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Status of nuGeN experiment at Kalinin Nuclear Power Plant on coherent elastic neutrino-nucleus scattering

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The νGeN experiment is aimed to study neutrino scattering at the close vicinity of the reactor core of Kalinin Nuclear Power Plant (KNPP) at Udomlya, Russia. Its main interests are connected with the detection of coherent elastic neutrino-nucleus scattering (CEνNS), the search for the magnetic moment of neutrino and other rare processes. The experimental setup is constructed under reactor unit #3 of KNPP at a distance of about 10 m from the center of the 3.1 GW_{th} core. In this way, we obtain an enormous antineutrino flux of more than 5x10^{13} $\nu/cm^2/s$. Materials of the reactor surrounding provide about 50 m w.e. overburden, that serves as a good shielding against cosmic radiation. In combination with a low ambient background, it gives us a unique opportunity to investigate antineutrino properties at the best experimental location in the world. A special lifting mechanism allows moving the spectrometer towards the reactor core changing the neutrino flux and thus suppressing main systematic errors caused by possible long-term instability and insufficient knowledge of neutrino flux. To detect signals from the neutrino scattering we use high-purity low-threshold germanium detector surrounded by passive and active shielding. A specially developed acquisition system allows suppressing events that correspond to noise. A detailed description of the experimental setup will be shown. The current status of data taking and comparison of the spectra with reactor on and off regimes will be presented.

Primary author(s) : Dr. LUBASHEVSKIY, Alexey (JINR)

Presenter(s) : Dr. LUBASHEVSKIY, Alexey (JINR)

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