Project review on investigation of neutrino properties with the low-background germanium spectrometer vGEN.

vGEN project is a continuation of the previous projects at Kalinin Nuclear Power Plant (KNPP) aimed to the search for neutrino magnetic moment using reactor antineutrinos. The interest in investigation of this process is tightly connected with the clarification of the neutrino properties. This problem is rather essential for most experiments in neutrino physics after the discovery of neutrino oscillations. The presence of magnetic moment is required in the number of astrophysical (cosmological) models and in the number of theories its value depends on the neutrino nature (Majorana or Dirac). That's why the observation of neutrino magnetic moment would have been an important discovery and would have required the extension of the Standard Model, and the corresponding experiments meet the priority objectives of the modern neutrino physics and are relevant at the present moment. The current best world limit on the magnetic moment neutrino of ($\mu_\nu \leq 2.9 \times 10^{-11}\ \mu_B$) was obtained in the previous phase of the project (GEMMA-I). In the vGEN project this limit is expected to be improved by increasing detector mass in more than three times, energy threshold down to 200 eV (in GEMMA-I it was 2.8 keV), by decreasing the background level and by using the higher neutrino flux from the new place under the reactor.

Another effect that will be searched at KNPP using vGEN spectrometer is a coherent elastic neutrino-nucleus scattering (CEvNS). The big advantage of the vGEN experiment in comparison with other projects is a location, which allows operating at enormous neutrino flux and with good cosmic ray suppressing. It can be a first observation of the CEvNS using reactor antineutrinos. Also it would be interesting to check the result obtained by COHERENT collaboration. While observing it opens a way to interesting tests of non-standard neutrino interactions. In addition, this can be used for sterile neutrino search and reactor monitoring. Using low-threshold HPGe detectors with a total mass of about 5.5 kg authors will detect CEvNS with a good ration signal to background.

To sum up, it is important to point out that the vGEN project is aimed to investigate the priority problems of neutrino physics. The justifiability of the experimental methods, the qualification and experience of implementers, the reality of predicated plans and aims are out the doubt, and the obtained and expected results are on the high international level. In consideration of all that has been mentioned it is important to point out that project vGEN fully deserves the highest priority and should be thoroughly supported.

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