

Search for sterile neutrino at the NEOS Experiment

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There are neutrino anomalies which cannot be explained with 3-neutrino hypothesis. A 3+1 neutrino framework including light sterile neutrino can be an alternative hypothesis to explain those anomalies. NEOS is a reactor neutrino experiment to search for sterile neutrino. The detector was installed in the tendon gallery at 24-meters distance from a 2.8-GWt reactor core, with 20-m.w.e overburden. The number of inverse beta decay (IBD) candidates is about 2,000 per day during reactor-on period, with the signal-to-background ratio higher than 20. As a result of significance test with pseudo-data sets, there is no strong evidence for 3+1 neutrino hypothesis. An exclusion limit at 90% CL for the alternative hypothesis is obtained via shape-only analysis. The measurement will be resumed in this summer to figure out the evolution of reactor neutrino spectrum along with the variation of fission fraction.

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