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Fair scans of the seesaw. Consequences for predictions on LFV processes

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Usual analyses based on scans of the seesaw parameter-space can be biassed since they do not cover in a fair way the complete parameter-space. More precisely, we show that in the common 'R-parametrization', many acceptable R-matrices, compatible with the perturbativity of Yukawa couplings, are normally disregarded from the beginning, which produces biasses in the results. We give a straightforward procedure to scan the space of complex R-matrices in a complete way, giving a very simple rule to incorporate the perturbativity requirement as a condition for the entries of the R-matrix, something not considered before. As a relevant application of this, we show that the extended believe that BR(mu –> e, gamma) in supersymmetric seesaw models depends strongly on the value of theta_13 is an 'optical effect' produced by such biassed scans, and does not hold after a careful analytical and numerical study. When the complete scan is done, BR(mu –> e, gamma) gets very insensitive to theta_13. Moreover, the values of the branching ratio are typically larger than those quoted in the literature, due to the large number of acceptable points in the parameter-space which were not considered before. Including (unflavoured) leptogenesis does not introduce any further dependence on theta_13, although decreases the typical value of BR(mu –> e, gamma).

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