Leptonic CP Violation From Discrete Symmetries

S.T. Petcov[1,2]

[1]SISSA/INFN, Trieste, Italy
[2]Kavli IPMU, University of Tokyo, Japan

Abstract. We explore the possibility that the observed pattern of neutrino mixing is determined by new fundamental (discrete) symmetry of the particle interactions. Possible candidates for such symmetries of the lepton sector include S_4, A_4, T', A_5, among other. The indicated discrete symmetries lead to specific underlying symmetry forms of the neutrino mixing matrix: i) A_4, T' to tri-bimaximal mixing (TBM) form, ii) S_4 to bi-maximal mixing (BM) form, iii) A_5 to golden ratio type A (GRA) from, iv) D_{10} to golden ratio type B (GRA) from, v) D_{12} to hexagonal (HG) form. In each of these cases the approach of interest leads to specific predictions for the magnitude of the Dirac CP violation in the lepton sector. The results that will be discussed in this presentation show, in particular, that the experimental measurement of the Dirac phase δ (or of $\cos\delta$) of the neutrino mixing matrix combined with the data on the neutrino mixing angles, can provide unique information about the possible discrete symmetry origin of the observed pattern of neutrino mixing.