



Contribution ID: 68

Type: Poster

Reduction of the ^{14}C -background in JUNO

Thursday, 14 June 2018 15:58 (2 minutes)

The Jiangmen Underground Neutrino Observatory (JUNO) will be a 20\,kt liquid scintillator neutrino detector located at Kaiping, Jiangmen in South China. With the data acquisition starting in 2021, its main goal is the determination of the neutrino mass hierarchy from a precise measurement of the energy spectrum of anti-electron-neutrinos 53\,km away from the reactor. To precisely measure the oscillation pattern of the reactor spectrum an unprecedented energy resolution for this kind of detector of 3% at 1\,MeV is needed. Pile-up events with background from radioactive decays such as those from ^{14}C can spoil the reconstruction of the neutrino energy. On this poster methods for detecting spoiled pile-up events are presented. In addition to a simple clusterization algorithm on the hit times, the utilization of spherical harmonics of the event distribution as well as a Likelihood-test of the hit times are used to tag pile-up events.

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Session Classification: poster