Analysis chain in Japan

In NEWS meeting @Napoli 27-28/Oct./2016

T. Katsuragawa

topic

- Analysis chain

  Scan -> Ellipse fit -> Dust removal

- Scanning results about LNGS sample

Flow of analysis by Ellipse fitting

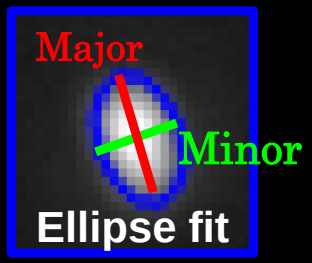
Katsuragawa's slide in NEWS meeting 28/11/2014

PTS_Scanning

- Stop & Go
- .bmp (8bit_1ch *4Mpixel = 4Mbyte/1picture)

Ellipse fitting

- High pass filter
- Binarization
- Labeling (clustering of pixels)
- Contour retrieval
- Ellipse fit



Best focus selection

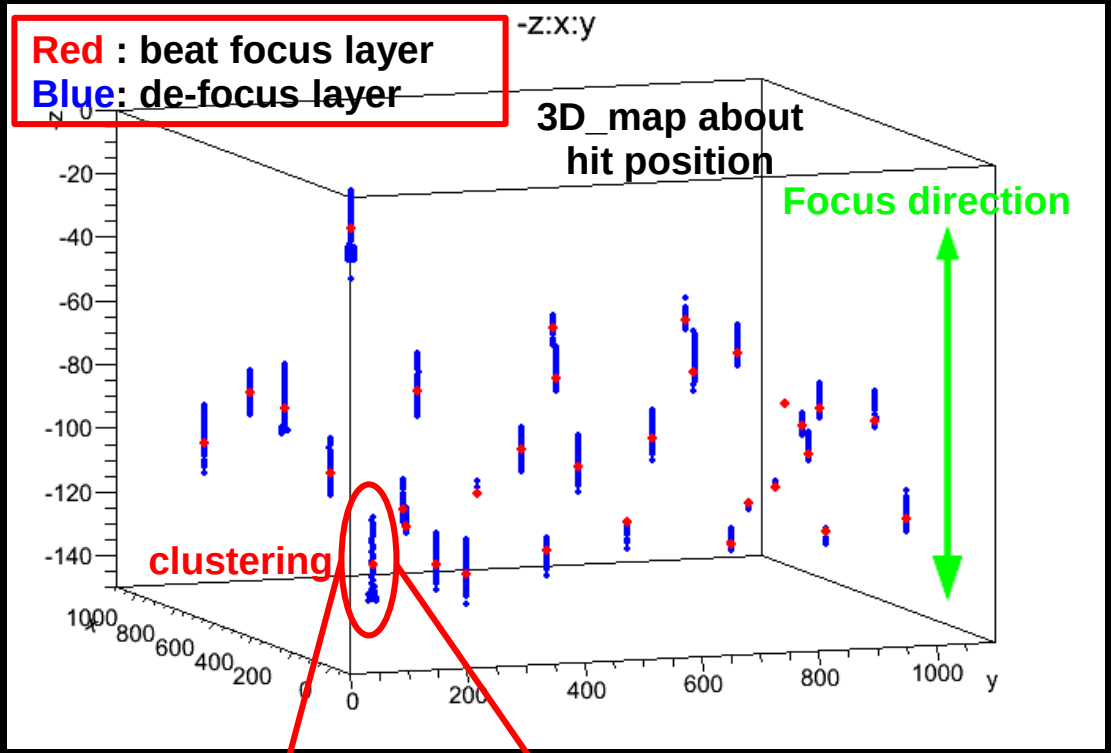
- Event sort (brightness)
- Clustering (use distance)
- Best focus selection(use brightness)

