Erratum: Lepton flavor violation in type I + III seesaw

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On page 5, there is a misprint in equations (3.2), (3.3) which should correctly read

$$\tilde{g}_{LV}^{(p)} = 2(1 - 4s_w^2) L_{12}^Z, \quad \tilde{g}_{RV}^{(p)} = 2(1 - 4s_w^2) R_{12}^Z, \quad ((3.2))$$

$$\tilde{g}_{LV}^{(n)} = -2L_{12}^Z, \quad \tilde{g}_{RV}^{(n)} = -2R_{12}^Z. \quad ((3.3))$$

Accordingly, eq. (3.4) is modified to

$$|L_{12}^Z|^2 + |R_{12}^Z|^2 < 2.8 \times 10^{-13}, \quad 2.3 \times 10^{-14}, \quad ((3.4))$$

and the last sentence in the paragraph after equation (3.4) now reads as follows: “After allowing to vary the poorly known neutrino mass parameter θ_{13} within the allowed range in table 1 and the unknown phases δ and ϕ , we obtain in the minimal models a bound on $\text{Im}(z) < 8.3(7.9)$ for normal (inverted) hierarchy in case of one triplet and one singlet and $\text{Im}(z) < 8.0(7.6)$ for two triplets, all at the reference mass of $m_T = 100$ GeV for the lightest triplet.”

Appropriate changes affect also figure 1, which is correctly given below.

The change also affects the last sentence in section 5 on page 9, which should read as follows: “For example, if light neutrinos are degenerate with the sum of their masses close to the upper limit from β decay and cosmology (say $\sum m_\nu \lesssim \text{eV}$ [1]), present $\mu - e$ conversion bounds already probe values of $\text{Im}(z_i) \simeq 3 - 5$.”

Also, the third and fourth sentence in section 6 on page 9 now read: “Such a sensitivity would constrain $\text{Im}(z)$ to 5.0 (4.6) in case of the minimal I + III model and to 4.6 (4.2) for the minimal type III, again for normal (inverted) hierarchy. For non-minimal models with degenerate eV scale neutrinos, these experiments would already probe $\text{Im}(z_i) \simeq 1 - 2$ ”.

Finally, we give the corrected figure 2 below.

Figure 1. Comparison of various LFV and LFU bounds on the minimal type III model for normal (top) and inverted (bottom) neutrino mass hierarchy. The bounds coming from $\mu - e$ transitions are plotted in red, $\tau - e$ in blue and $\tau - \mu$ in green. Constraint from the Z width to electrons is shown in magenta, to muons in cyan and to taus in yellow. The bounds constrain $\text{Im}(z)$ at the reference triplets' mass of 100 GeV and depend on the unknown Majorana phase ϕ . Dependence on the other poorly known neutrino parameters is negligible as explained in the text.

Figure 2. Present and projected sensitivity of $\mu - e$ conversion experiments in non-minimal type III see-saw models for a massless lightest neutrino (in red empty circles, for both hierarchies) and for degenerate scenario at 1 eV (in blue filled spades). Minimal model predictions are drawn in green dashed lines. In all cases we put all the Majorana phases to zero and vary z_i randomly.

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References

- [1] A. Strumia and F. Vissani, *Neutrino masses and mixings and...*, [hep-ph/0606054](https://arxiv.org/abs/hep-ph/0606054) [[INSPIRE](https://arxiv.org/archive/hep)].