ_5 followed in different places. We wish to explain and correct them in this erratum. A few typographical errors are also corrected.

(1) In the revised notation γ_5 stands for $\gamma_5 = i\gamma^0\gamma^1\gamma^2\gamma^3$. Accordingly, Eq. (2) should now be modified to

$$\mathcal{L}_{\text{eff}} = -\frac{1}{\sqrt{2}} G_F \overline{\nu}\gamma^\mu (1-\gamma_5)\nu \overline{l}_\nu \gamma_\mu (g_V + g_A\gamma_5) l_\nu . \tag{2}$$

(2) It should be noted that Eq. (4) with this changed notation should be read as

$$g_A = -1 + 1/2. \tag{4}$$

(3) Equation (5) has an error with the indices, and its corrected form is

$$\Gamma_\nu = -\frac{1}{\sqrt{2}e} G_F \gamma^\mu (1-\gamma_5)(g_V \Pi_{\mu\nu} + g_A \Pi^5_{\mu\nu}). \tag{5}$$

(4) On the right-hand side of Eq. (11) instead of $(1+\gamma_5)$ there should be $(1-\gamma_5)$.

(5) In Sec. V there are some typographical errors. In the last line of the right-hand side of Eq. (56) and in the left-hand sides of Eqs. (58) and (59) wherever the fraction

$$\frac{(p_\parallel^2 - m^2)}{(p_\parallel'^2 - m^2) + i\varepsilon}$$

appears, it must be replaced by

$$\frac{\delta(p_\parallel^2 - m^2)}{(p_\parallel'^2 - m^2) + i\varepsilon}.$$

(6) Equation (61) has a minor correction; it should be replaced by

$$e_{\text{eff}} = -\frac{\sqrt{2}G_F}{e} g_A (1-\lambda)\Pi^5_{30}(q_0 = 0, \mathbf{q} \to 0)\cos\theta. \tag{61}$$

(7) Accordingly, Eq. (62) should read as

$$e^\nu_{\text{eff}} = -\sqrt{2} g_A m\beta G_F \frac{e^2\mathcal{B}}{\pi^2}(1-\lambda)\cos(\theta)\sum_{n=0}^{\infty}(-1)^n \cosh\{(n+1)\beta\mu\} K_{-1}[m\beta(n+1)]. \tag{62}$$

(8) Equation (63) should be changed to

$$\frac{e^\nu_{\text{eff}}(\mathcal{B})}{e^\nu_{\text{eff}}(\mathcal{B}=0)} = -\frac{4g_A}{\pi^2}\left(\frac{\mathcal{B}}{\mathcal{B}_c}\right)(m\beta)^3 K_1(m\beta)\cos\theta. \tag{63}$$

A consistent and updated version of our paper is available in Ref. [1].

[1] K. Bhattacharya and A.K. Ganguly, hep-ph/0209236.

