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A Relative Rate and Shape Measurement of Neutrino Oscillation at the Daya Bay Experiment

A major goal of the Daya Bay Reactor Neutrino Experiment is the precise measurement of the neutrino oscillation via the disappearance of the reactor electron antineutrinos. This technique provides the most precise determination of the neutrino mixing angle theta_{13} and the larger mass-squared difference Delta m^2_{ee} (~Delta m^2_{31}). The experiment consists of eight identical detectors placed at two near and one far underground experimental halls. A relative measurement can reduce the uncertainty due to the imperfect modeling of the reactor antineutrino flux. We have developed a method effectively independent of reactor models. This is achieved by predicting the antineutrino rate and energy spectrum of the far detectors directly from the measurement of the near detectors, with corrections for backgrounds, acceptance and oscillation. This poster will describe in detail the method and merits of our approach, as well as the estimated values of sin^2(2theta_{13}) and Delta m^2_{ee} that we obtain.

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