Noise rejection

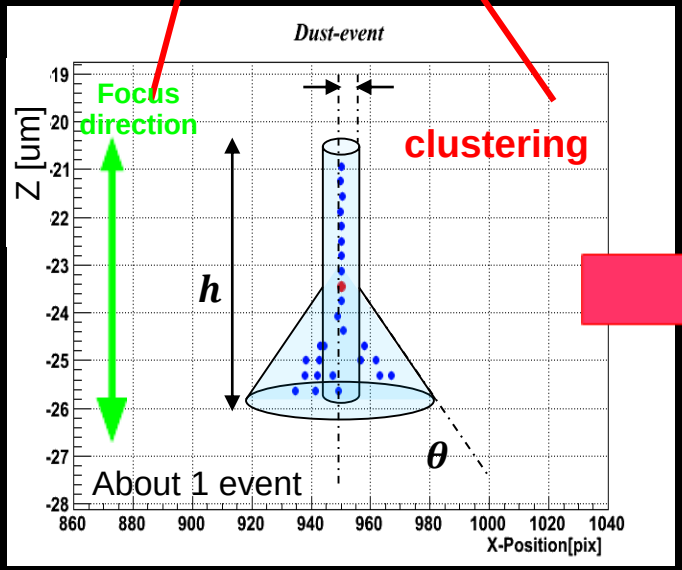
- Surface & bottom cut
- Dust rejection x2

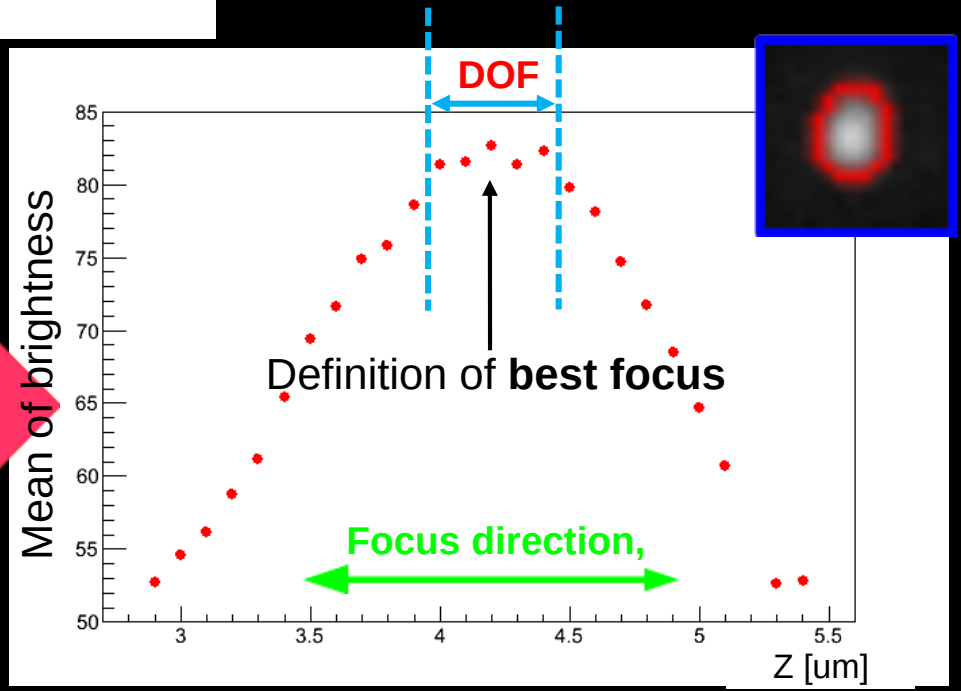
Katsuragawa's slide in NEWS meeting 28/11/2014 + α

Red : beat focus layer
Blue: de-focus layer



Detail of best focus selection





Dust(Noise) rejection in 1st scan

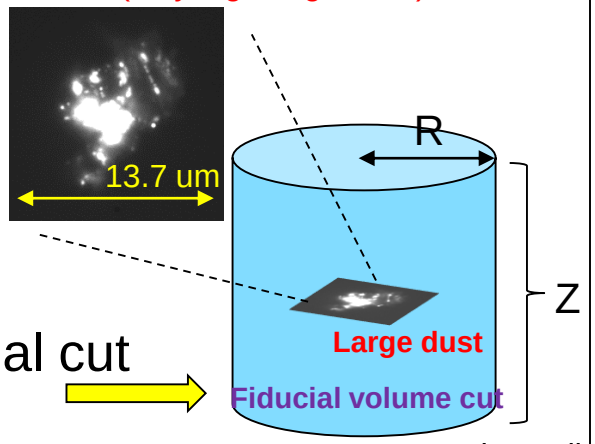
Raw data (without any cuts) of 1st scanning has many multiple-hits induced by large or middle size dust (> 10 um).
=> its should be removed.

