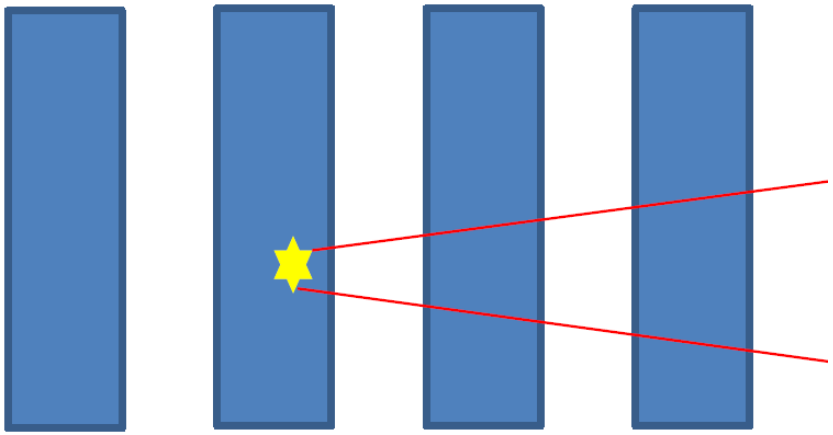
Neutron Detector Simulation
2014 / 07 / 18



Korea University
Nuclear Physics Lab.
BumGon Kim

Hit Collection

- 1 Stack consist of 40 modules.
- **1 module** has one **0.1 × 0.1 × 2 $\mathbf{m^3}$ scintillator**.
- We **cannot distinguish** **hits** which were deposited in the **same scintillator** & in the **same gate time interval**.
- So, we need to collect **hits** **by the module(scintillator)**.

- **Threshold**
  - When within some time interval, **the sum of deposited energy of hits in one scintillator** is **over certain value(≥ threshold)**, this is considered as a **signal** by neutron.

- **hitTime**
  - Within some time interval, arrange hits in one scintillator **in order of time**, & **add up their deposited energy**.
  - When the sum of deposited energy of hits in one scintillator is **over threshold**, the **time of last added hit** is considered as **hitTime of that scintillator**.

Hit Collection

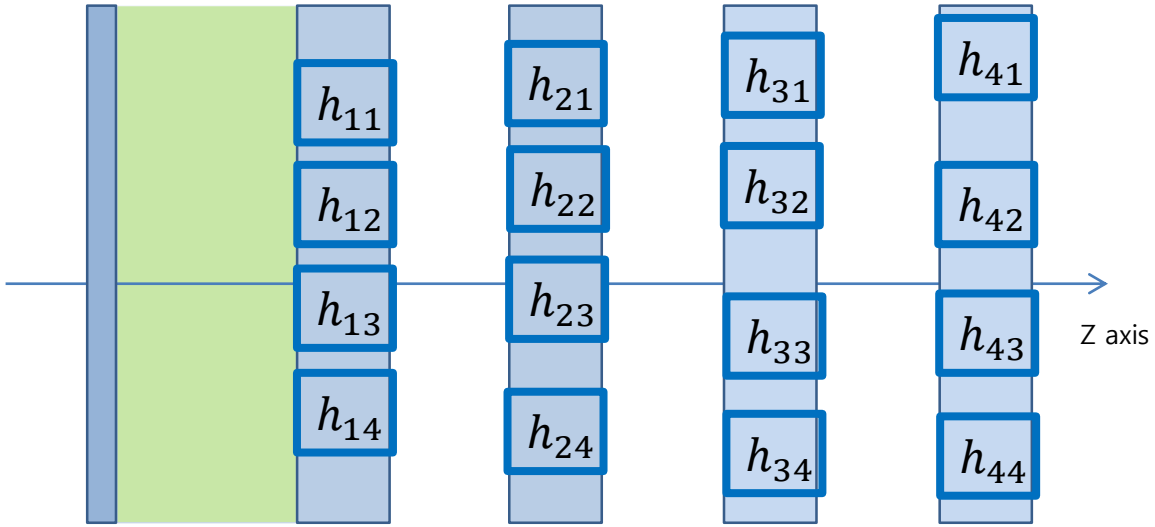
- Therefore, same with experiment, we can get **signals & their information per one event**.
  - **the sum of deposited energy of a scintillator**
  - **Positions of each signal**(scintillator position)
  - **hitTimes of each signal**(scintillator hitTime)

- **Position & time resolution** are **not yet concerned**.

$0.1 \times 0.1 \times 2\ \mathrm{m}^3$ scintillator for 1 module
- Energy deposit
- Position of scintillator
- hitTime of signal

Next Step

- **Clusterization**
  - Using **the informations of signals** for each event, find the most efficient way to **classify the signals in each stack into the groups**, each is remained by same neutron.



- **Beta condition**