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New results from the DANSS experiment

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Recently the MiniBooNE collaboration observed electron (anti)neutrino appearance in the muon (anti)neutrino beams. The significance of the effect reaches 6.0σ level when combined with the LSND result. Even more recently the NEUTRINO-4 collaboration claimed the observation of electron antineutrino oscillations to sterile neutrinos with a significance of about 3σ . If these results are confirmed, New Physics beyond the Standard Model would be required.

On the other hand, the DANSS experiment and several other reactor experiments at short baselines obtained quite strict limits on the hypothetical sterile neutrino parameters. We present new results of the DANSS experiment on the searches for sterile neutrinos. They are based on more than 2 million of inverse beta decay events collected at 10.7, 11.7 and 12.7 meters from the reactor core of the 3.1 GW Kalinin Nuclear Power Plant in Russia. This data sample is 2.4 times larger than the data sample in the previous DANSS publication. The neutrino spectrum dependence on the fuel composition is also presented. We have also measured the reactor power using the IBD event rate during 17 months with the statistical accuracy 1.5% in 2 days and with the relative systematic uncertainty of about 0.5%.

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