Erratum: Lepton flavor violation in type I + III seesaw

Jernej F. Kamenik\textsuperscript{a,c} and Miha Nemevšek\textsuperscript{b,c}

\textsuperscript{a}INFN, Laboratori Nazionali di Frascati, I-00044 Frascati, Italy
\textsuperscript{b}II. Institute für Theoretische Physik, Universität Hamburg, Lurper Chaussee 149, 22761 Hamburg, Germany
\textsuperscript{c}J. Stefan Institute, 1000 Ljubljana, Slovenia

E-mail: jernej.kamenik@lnf.infn.it, miha.nemevsek@desy.de

Erratum to: JHEP11(2009)023

ArXiv ePrint: 0908.3451

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

\begin{align}
\tilde{g}^{(p)}_{LV} &= 2 \left( 1 - 4s_{w}^{2} \right) L_{12}^{Z}, \\
\tilde{g}^{(n)}_{LV} &= -2L_{12}^{Z}, \\
\tilde{g}^{(p)}_{RV} &= 2 \left( 1 - 4s_{w}^{2} \right) R_{12}^{Z}, \\
\tilde{g}^{(n)}_{RV} &= -2R_{12}^{Z}.
\end{align}

((3.2))

((3.3))

Accordingly, eq. (3.4) is modified to

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

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 $\theta_{13}$ within the allowed range in table 1 and the unknown phases $\delta$ and $\phi$, 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 $m_T = 100 \text{ GeV}$ 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 $\beta$ 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 $\phi$. 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.

Open Access. This article is distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits any use, distribution and reproduction in any medium, provided the original author(s) and source are credited.

References

[1] A. Strumia and F. Vissani, Neutrino masses and mixings and... , hep-ph/0606054 [iSPIRE].