RAW data

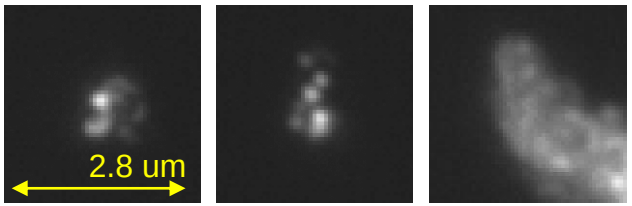
- Removing surface & bottom layer
  (already talked)
- Rejecting large dust and shadow hits
  by brightness information and fiducial cut
  (already talked)
- Constructing and reject to cluster-type dust (middle size dust)
  (new, I will talk in “background from dust”)

1st scanning result

Large dust (very high brightness)



Cluster-type dust



Constructing by space and reject

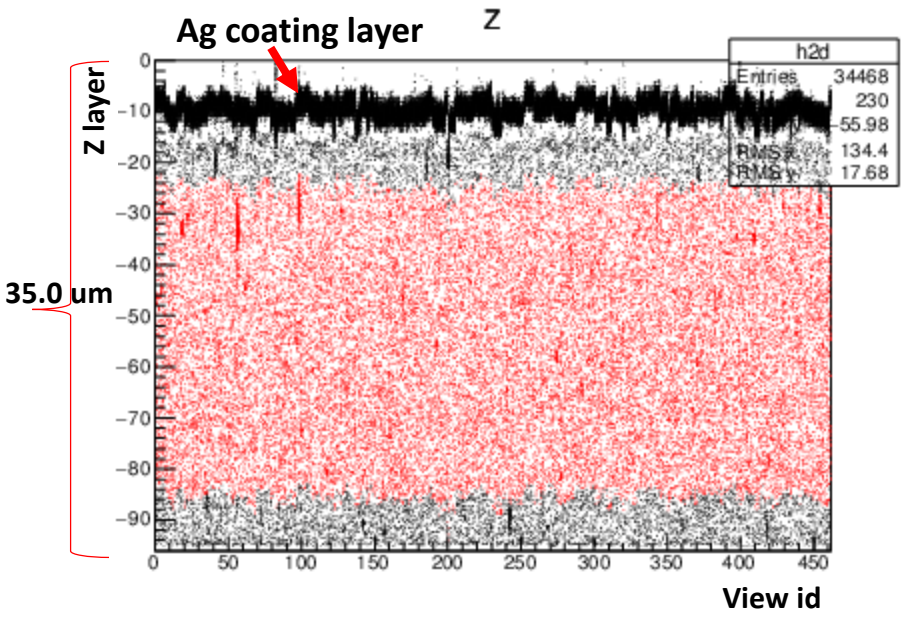
Scanning about LNGS sample

