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## Reduction of Tl-208 backgrounds for Zr-96 neutrinoless double beta decay experiment using topological information of Cherenkov light

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Reduction of Tl-208 backgrounds for Zr-96 neutrinoless double beta decay experiment using topological information of Cherenkov light

ZICOS is a future experiment for neutrinoless double beta decay using  $^{96}\text{Zr}$  nuclei. In order to achieve sensitivity over  $10^{27}$  years, ZICOS will use tons of  $^{96}\text{Zr}$ , and need to remove  $^{208}\text{Tl}$  backgrounds as observed by KamLAND-Zen one order of magnitude. For this purpose, we have developed new technique to distinguish the signal and background using topology of Cherenkov light. We have measured directly this topology using HUNI-ZICOS detector and the results clearly indicated topology as effective even 1MeV electron. We have also developed the pulse shape discrimination for the extraction of PMT which receives Cherenkov lights in the liquid scintillator. In order to confirm above technique, we demonstrated beta-gamma events such as  $^{208}\text{Tl}$  beta decay scheme using  $^{60}\text{Co}$  source with UNI-ZICOS detector.

Here we will report the current status and some results obtained by recent measurement, and will also explain a plan to measure the half life of two neutrino double beta decay for  $^{96}\text{Zr}$  nuclei.

### In-person participation

Yes

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