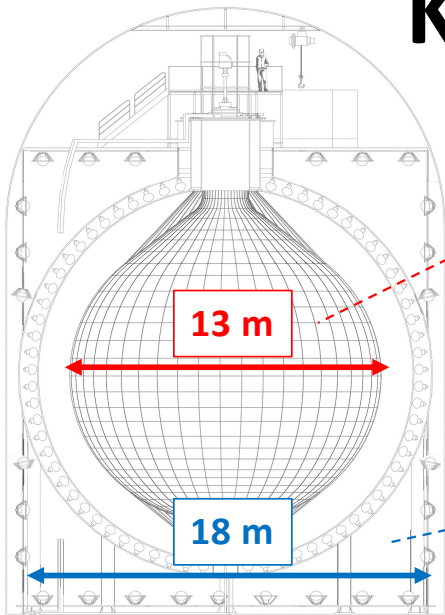


# GPPU progress report

Search for solar flare coincidence neutrinos  
and geo neutrinos with KamLAND

Research Center for neutrino Science  
DC1 Nanami Kawada

# KamLAND experiment

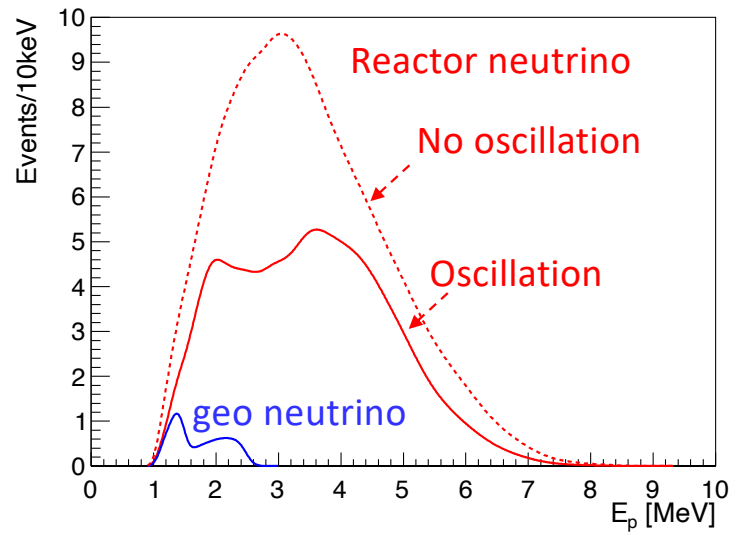


- 1kt liquid scintillator
- 1,325 17inch PMT + 554 20inch PMT  
-> Event detection

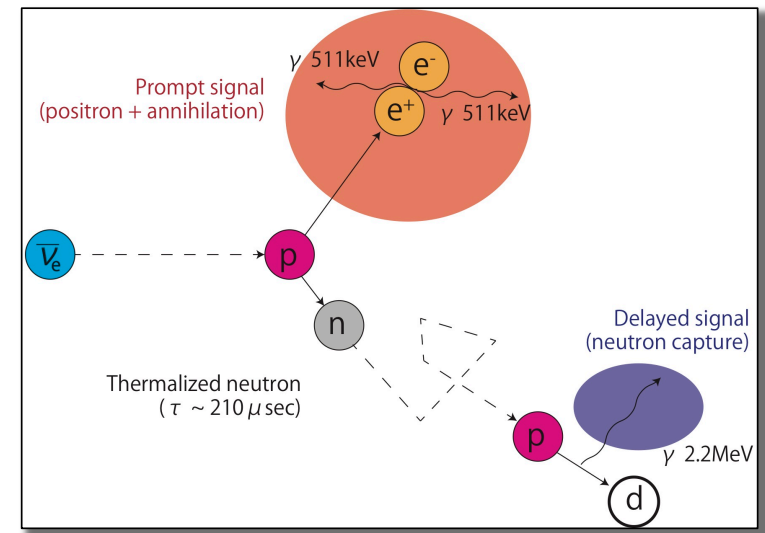
- 3.2 kt pure water
- 140 20inch PMT  
-> Shield + Active veto

## Geo neutrino

- Flux -> radioactive heat
- Spectre -> U/Th ratio
- > Appricatio of neutrino as a prove of geoscience !!



