

Latest results of the DANSS experiment

Friday 25 August 2023 11:00 (25 minutes)

The latest results of the DANSS experiment are presented. The plastic scintillator detector is located under 3.1 GW industrial reactor core of Kalinin Nuclear Power Plant, and its main purpose is the search for the short baseline neutrino oscillations. The inverse beta decay reaction is used for the antineutrino detection. The data are collected at three distances –10.9, 11.9 and 12.9 meters from the reactor core center. The total number of the antineutrino events has reached 7M with about 1.5M new events from the last year. New limits on the sterile neutrino oscillation parameters are presented. The evolution of the antineutrino counting rate and spectrum with the time of the reactor campaign will also be discussed. A model-dependent analysis of the data, including the absolute antineutrino flux, excludes nearly the whole area of the sterile neutrino parameters, preferred by the recent BEST results, and also the best fit point of the Neutrino-4 experiment. The study of the cosmic muon flux variations at the detector depth of 50 m.w.e., caused by the temperature and barometric effects, is also presented.

The status of the coming DANSS modernization will be presented. This upgrade will improve DANSS energy resolution and increase the sensitive volume, which will allow to cover of even larger area of the sterile neutrino parameters. In this case, the sensitivity of the DANSS detector will allow to check the latest BEST and Neutrino-4 experiments in a model-independent way.

Primary author: SAMIGULLIN, Eduard

Presenter: SAMIGULLIN, Eduard

Session Classification: parallel (room#101)

Track Classification: WG5: Neutrinos Beyond PMNS