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Recent results from the DANSS experiment

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New results from the DANSS experiment on the searches for sterile neutrinos are presented. They are based on 7 million inverse beta decay events collected at 10.9, 11.9, and 12.9 meters from the 3.1 GW reactor core of the Kalinin Nuclear Power Plant in Russia. Additional 1 million of antineutrino events further improves the sensitivity for the sterile neutrino mixing parameter below 0.01 for a sterile neutrino mass around 1 eV. Obtained limits exclude practically all sterile neutrino parameters preferred by the recent BEST results for Δm^2 below 5 eV^2. Additional data will allow to test the statistical significance of the DANSS best-fit point in case of the 4-neutrino scenario which was 2.35σ. The neutrino spectrum dependence on the ^{239}Pu fission fraction is presented. It agrees with the predictions of the Huber-Mueller model. Using this dependence, the ratio of cross sections for ^{235}U and ^{239}Pu was extracted. It also agrees with the Huber-Mueller model and somewhat larger than in other experiments. The reactor power was measured using the IBD event rate during 6.5 years with a statistical accuracy of 1.5\% in 2 days and with the relative systematic uncertainty of about 0.5\%. The neutrino oscillation analysis using the predictions for the absolute antineutrino flux from the reactor with a conservative systematic error of 5\% excludes practically all sterile neutrino parameter space preferred by the recent BEST results as well as the best fit point of the Neutrino-4 experiment. Status of the DANSS upgrade will be presented. This upgrade should allow DANSS to test the Neutrino-4 claim of the observation of sterile neutrinos and to scrutinize even larger fraction of the sterile neutrino parameter space preferred by the recent BEST results.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

DANSS

Is the speaker for that presentation defined?

No

Details

N/A

Internet talk

Maybe

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