

Studies on muon veto in the JUNO liquid scintillator neutrino detector

The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kt liquid scintillator detector. Its main goal is the determination of the neutrino mass hierarchy with neutrinos from two nuclear power plants at 53 km baseline. Fast and effective muon tracking is essential for the veto of atmospheric muons and the cosmogenic background they produce as well as the detection of atmospheric muon neutrinos. An expected muon rate of 3 / second inside the detector makes a partial veto of volume along the track mandatory. To achieve this, JUNO features an outer water Cherenkov detector around its liquid scintillator central detector. Due to the isotropic emission of light, tracking in liquid scintillator is more difficult than in water. Results for muon tracking in both subdetectors of JUNO are presented together with a realistic dead time estimation.

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