

New approaches to neutron monitoring in low background neutrino experiments

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In this work the new methods for neutron detection in low background experiments are presented. During study of background conditions of ν GeN and Ricochet neutrino experiments it has been shown that low intrinsic background helium-3 filled tubes are suitable not only for well known detection of thermal neutrons, but also for the fast neutrons with energies up to few MeV. Alternative to the helium-3 could be NaI (Li+Tl) detectors. One such of the detectors loaded with 1% of natural lithium was experimentally studied. The MC calculations based on our data shows that in a case of the detector loaded with 2% of lithium-6 and with its background reduced to the lowest values of available NaI detectors, it will become possible simultaneous measurement of low level fluxes for thermal, epithermal and fast neutrons. That possibility, together with traditional γ -measurements, looks very promising for background characterization at neutrino experiment sites.

The speaker is a student or young scientist

Yes

Section

1. Neutrino physics and nuclear astrophysics

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