

Study of Anti-Neutrino beam with Muon Monitor in the T2K experiment

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The T2K experiment [1] is a long-baseline neutrino oscillation experiment. Last year our collaboration observed electron neutrino appearance in a muon neutrino beam at 7.3 sigma significance [2]. One of the next main goals of the T2K experiment is to measure electron antineutrino appearance. In June we plan to take anti-neutrino beam data for the first time. Anti-neutrino beam can be obtained by reversing the polarity of horns (Fig 1).

To monitor direction and intensity of the neutrino beam, the muon beam is continuously measured by Muon Monitor (MUMON) [3]. To reconstruct the profile, MUMON is equipped with 49 sensors in a plane.

In this poster T2K show some results of anti-neutrino beam data taken by monitors including MUMON. In particular, dependence of beam intensity on electric current of horns, correlation of position between proton beam position and MUMON profile, and beam stability is shown. Comparison between data and Monte Carlo simulation is also discussed.

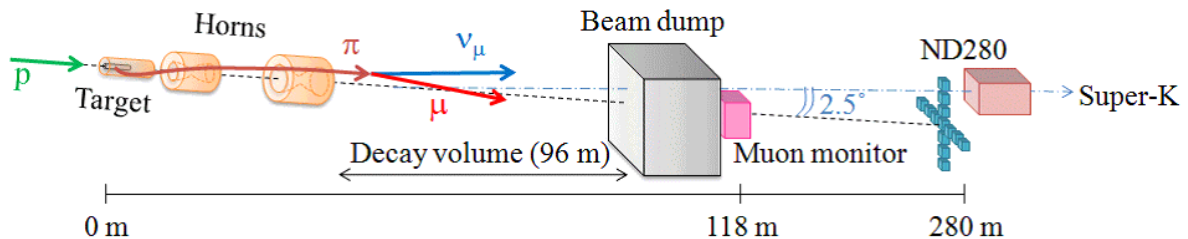


Fig1. Schematic view of the T2K neutrino beamline. Muon monitor is located just downstream of beam dump.

References

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- [3] K. Matsuoka et al. , Nucl. Instrum. Meth. A624:591-600, 2010