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Three loop neutrino masses

Tuesday 3 July 2018 16:00 (30 minutes)

We systematically analyze the $d = 5$ Weinberg operator at 3-loop order. From all possible topologies only a small number of them can generate a genuine 3-loop neutrino mass for which $d = 5$ tree-level, 1-loop and 2-loop, as well as $d = 7$ up to 1-loop, are guaranteed to be absent. Moreover, from the large list of all possible genuine neutrino mass diagrams, we find that they consist of variations of only 18 diagrams, that can be written in terms of 5 three-loop integrals. Finally, we show how our results can be consistently used to construct 3-loop neutrino mass models.

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