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Investigation of reactor antineutrino in the DANSS experiment

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Detector DANSS detects antineutrino flux from the 3.1 GW industrial nuclear reactor VVER-1000 of the Kalinin Nuclear Power Plant at distances 10.9, 11.9, 12.9 meters over 8 years. By 2024 statistics of more than 8 million inverted beta decay events have been collected. New analyses of the data exclude a large area of parameters for hypothetical short base reactor neutrino oscillations to sterile state. Additionally, a new study of high energy part (8-12 MeV) of reactor antineutrino spectrum was carried out. The neutrino spectrum dependence on the 239Pu fission fraction and the ratio of cross sections for 235U and 239Pu will be shown. A status of the DANSS upgrade will be reviewed. Twice better energy resolution of 12% at 1 MeV and increased by 70% sensitive volume will provide more sensitive and precise studies of reactor antineutrino in the DANSS experiment over next years.

Section

Neutrino physics and nuclear astrophysics

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