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Improvements on Monte Carlo Simulation and Studies of Absolute Detection Efficiency at Daya Bay

The Daya Bay experiment has made the most precise measurement of neutrino mixing angle θ_{13} and the first direct measurement of the $\bar{\nu}_e$ mass-squared difference Δm^2_{ee} through the relative measurements between near and far detectors. In addition, efforts are made toward the absolute reactor flux and spectra measurement, which require a precise understanding of the absolute detection efficiency and detector energy response. The Monte Carlo simulation plays a crucial role in understanding the detector performance. A Geant4-based full detector simulation software has been built under the Gaudi framework, and is tuned with various data sets. This poster will describe details of the improvements on Monte Carlo Simulation and studies of the absolute detection efficiency at Daya Bay.

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