Contribution ID: **20** Type: **Poster**

The AmC Calibration Source Induced Background at Daya Bay Experiment

The Daya Bay experiment has made the most precise measurement of the neutrino mixing angle theta13 and the first independent measurement of the effective mass splitting in the electron anti-neutrino disappearance channel utilizing measured reactor anti-neutrino rate and spectral shape. A thorough understanding of backgrounds is crucial for the measurement. Among all the backgrounds at Daya Bay, one comes from the AmC calibration source parked on top of the anti-neutrino detectors, which is an especially major background contributor at the far site. Many efforts have been made to better evaluate this background and constrain related systematics, including an in-situ measurement using a much stronger AmC source to directly measure the background spectra and benchmark our simulations. Details of the measurement and evaluation of the AmC background will be presented in this poster.

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Track Classification: Reactor Neutrino Oscillations