

GP-PU Status Report

# Research and Development of Scintillation Balloon

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# My Work

- R&D toward KamLAND2-Zen  $\longrightarrow$ 
  - Improvement of energy resolution
  - Reduction of background
- $0\nu 2\beta$  search experiment
- Future project of KamLAND-Zen experiment

## • Scintillation balloon

- Mainly background in mini-balloon will be tagged

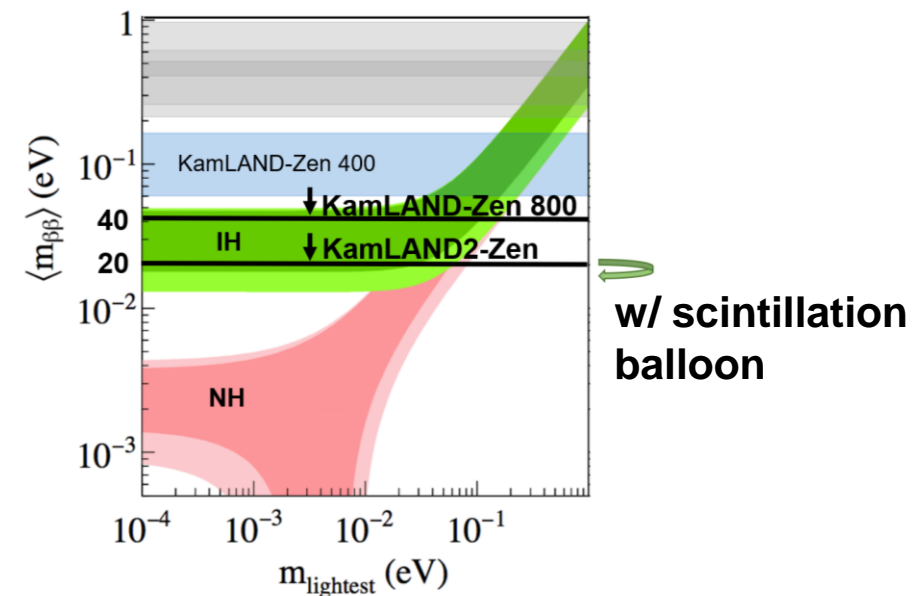
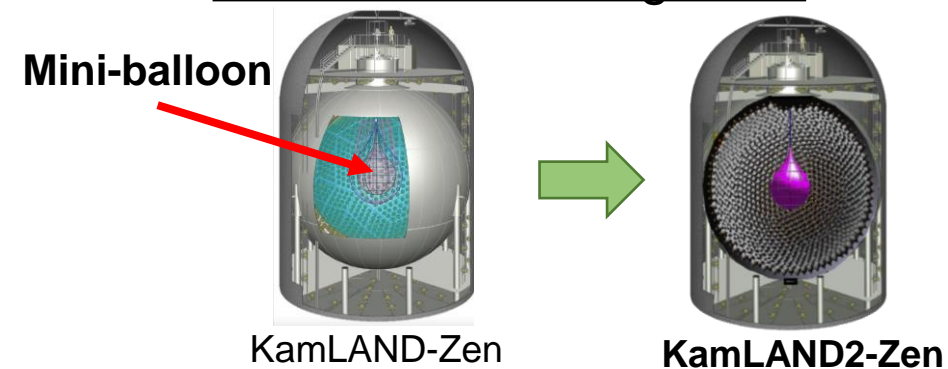
- $^{214}\text{Bi}$   $\longrightarrow$  tagged
- $^{212}\text{Bi}$ - $^{212}\text{Po}$   $\longrightarrow$  tagged...?  
 $\longrightarrow$  **My study**

## • KamLAND2-Zen sensitivity

- w/o scintillation balloon  $\rightarrow$   $\sim 20$  meV
- **w/** scintillation balloon  $\rightarrow$  **less than 20 meV**

## • We can search whole IH region

- $0\nu 2\beta$  detect or exclude of IH region



# Schedule of my research

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- Goal of my research is to reveal :
  - Feasibility of scintillation balloon
  - $^{212}\text{Bi}$ - $^{212}\text{Po}$  can be tagged by scintillation balloon in KamLAND2-Zen

# Schedule of my research

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- Current status of my research
  - Polyethylene naphthalate is candidate of scintillation balloon material
  - More than half of feasibility test is done
  - $^{212}\text{Bi}$ - $^{212}\text{Po}$  can be tagged in laboratory measurement

# Plans of study abroad

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- The plans hasn't been decided yet.
- Depending on COVID-19, I'm thinking that :
  - when : ~first half of D2
  - where : KamLAND collaborator's institute