

Fitting T2K Near Detector Data using a Markov Chain Monte Carlo

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The Tokai to Kamioka (T2K) experiment is a long baseline neutrino experiment in Japan which aims to measure neutrino oscillation parameters with world leading precision. One of the most profound and challenging tasks facing T2K is determining whether or not CP symmetry is violated in the lepton sector.

In order to perform these measurements, we require excellent constraints on systematic uncertainties relating to the initially unoscillated neutrino beam, as well as on neutrino nucleus interactions that occur in the detector media. Data collected at T2K's near detector (ND280) is used to greatly improve these constraints by fitting parameters of a highly sophisticated model.

There have been many upgrades to this analysis recently. These include an overhaul of the modelling of detector systematic uncertainties, moving towards a more easily interpretable approach which uses fewer simplifying assumptions. In order to better constrain this new model, new analysis samples have also been introduced with better angular acceptance.

These improvements will be summarised in this poster, and fit results of this model to ND280 data using a Markov chain Monte Carlo approach will be shown.

Poster prize

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