

## Performance of upgraded shielding system in CANDLES

*Thursday, May 25, 2017 4:10 PM (20 minutes)*

CANDLES aims to measure neutrino-less double beta decays using  $^{48}\text{Ca}$  which has the highest Q value (4.27 MeV) among all isotope candidates of double beta decays. A distinction in the measurement is an active veto system using liquid scintillator. Large amount of external backgrounds reacted in LS can be removed by taking advantage of the pulse shape difference between  $\text{CaF}_2$  and liquid scintillator. Thanks to the high Q value and LS active veto system, background candidates are well limited in CANDLES.

Remained backgrounds are  $^{208}\text{Tl}$ , pile-up events of  $^{212}\text{Bi}$ - $^{212}\text{Po}$  from  $^{232}\text{Th}$  decays in  $\text{CaF}_2$  crystals, and high energy gamma rays from neutron captures on rock and stainless steel tank. Since gamma rays from neutron captures was found to be the most serious background, shielding system consisted of lead and B-contained rubber sheet was constructed from year 2015 to year 2016. Performance of the constructed shielding system will be reported in the talk.

**Primary author:** Dr NAKAJIMA, Kyohei (University of Fukui)

**Presenter:** Dr NAKAJIMA, Kyohei (University of Fukui)

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