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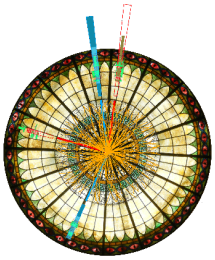

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Measurements of The Neutrino Flux Using Fine-Grained Tracker

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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: νμ, νe, $\bar{\nu}$μ 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 of measurements –critical to constraining the systematics in oscillation searches –
of the absolute and relative neutrino flux using the various techniques: 1) neutrino electron NC (CC) scattering, 2) $\bar{\nu}$μ proton QE scattering, 3) Coherent ρ production for absolute flux and 4) Low-ν method for relative flux. Historically, the limited knowledge of the (anti)neutrino fluxes has been the dominant systematic uncertainty for past neutrino scattering experiments. The precision in the determination of the absolute and relative fluxes achieved in FGT will allow for the first time to fully exploit the potential of the (anti)neutrino probe.

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