

Measurements of the reactor antineutrino with solid state scintillation detector

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Measurements of reactor antineutrino play an important role in the efforts at the frontier of the modern physics. The DANSS collaboration presents preliminary results of a one year run with a cubic meter solid state detector placed below 3.1 GW industrial light water reactor. The experiment is sensitive to sterile neutrino in the most interesting region of mixing parameter space. 2500 scintillation strips of the sensitive volume of the detector have multilayer passive shielding of copper, lead and borated polyethylene and active muon veto. Detector position below the reactor gives an advantage of overburden about 50 m of water equivalent providing factor of 6 in cosmic muon suppression and eliminating fast neutrons. The detector is placed on a vertically movable platform which allows to change the distance to the reactor core center in the range 10.7-12.7 m within a few minutes. The strips are read out individually by SiPMs and in groups of 50 by PMTs. 5000 inverse beta-decay events per day are collected in the fiducial volume, which is 78% of the whole detector, at the position closest to reactor. Overburden, active veto and good segmentation of the detector result in an excellent signal to background ratio. The talk is dedicated to the data analysis and preliminary results. The experiment status is also presented.

Presenter: ALEKSEEV, Igor (ITEP)

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