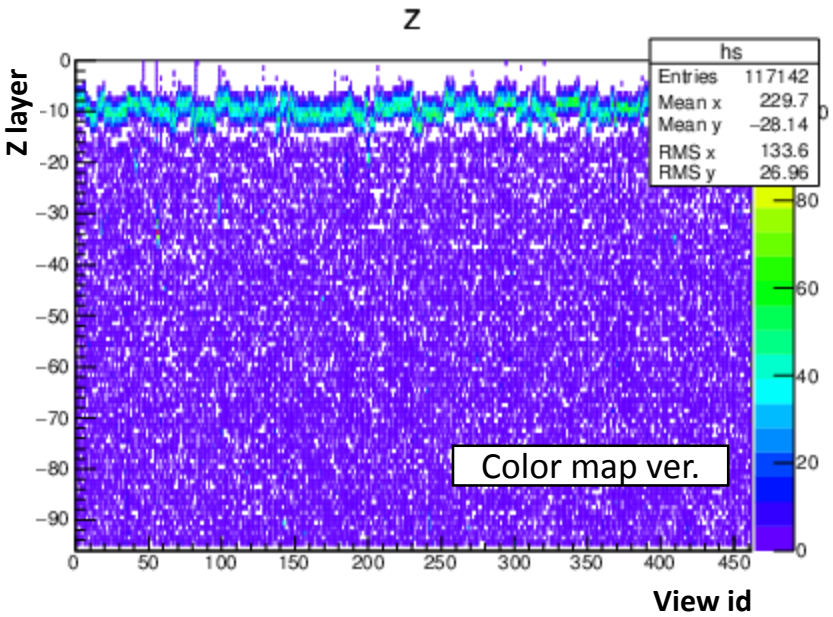
Sample list scanned in Nagoya

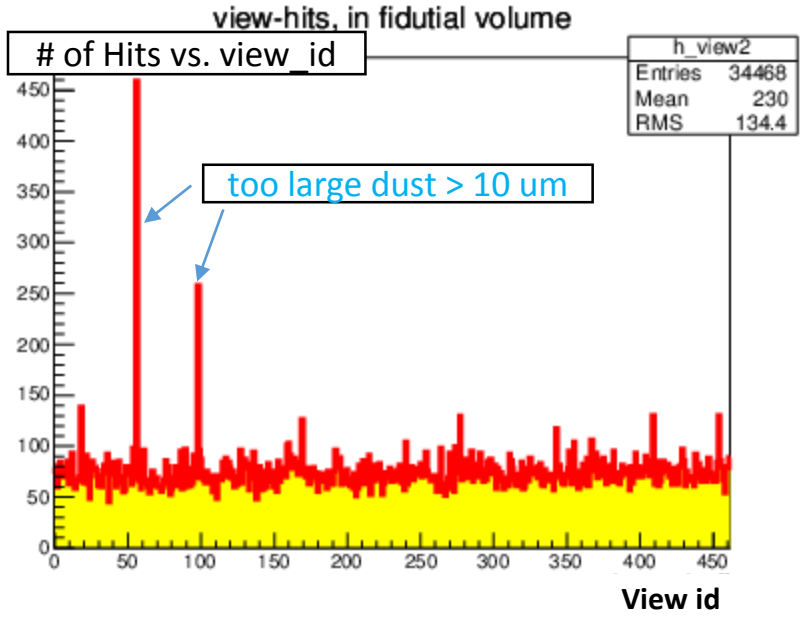
- Batch ID of NIT; FAN079f (f = filtered)
  - ☐ Nagoya sample (before LNGS) x3
    - Only fix
    - MAA dev. + fix
    - Filtered gelatin about FAN079f
  - ☐ LNGS Sample x3 (+1)
    - 0 week (ID 42)
    - 1 week (ID 65)
    - 0 week PMMA (ID 26)
    - (- beta, ID 41)

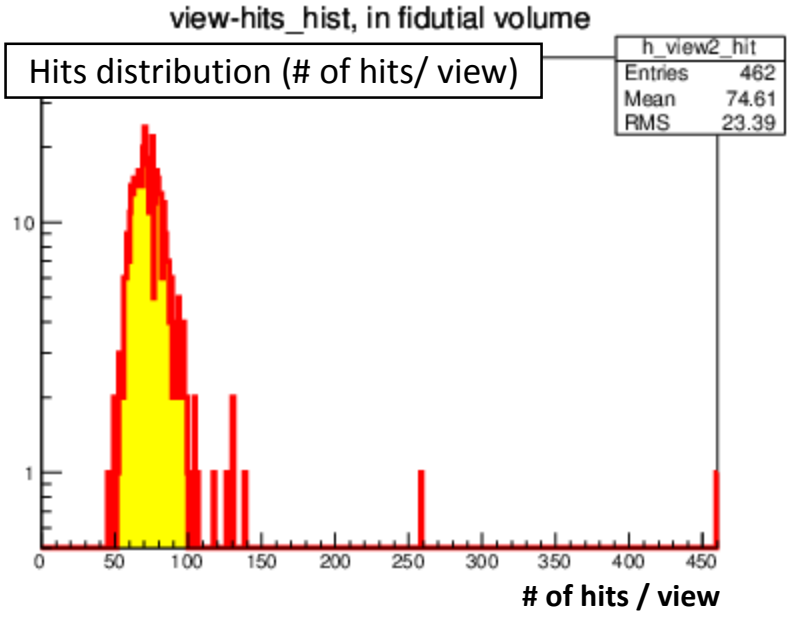
Talked by Asada
(or Valerio)

Raw data about "Sample_42"

