SEARCH FOR STERILE NEUTRINO WITH THE DAYA BAY FULL DATASET

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Modern neutrino physics contains a few anomalies that can not be described by the three-neutrino mixing and oscillation framework. Reactor neutrino experiments observed a deficit of the anti-neutrino flux at 2.5σ level with respect to the prediction (Huber-Mueller model). Gallium detectors for solar neutrinos observed a deficit of events from radioactive calibration sources of neutrino (^{37}Ar and ^{51}Cr) at 2.3σ level.

These anomalies could be explained with one or more sterile neutrinos, which interact only gravitationally.

The reactor experiment Daya Bay has stored $5.55 \cdot 10^6$ IBD candidates from the interaction of electron antineutrinos. The statistics have been accumulated on a distance from 400 m to 2 km between reactor and detectors. It makes the experiment sensitive to sterile neutrino in a wide range of sterile mass splittings Δm^2_{41}.

Since no significant signal of sterile neutrino was observed, it enables us to exclude a large region of sterile neutrino parameter space. The sensitivity to sterile amplitude $\sin^2 2\theta_{14}$ achieves $5 \cdot 10^{-3}$ with 95% confidence level in a region of $2 \cdot 10^{-4}$ eV$^2 < \Delta m^2_{41} < 2 \cdot 10^{-1}$ eV^2.

The overview of the experiment and results of the analysis of the full dataset of Daya Bay will be presented.