

A New Type of Accessible Environmental Influences on Neutrino Oscillation

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Abstract: Considering a new type of environment influences, we use a two-energy-level (ν_1 - ν_2) quantum system to investigate neutrino oscillations in medium. Besides the matter effects derived by Wolfenstein, there may exist extra terms due to a unitary evolution of the system between pure and mixed states, so the evolution equation is modified obviously. We show that the extra terms may play some role and induce observable effects in solar neutrino problem, especially, in the long baseline neutrino oscillation experiments which are under serious consideration recently, if the parameters fall into a suitable region.

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Key words: neutrino oscillation, pure and mixed states, extra medium effects

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