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Determining the leptonic CP phase with future atmospheric neutrino detectors

We explore possibility to determine the leptonic CP phase using large atmospheric neutrino detectors. We show that sensitivity to the CP phase improves substantially with decrease of energy threshold below 1 - 2 GeV, and there is no significant averaging out of the CP effect due to poor angular reconstruction. The sensitivity of the proposed PINGU detector to CP phases is marginal but future upgrade with (0.2 - 0.3) GeV energy threshold will allow to determine the phase with accuracy $\sim 0.2\pi$. This upgrade can also be used for Proton decay searches.

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Track Classification: Atmospheric Neutrinos