Merit : Ultra-low background observation using **Inverse-beta decay**

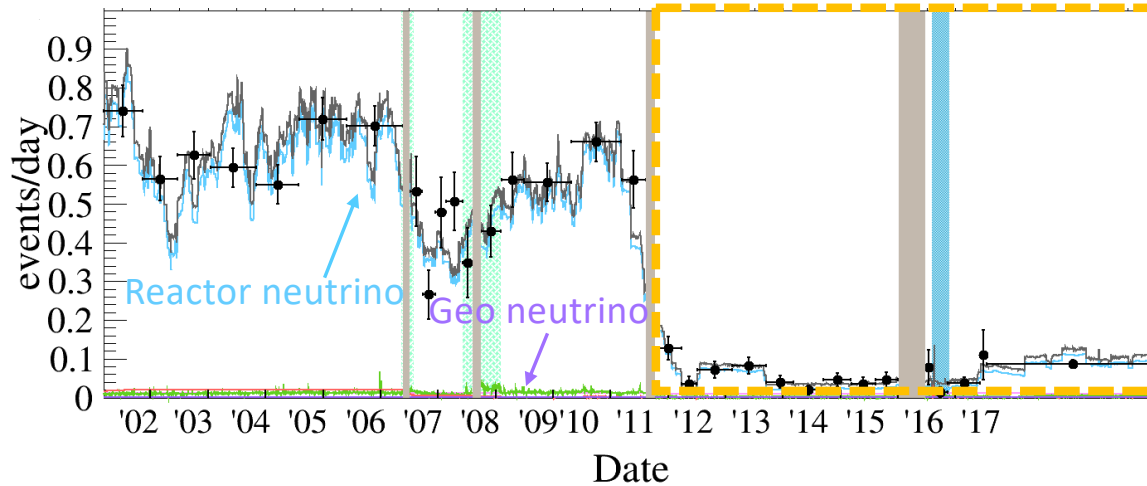


## Reactor neutrino

- Neutrino oscillation parameter  
-> Revealing the nature of neutrino

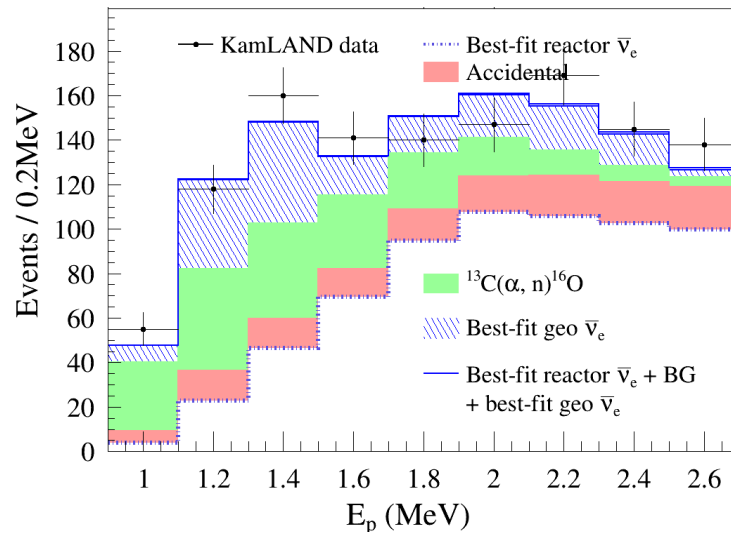
# Geo neutrino measurement update

Expected event rate at KamLAND



## Reactor-off period analysis

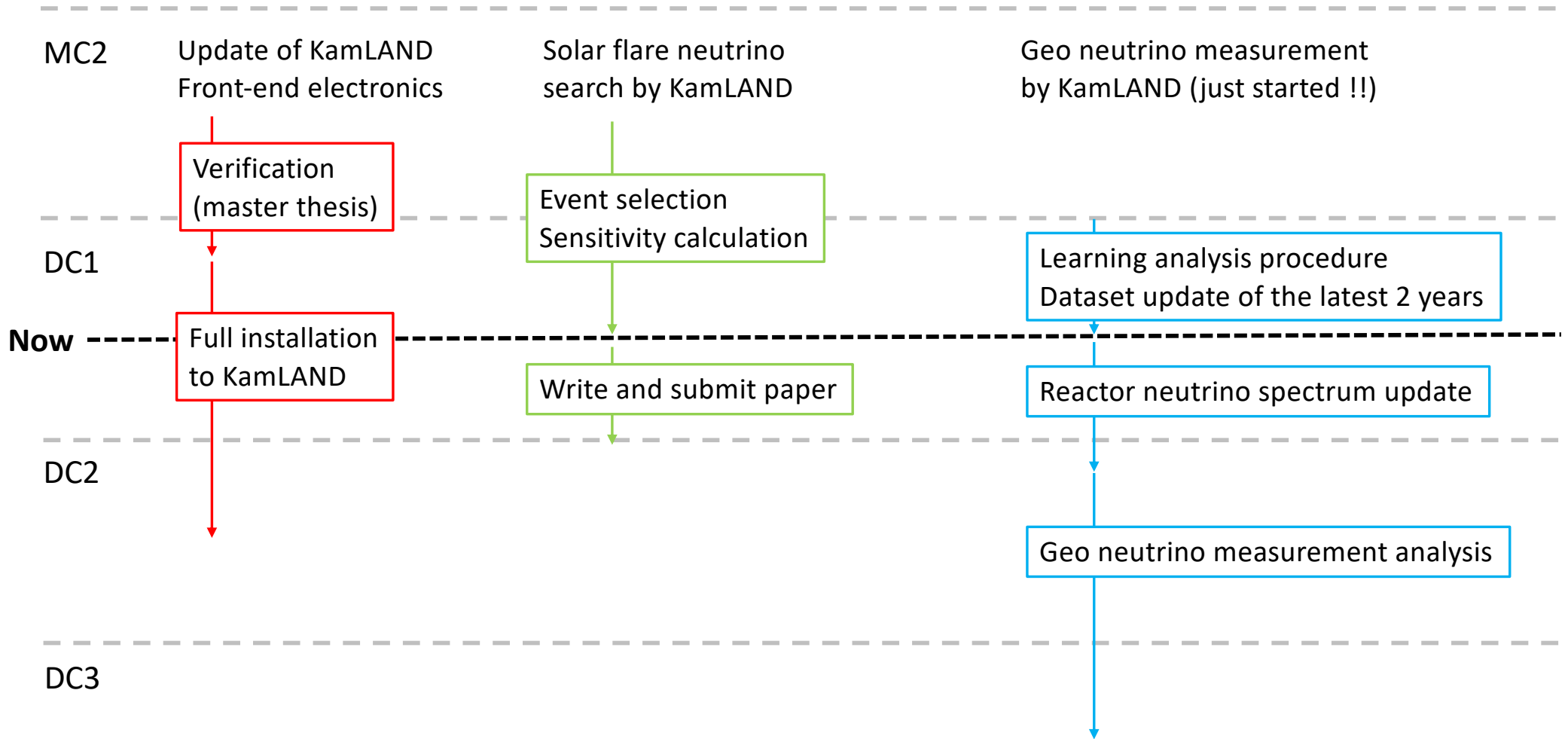
- Reactor neutrino is the dominant BG of geo neutrino.
- **Reactor-off period** give us large S/N ratio.



## Reactor-neutrino spectre update

- In reactor-on period, big systematic error comes from reactor-neutrino spectrum uncertainty.
- To reduce the uncertainty, I will re-estimate the spectre at KamLAND by;
  1. results of other reactor-neutrino experiments
  2. calculation of the contribution from long-lived fission products in the nuclear fuel.

# Status and Prospect



# Studying abroad

## Present status

- I have not studied abroad yet.
- I have got many opportunities of co-working and discussing with foreign researchers in KamLAND collaboration.

## Future plan

- I do not have any fixed plan yet.
- I would like to ask researchers in KamLAND collaboration to train remotely.
  - Electronics update (Actually I am already co-working.)
  - Discussion about anti-neutrino measurement and analysis