NSI - Electron neutrino and antineutrino appearance
Selected candidate electron neutrino and antineutrino events

The reconstructed energy distributions for three ranges of the LEM selection variable. The plots on the left correspond to data collected in the neutrino beam mode. The plots on the right correspond to data collected in the antineutrino beam mode.

Signal predictions shown here assume $\sin^2(2\theta_{13}) = 0.051$ and no NSI.

Note we are unable to distinguish between $\nu_e$ and $\bar{\nu}_e$ events, so the selected events include a combined contribution of $\nu_e + \bar{\nu}_e$ events.
Allowed NSI parameter values

The appearance of $\nu_e$ events at the Far Detector is sensitive to the NSI parameters $\varepsilon_{et}$ and $\delta_{et}$. These plots show the 90% CL allowed values of $\varepsilon_{et}$ and $\delta_{et} + \delta_{CP}$ assuming a normal hierarchy (top plot) and an inverted hierarchy (bottom plot).

The appearance rate also depends on standard oscillation parameters which are assumed to be the following: $\sin^2(\Theta_{23}) = 0.5$, $\sin^2(\Theta_{13}) = 0.025$, and $\Delta m_{32}^2 = 2.43 \times 10^{-3}$ eV$^2$. The contour is produced by marginalizing over the values of $\delta_{CP}$. 