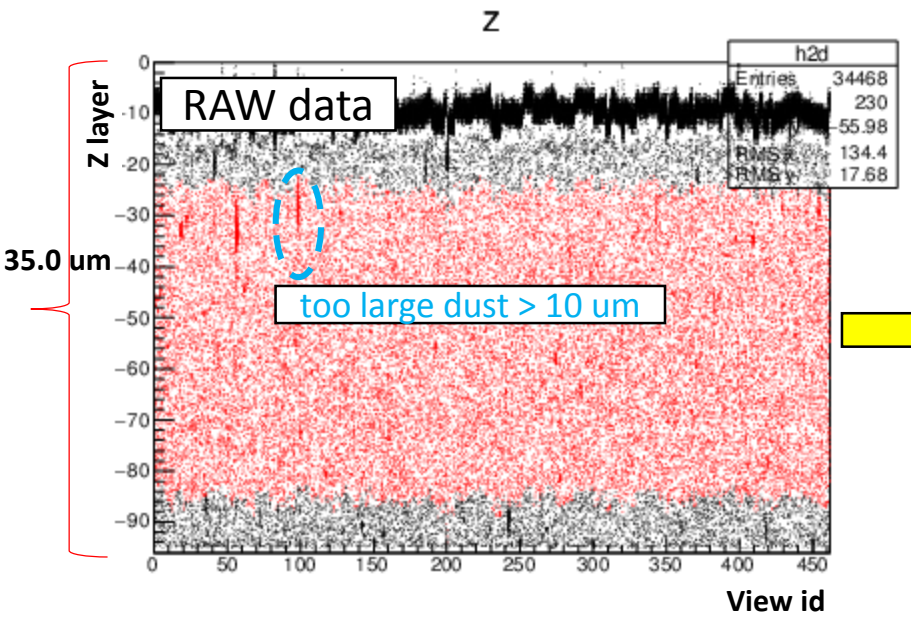


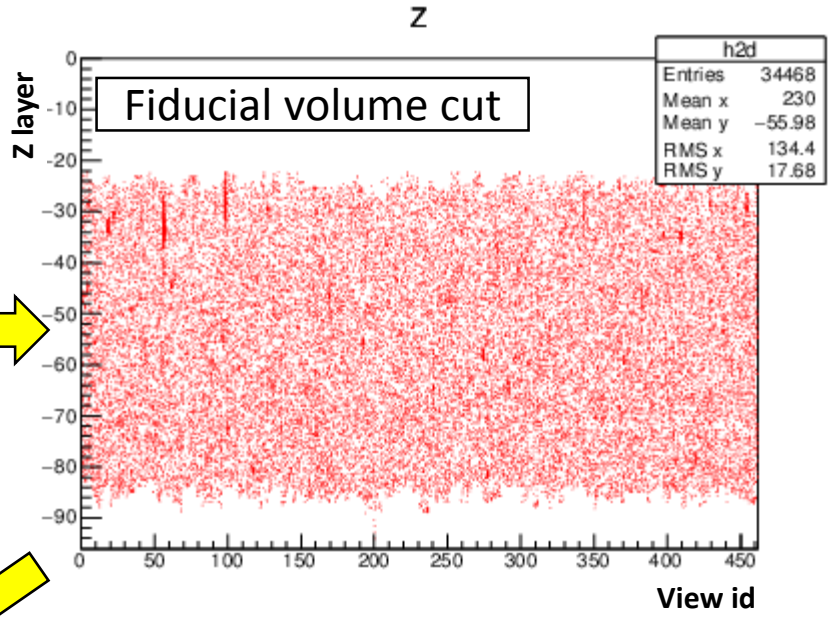


