

Daya Bay energy calibration model

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The Daya Bay Reactor Neutrino Experiment was designed to determine θ_{13} , the smallest mixing angle in the three-neutrino mixing framework, with unprecedented precision. Daya Bay provided θ_{13} with the best precision and made an independent measurement of the effective mass splitting in the electron antineutrino disappearance channel. Daya Bay also performed a number of other precise measurements, such as a high-statistics determination of the absolute reactor antineutrino flux and spectrum, and study of their evolution, as well as a search for sterile neutrino mixing, among others.

A precision evaluation of the antineutrino energy spectra is a fundament for neutrino oscillation investigation. So an accurate conversion of the detector response to the antineutrino energy is a key attribute of the analysis. This is named as the detector energy response model, which will be presented in the poster. The model involves non-linearity which originates from processes in the liquid scintillator and readout electronics as well as other potential biases related to energy calibration.

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