Contribution ID: **787** Type: **Poster**

Daya Bay energy calibration model

Friday 6 July 2018 20:15 (15 minutes)

The Daya Bay Reactor Neutrino Experiment was designed to determine theta13, the smallest mixing angle in the three-neutrino mixing framework, with unprecedented precision. Daya Bay provided theta13 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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Session Classification: POSTER