

The $S(3)$ flavour symmetry and reactor mixing angle.

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Abstract content

We discuss the neutrino masses and mixings as the realization of an $S(3)$ flavour permutational symmetry. In this model the $S(3)$ symmetry is left unbroken and the concept of flavour is extended to the Higgs sector by introducing in the theory three Higgs fields which are $SU(2)$ doublets. The mass matrices of the neutrinos and charged leptons are reparametrized in terms of their eigenvalues, and exact, explicit analytical expressions for the neutrino mixing angles as functions of the masses of leptons are obtained. If the masses of the three right handed neutrinos are assumed to be different, non-degenerate, then it is possible to get a numerical value for the reactor mixing angle in very good agreement with the last experimental data, including the results of the Daya Bay and RENO experiments. We also show the branching ratios of some selected flavour changing neutral currents (FCNC) process as well as the contribution of the exchange of a neutral flavour changing scalar to the anomaly of the magnetic moment of the muon.

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