

The purification study on the Liquid Scintillator for JUNO

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Content

The Jiangmen Underground Neutrino Observatory (JUNO) is under construction in the south of China which aims to measure the neutrino mass hierarchy and neutrino oscillation parameters by studying the reactor neutrinos from two nearby nuclear power plants 53km away. JUNO is also designed to have good capabilities of researches such as supernova neutrinos, geo-neutrinos, solar neutrinos and so on. The energy resolution of JUNO central detector will reach 3% at 1MeV [U+FF0C] corresponding to at least 1,100 photoelectrons (pe) per MeV of deposited energy. The central detector consists of 20,000 tons of liquid scintillator(LS) in a acrylic ball with the diameter of 35.4 meters. The proper manipulation of the LS is needed for two reasons: on one hand to ensure the degree of transparency which has to contribute to the overall light yield of the experiment, and on the other to keep the radiopurity of the liquid itself at least in the 10^{-15} g/g range (in term of U and Th contaminations). The study on the techniques include alumina absorption column, distillation, water extraction, and gas stripping will be reported and the prototype test of the combined techniques checked with one of the AD detector of Day Bay, whose scintillator replaced with the purified one, will be introduced, too.

Summary

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