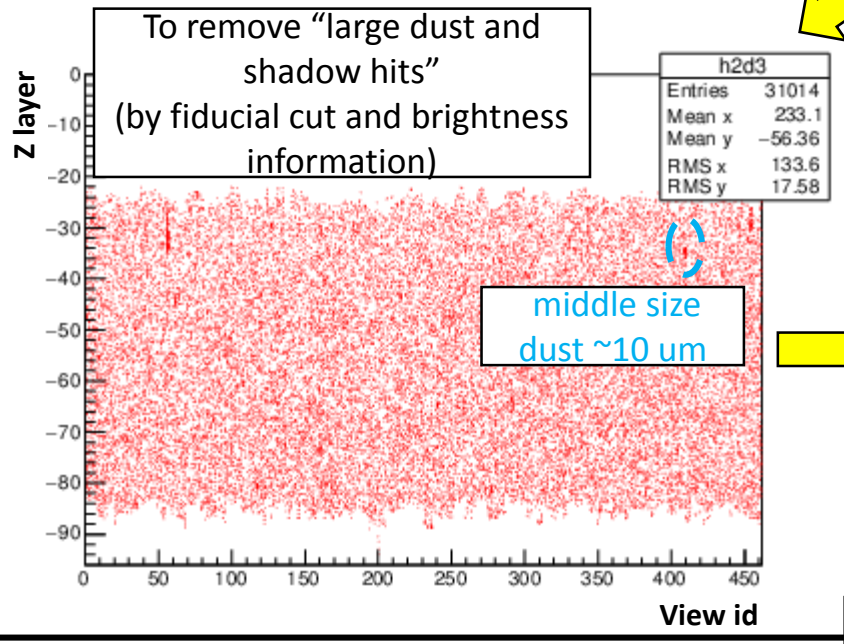


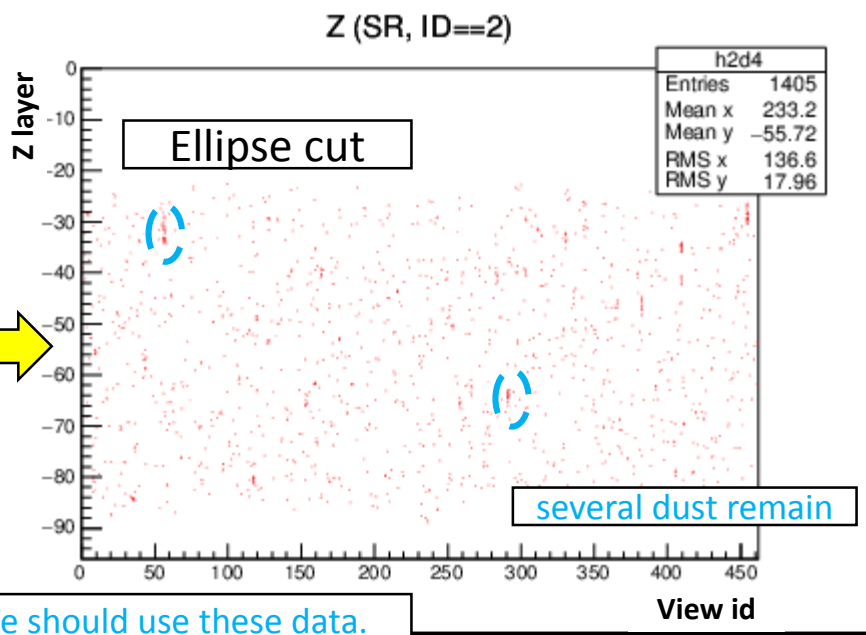


To remove large type dust





