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Measurements of The Neutrino Flux Using Fine-Grained Tracker

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Univ of South Carolina, LBNE COLLABORATION — The reference design of the
near detector for the LBNE/F experiment is a high-resolution Fine-Grained Tracker
(FGT) capable of precisely measuring all four species of neutrinos: ν_μ , ν_e , $\bar{\nu}_\mu$ and $\bar{\nu}_e$.
The goals of the FGT is to constrain the systematic errors, below the corresponding
statistical error in the far detector, for all oscillation studies; and to conduct a
panoply of precision measurements and searches in neutrino physics. We present
sensitivity studies – critical to constraining the systematics in oscillation searches – of
measurements of the absolute and relative neutrino flux using the various techniques:
1) neutrino electron NC (CC) scattering, 2) $\bar{\nu}_\mu$ proton QE scattering, 3) Coherent
 ρ production for absolute flux and 4) Low- ν method for relative flux.

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