

DANSS reactor antineutrino spectrometer: results for 2023

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DANSS is a highly segmented solid-state scintillation spectrometer that detects up to 5000 reactor antineutrinos at a distance of 10-13 m from the industrial nuclear reactor (4 units, 3.1 GW) of the Kalinin NPP. Taking into account the low background (only 2%), this makes it possible to search for oscillations into sterile neutrinos in the $\Delta m^2 \in (0,02-5,0)$ eV² region. Results will be presented based on record statistics - almost 8 million reactor antineutrinos over 7 years of measurements. We did not find a statistically significant oscillation signal and excluded a significant part of their possible phase space. In addition, the results of research into the evolution of nuclear fuel, differences in the shapes of the experimental and theoretical spectra of reactor antineutrinos will be presented. Particular attention will be paid to the upgrade of the spectrometer, the main goal of which is to achieve an energy resolution no worse than 12% at 1 MeV on 1.7 more sensitive volume with the same passive shielding and mobile platform.

Abstract title

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