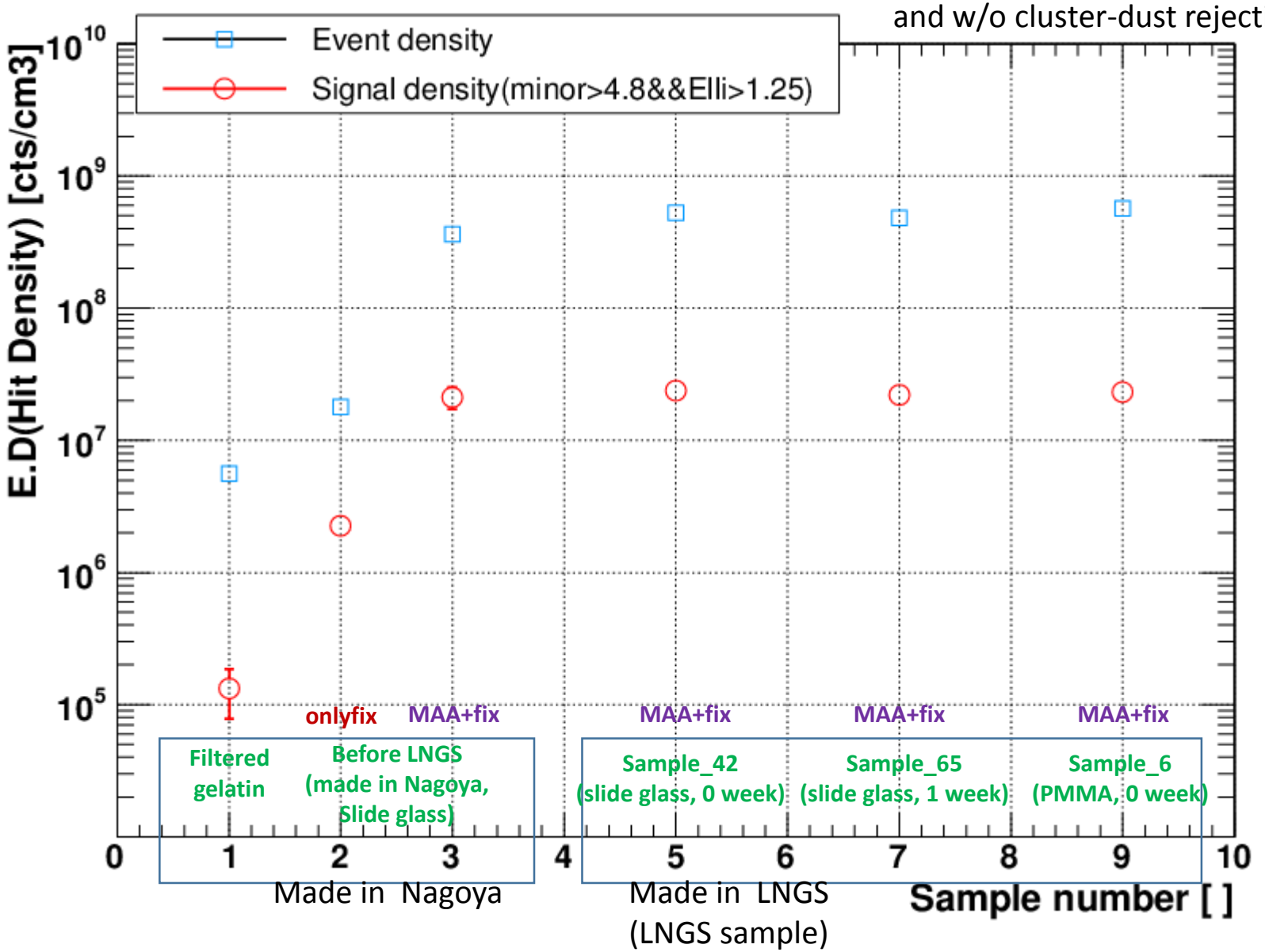




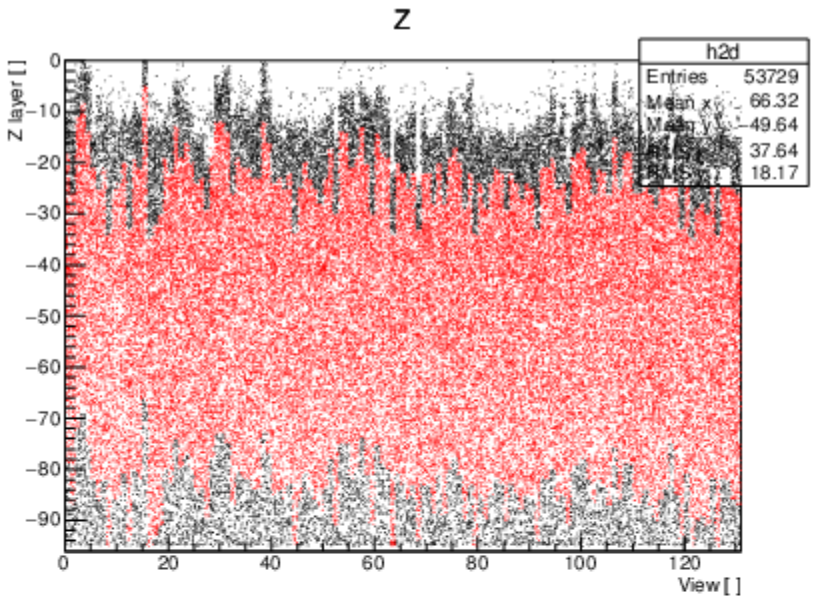
We should use these data.

