

Sub-Dominant Oscillation Effects in Atmospheric Neutrino Experiments

Edited by

T. Kajita and K. Okumura

Atmospheric neutrino experiments have been studying $\nu_\mu \rightarrow \nu_\tau$ oscillations extensively. The zenith angle and energy dependent deficit, or more recently the L/E dependent deficit, of atmospheric muon neutrinos has been used to constrain the neutrino oscillation parameters.

As a natural extension of the present $\nu_\mu \rightarrow \nu_\tau$ oscillation studies, atmospheric neutrino experiments should study three flavor oscillation effects. One is the effects driven by θ_{13} and the other is the ones driven by the solar oscillation terms (θ_{12} and Δm_{12}^2). Especially, thanks to the diameter of the Earth, atmospheric neutrino experiments are, in principle, sensitive to the solar neutrino oscillation terms. If the solar neutrino oscillation effect is observed, it is possible to get unique information, such as a discrimination of θ_{23} larger or smaller than 45 degree.

This volume contains detailed discussions on the sub-dominant oscillation effects in present and future atmospheric neutrino experiments.

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