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Exploring the leptonic CP violation in two zero textures

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Ever since their inception by Pauli, neutrinos have turned out to be one of the most fascinating particles. Despite decades of theoretical and experimental advances, many questions still remain unanswered in neutrino physics. Some of the most significant ones amongst these include the nature of neutrinos being Dirac or Majorana and the possibility of CP violation in the leptonic sector. In order to decode these enigmatic aspects, the last few decades have witnessed a lot of thrust in the form of dedicated experimental as well as phenomenological advances. On the experimental front, many of the ongoing and upcoming experiments such as DUNE, IceCube, GERDA, EXO-200, JUNO, NOvA etc. are expected to shed some light on these in near future. On the phenomenological front, many approaches have been proposed over the years in order to decipher the mystery of neutrino masses and mixings, amongst which the ones based on texture specific mass matrices have turned out to be quite noteworthy. In this context, it becomes interesting to explore the implications of these matrices regarding the above mentioned puzzles of neutrino sector. To this end, the present work aims to explore the texture two zero neutrino mass matrices and seek their implications for leptonic CP violation and neutrinoless double beta decay specifically in the light of current neutrino oscillation data. After examining the viability of different classes of these mass matrices, we analyze them further and obtain interesting results regarding some significant parameters such as Dirac and Majorana CP violating phases, effective mass in neutrinoless double beta decay, absolute neutrino mass etc.

Session

Neutrino Physics

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