

ZICOS –Neutrinoless double beta decay experiment using Zr-96 with an organic liquid scintillator-

A liquid scintillator containing a tetrakis (isopropyl acetoacetate) zirconium has been developed for new project of neutrinoless ^{96}Zr double beta decay experiment. The liquid scintillator has 1.4 wt.% concentration of Zr, light yield of $48 \pm 7.1\%$ for BC505, and an energy resolution of $2.5 \pm 0.4\%$ at 3.35 MeV assuming 64 % photo coverage. In order to investigate a half-life over 10^{26} years, we need to remove backgrounds such as ^{208}Tl over one order magnitude. For this purpose, we have developed new technique to use Cherenkov light using their characteristic photon hit pattern, and have obtained the efficiency that 93% of ^{208}Tl backgrounds could be reduced even though remaining 80% of double beta decay signal. In order to use this technique, we have to separate Cherenkov and Scintillation lights emitted from a few MeV electron using the pulse shape discrimination. Here, we will report recent results of our measurement of pulse shape using the FADC digitizer.

Session and Location

Monday Session, Poster Wall #34 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (not participating in poster prize competition)