

Track and shower energy resolution in the MINOS charged current analysis

The energy resolution of the MINOS detectors is an important factor in the sensitivity of our measurement of the “atmospheric” neutrino oscillation parameters.

Better energy resolution more clearly resolves the oscillation dip and allows us to more tightly limit the mass splitting and mixing angle.

We present a method for improving MINOS’s energy resolution for hadronic showers, using a kNN (k-Nearest-Neighbour) algorithm.

We also present parametrizations of MINOS’ track and shower resolutions that allow the dataset to be subdivided into quantiles of energy resolution.

We show the sensitivity improvement obtained from both of these techniques.

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