

Earth as a baseline for measuring CP violating phase in neutrino oscillations in matter

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Neutrino oscillations are among the most promising sources of information on leptonic CP violating phase, which can be obtained from the measurement of oscillation probabilities. Matter can both suppress and enhance those probabilities and therefore affect the prospects for successful measurement of this quantity. In my talk, I'll summarize results of a recent study (2005.07719) in which we analyzed oscillations of neutrinos traversing an arbitrary number of Earth layers of variable density before hitting the detector. As a result, we were able to derive very accurate and compact analytic expressions for averaged oscillation probabilities in terms of only two analytically calculable effective parameters, which then allowed us to estimate the magnitude of CP violating effects in our setup and to propose an observable optimized for such measurement

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