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Study of Reactor Fuel Evolution and Decomposition of Isotope Contributions

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The Daya Bay Reactor Neutrino Experiment is designed to measure the smallest neutrino mixing angle theta13 and it has 8 functionally identical antineutrino detectors (AD), 4 located at two near sites and 4 in the far hall. Due to the high power of the Daya Bay reactors and over 100-t target mass, Daya Bay has collected unprecedented amount of statistics of reactor antineutrino events at various fuel burnups. This has provided a great opportunity for the study of the reactor fuel evolution, namely, the correlation between antineutrino rates and the fuel burnup. Furthermore, given the precise energy response of the ADs, better than 0.5%, combined with the data of fuel isotopes during burnup provided by the reactor operator, we are also able to resolve the antineutrino spectra of the two dominant isotopes, 235U and 239Pu. These two studies could provide important insights to the origin of the reactor antineutrino anomaly (RAA) and validity of the calculation of the reactor antineutrino fluxes and spectra of different fuel isotopes. In this poster, we will present the latest results from the fuel evolution and isotope decomposition studies.

Secondary track (number)

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