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Simulation and Design of a Water Cherenkov Veto for the PandaX-xT Experiment

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PandaX-xT is a next-generation, multi-purpose liquid xenon detector at China Jinping Underground Laboratory. It is designed with a 43-ton active target mass and ultra-low background to achieve a high sensitivity for dark matter detection and neutrinoless double-beta decay search. As a passive shielding, 4 kton of water will be filled in the water pit where the liquid xenon detector is situated. By instrumenting 3-inch PMT arrays in water, one can transform it into a Cherenkov veto detector which can tag cosmic muons as well as atmospheric neutrinos. A simulation framework has been developed to optimize the design and achieve optimal detection performance. This poster presents the simulation, reconstruction, and a preliminary design for this veto detector.

Collaboration you are representing

Author: TIAN, Yuxin (School of Physics and Astronomy, Shanghai Jiao Tong University)

Presenter: TIAN, Yuxin (School of Physics and Astronomy, Shanghai Jiao Tong University)

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