



Contribution ID: 476

Type: **Parallel Talk**

Improved Search for a Light Sterile Neutrino at Daya Bay

Friday, 7 July 2017 12:45 (15 minutes)

The Daya Bay Reactor Neutrino Experiment currently holds for the most precise measurement of the third neutrino mixing angle $\theta_{13} \approx 8.4^\circ$, which unlocked the gateway of studying the CP violation in the lepton sector, and the most precise measurement of $|\Delta m_{23}^2|$. The multiple detectors at different locations also allow for using relative energy spectral analysis to search for a light sterile neutrino with corresponding mass-squared splitting Δm_{41}^2 below 0.3 eV^2 . This result was combined with those of Bugey-3 and MINOS to set limits in the anomalous muon to electron neutrino appearance oscillation. For Δm_{41}^2 above 0.3 eV^2 , Daya Bay tested the foundation of the sterile neutrino explanation of the reactor antineutrino anomaly through measurements of reactor flux, energy spectrum, and fuel evolution. In this talk, we will present the latest results.

Experimental Collaboration

Daya Bay experiment

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