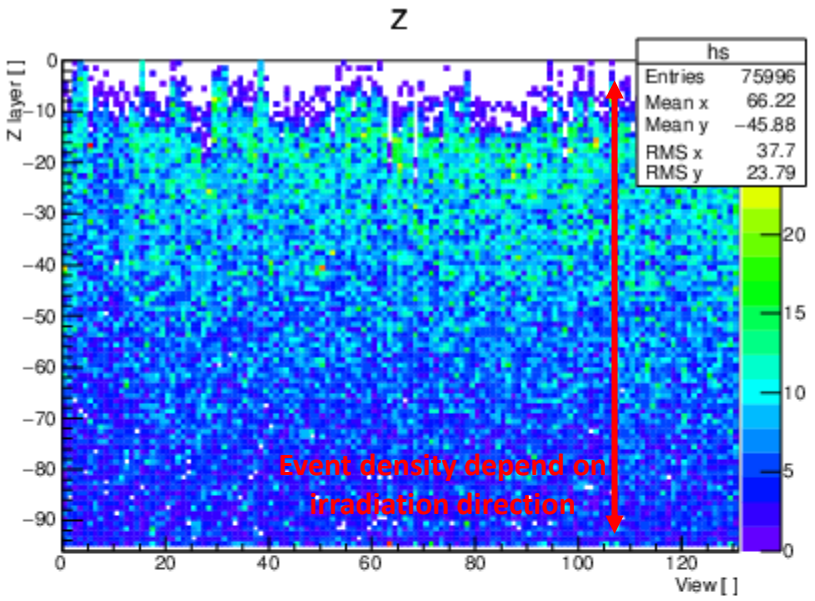
Summary of FAN079f

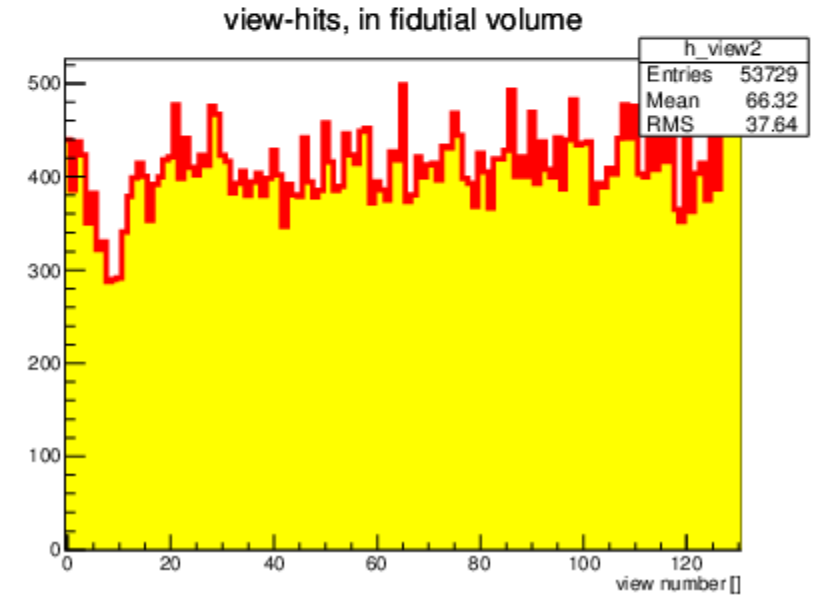
*before shrinkage correction
and w/o cluster-dust rejection

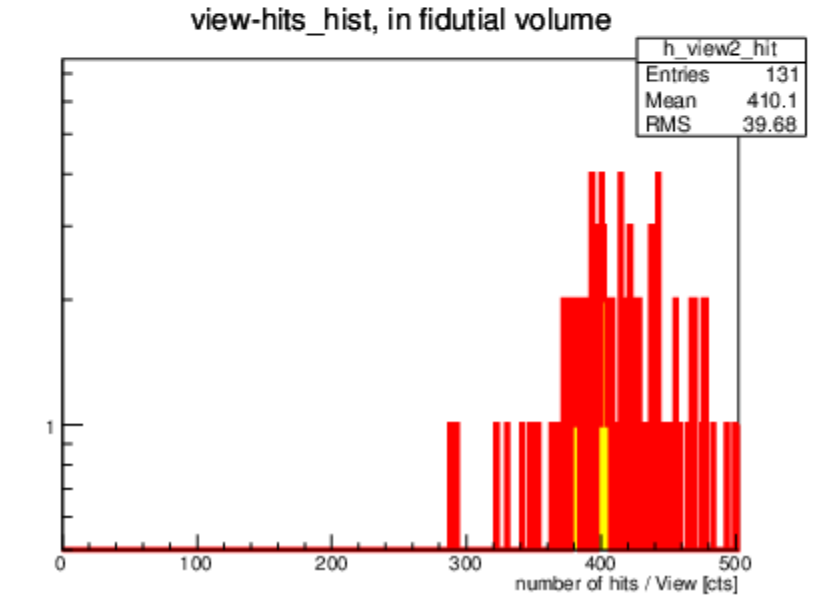


Raw data of “Sample_41”(β-ray sample) **w/o Ag coating









points

- LNGS sample and Nagoya sample(same NIT) looks like same quality.
- PMMA(=acrylic base) has also same results.

- Beta sample has strong dependence of irradiation direction

  => Surface recognition and fiducial volume cut are very important for comparison between Japan and Italy

  **especially, surface recognition for each view is essential.