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Evolution of the Reactor Antineutrino Flux and Spectrum at Daya Bay

Thursday, 6 July 2017 10:15 (15 minutes)

The Daya Bay Reactor Neutrino Experiment consists of eight antineutrino detectors placed at different baselines from six 2.9 GW_{th} nuclear reactors. In this talk, I will present the evolution of the reactor antinetrino flux and spectrum with a 2.2 million inverse beta decay (IBD) sample collected from the Daya Bay's near detectors over multiple fuel cycles in 1230 days. In addition to the disagreement of the observed flux and spectrum with reactor model predictions, a 3.1σ discrepancy in the antineutrino flux variation with respect to the reactor fuel composition is observed. This discrepancy indicates a 7.8% overestimation of the predicted antineutrino flux from ^{235}U, suggesting that this fission isotope could be the primary contributor to the reactor antineutrino anomaly.

Experimental Collaboration

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