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Can an unbroken flavour symmetry provide an approximate description of lepton masses and mixing?

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We answer the following question: what are the flavour groups and representations providing, in the symmetric limit, an approximate description of lepton masses and mixings? We assume that neutrinos masses are described by the Weinberg operator. We find that in all cases the neutrinos are either anarchical or have an inverted hierarchical spectrum. In the context of SU(5) unification, only the anarchical option is allowed. Therefore, if the hint of a normal hierarchical spectrum were confirmed, we would conclude that symmetry breaking effects must play a primary role in the understanding of neutrino flavour observables.

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