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# THE POSSIBLE EXPERIMENT FOR SEARCH OF STERILE NEUTRINOS ON THE BASE OF INTENSIVE ANTINEUTRINO SOURCE WITH REGULATED HARD SPECTRUM

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The work devoted to development of the novel type of antineutrino source and propose of the oscillation experiment to ensure: a) hard and well defined antineutrino flux that larger compare to reactor flux; b) drop of neutrino flux errors in several times at energy > 3 MeV; c) high rate of antineutrino events in the detector (about - ˜ 1E+3 per day); d) possibility to diminish significantly the dimensions of the detector; e) search of electron antineutrino disappearance (short base line experiment).

The most intensive artificial neutrino sources are the nuclear reactors. But antineutrino reactor spectra (formed by main fuel isotopes) are characterized by large uncertainties in the total -spectrum that lead to very serious problem in understanding of neutrino oscillation results. The reactor spectrum is known with ˜ (4-5)% -precision and this errors dramatically rise up to tens persents at more higher energies. [1-4].

The proposed scheme is based on activation of 7Li in the reactor neutron flux and transport of the fast beta-decaying 8Li isotope toward a remote neutrino detector and back in the closed loop to the reactor for the next activation in the continuous cycle. Well investigated neutrino spectrum of 8Li is hard: with maximal energy up to 13 MeV. For increasing of a hard lithium antineutrinos part in the total spectrum we propose to construct a being pumped reservoir near the neutrino detector. This novel type of the source will ensure not only harder neutrino spectrum in the detector volume but also an opportunity to register neutrino interaction at different summary spectrum hardness varying smoothly (without stop of the experiment) a rate of 8Li (or it's chemical compound) pumping in the closed loop [5, 6].

The strong advantage is that lithium component of the spectrum is well known and this fact allows to decrease significantly the count errors [7, 8]. The rate of neutrino detector counts in such hard flux will rise strongly compare to rate from reactor component. One more advantage is to use compact detector (with volume about ˜ cubic meter ) that is exclusively important for realization of the experiment.

The simulation of the possible experiment for search of sterile neutrinos (the reaction of inverse beta decay) with ∆m2 ˜1 eV2 reveals the promise to detect reliable the disappearance of electron antineutrinos. The detailed results for (3+1) and (3+2)-model are presented and discussed. It is proposed the variant of short base line oscillation experiment basing on the considered antineutrino source.

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