Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Measurements of The Neutrino Flux Using Fine-Grained Tracker
XINCHUN TIAN, SANJIB MISHRA, ROBERTO PETTI, HONGYUE DUYANG,
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: $\nu_\mu$, $\nu_e$, $\bar{\nu}_\mu$ 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
$\rho$ production for absolute flux and 4) Low-\nu method for relative flux.