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A Neutron Veto for the PandaX-4T Experiment

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PandaX-4T is a currently running experiment located at China Jinping Underground Laboratory searching for dark matter particles and studying the fundamental properties of neutrinos. It uses a liquid xenon TPC where neutrons and gammas from the liquid xenon container and PMT arrays significantly contribute to the total background. This poster presents the effort to build an active neutron and gamma veto surrounding the liquid xenon TPC. The 0.9 kton water shielding will first be instrumented with 8-inch PMTs forming a Cherenkov detector. To enhance the tagging efficiency, water-based liquid scintillator for which 5% liquid scintillator is mixed into the water using surfactants will be employed, with the possible addition of gadolinium. For its appreciable target mass, the detector will also detect cosmic rays and atmospheric neutrinos. For the next generation multi-ten-ton liquid xenon detector, the potential of using cold liquid scintillator as the veto detector medium will be explored.

Submitted on behalf of a Collaboration?

Yes

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