

Constraint on the atmospheric neutrino flux models using the cosmic-ray muon data in the Super-Kamiokande

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Atmospheric neutrinos and cosmic-ray muons are generated from the showers of secondary particles via the interactions of primary cosmic-ray particles with air nuclei at the top of the atmosphere. The meson, such as pion and kaon, decays into atmospheric neutrino and cosmic-ray muon, reflecting the information of the hadronic interactions depending on their energy. Currently, atmospheric neutrino flux models have uncertainties about various points, such as neutrino/antineutrino ratio and absolute flux, and so on. To constrain these uncertainties, we consider the usability of cosmic-ray muon data. In this poster presentation, we report the measurement of the charge ratio of the cosmic-ray muons and the modulation of the arrival cosmic-ray muons at underground by analyzing the data accumulated by Super-Kamiokande detector. In addition, we consider about the constraint on the neutrino/antineutrino ratio from the result of the muon charge ratio, and on the parent meson ratio from the result of the muon modulation.

Poster prize

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