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Results from the stage one of the DANSS experiment

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The DANSS reactor antineutrino spectrometer is located in close proximity to the power reactor at the Kalinin NPP (Russia). A lifting platform allows the detector position to be changed in the range of 11–13 m from the reactor core. More than 10M neutrino events and the long-term experiment operation, covering 5 complete fuel campaigns, provide DANSS with rich experimental data, which is used for both fundamental and applied studies. Our results include:

- the most stringent limit for sterile neutrinos at $\Delta m^2 \sim 1 \text{ eV}^2$;
- new limits for Large Extra Dimensions;
- a precise measurement of the ^{235}U to ^{239}Pu neutrino yield ratio;
- the first precise monitoring of an industrial reactor's power and fission fractions;
- extraction of the observed spectra of the main fissile isotopes ^{235}U and ^{239}Pu , as well as the unfolding of these spectra into the antineutrino energy domain;
- a high energy tail of the reactor antineutrino spectrum.

DANSS has been stopped for a major upgrade with the main aim to dramatically improve the energy resolution. New scintillation detectors will feature 8 WLS fibers (YS-2 by Kuraray) with double-side SiPM readout. The average light yield of the new detectors is 200 ph.c. per MeV. The upgraded detector will also have a 70% larger fiducial volume, providing a counting rate of about 10k neutrino events per day at the closest position.

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