Contribution ID : **783** Type : **Oral presentation**

The latest oscillation results from the Daya Bay reactor neutrino experiment

Friday, 4 July 2014 09:30 (13)

The Daya Bay reactor neutrino experiment (Daya Bay) is one of the three current-generation short-baseline reactor neutrino experiments designed to measure the lastly known neutrino mixing angle theta13. Its unique design of eight identical 20t liquid scintillator (LS) antineutrino detectors (AD) at the three near and far experimental sites does not only make it the most sensitive theta13 experiment but also provides the flexibility of re-arranging ADs. Daya Bay was able to discover the non-zero theta13 value using the first completed six ADs at an earlier stage of the experiment by adapting a 2-1-3 detector arrangement scheme. By establishing a precise energy model of the ADs, Daya Bay has further improved the precision of sin22theta13 to ~10% and measured the atmospheric mass-squared splitting dm2atm using electron-flavor reactor antineutrinos for the first time. The dm2atm measurement of Daya Bay is consistent with the one using muon-flavor (anti)neutrinos. The Daya Bay experiment has completed, installed and commissioned all eight ADs since Fall 2012 and has collected the largest reactor antineutrino dataset. The unpaired dataset has enabled the study of physics topics like oscillation analysis using neutron captured on hydrogen events, sterile neutrino search and other standard or exotic physics. Looking into the future, Daya Bay is expected to measure sin22theta13 to ~3% precision and dm2atm to a precision better than the current one by MINOS. The discovery and the precision measurement of non-zero theta13 have enabled other physics opportunities in neutrino physics. This talk will report the latest oscillation results and the current status with emphases on precision oscillation analysis and future prospect.

Summary

Primary author(s) : Prof. CAO, Jun (Institute of High Energy Physics)

Presenter(s) : Dr. WANG, Wei (College of William and Mary, Sun Yat-Sen University)

Session Classification : Neutrino Physics

Track Classification : Neutrino Physics