Abstract Submitted
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Studies of the NuMI Neutrino Flux Using the Accompanying Muon Beam LAURA LOIACONO[1], University of Texas Austin — In neutrino oscillation and interaction experiments, uncertainty in the flux of incident particles due to limited understanding of hadron production from nuclear targets is the largest contributor of systematic error to neutrino oscillation and cross-section measurements. We propose to measure the flux generated by the NuMI beam line by measuring the daughter muon flux produced in pion and kaon decays, $\pi \rightarrow \mu\nu_\mu$, $K^{\pm} \rightarrow \mu\nu_\mu$ and $K_L \rightarrow \pi\mu\nu_\mu$, using the muon monitoring system in the beam line. The longitudinal and transverse momentum of parent particles can be varied by moving the target longitudinally with respect to the focusing horns and by varying the current supplied to the horns providing a mechanism to map the momentum space of focused parents. The muon monitoring system consists of 3 arrays of 81 ionization chambers located approximately 720m downstream of the target. Muons must have a minimum energy of 4, 10 and 20GeV to penetrate muon monitor 1, 2 and, 3, respectively. Thus, the three monitors taken together can provide measure of the muon spectrum which is directly related to the parent pion and kaon flux off of the NuMI target.

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