

**mTower test at DESY electron beam line  
in Feb. 2020**

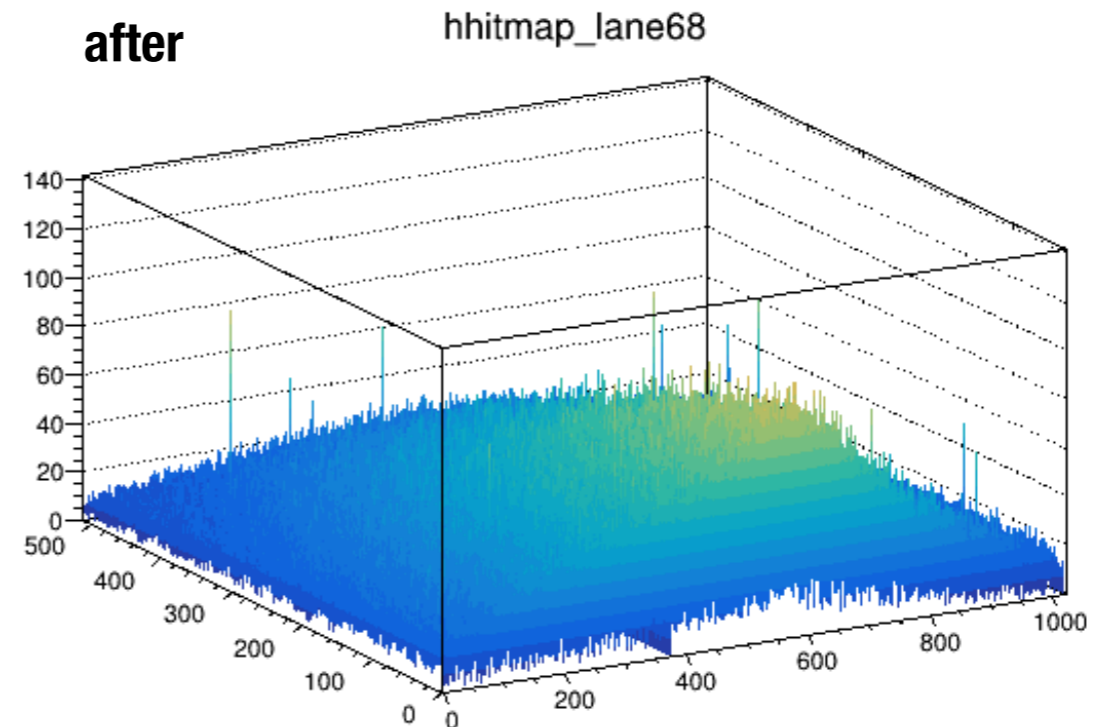
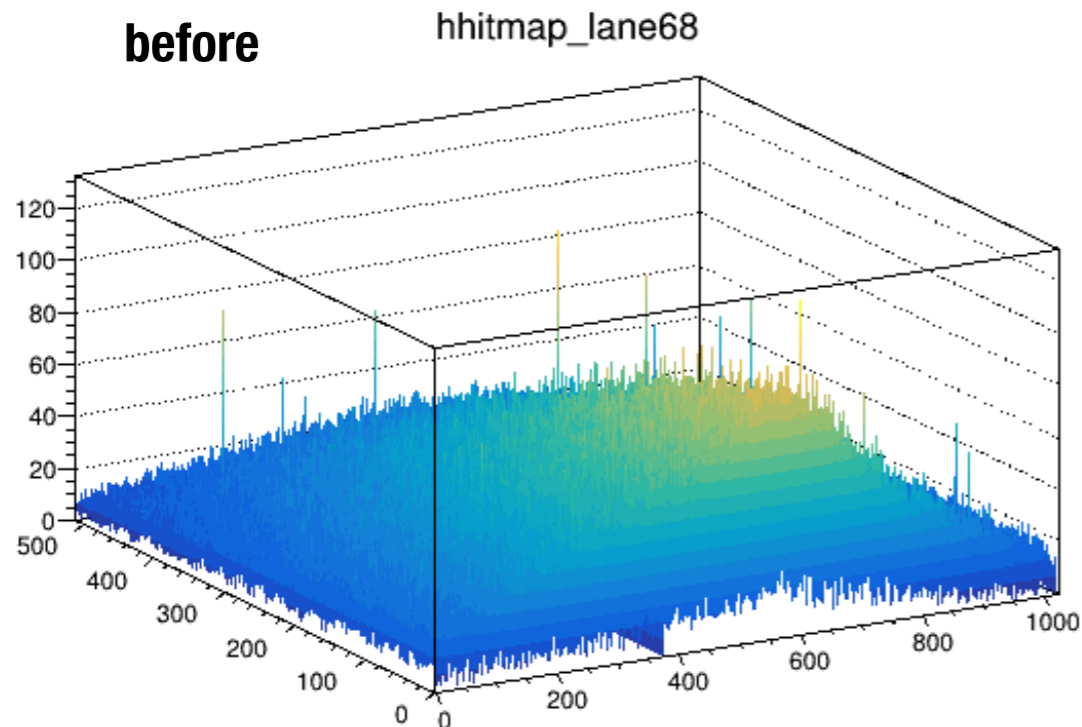
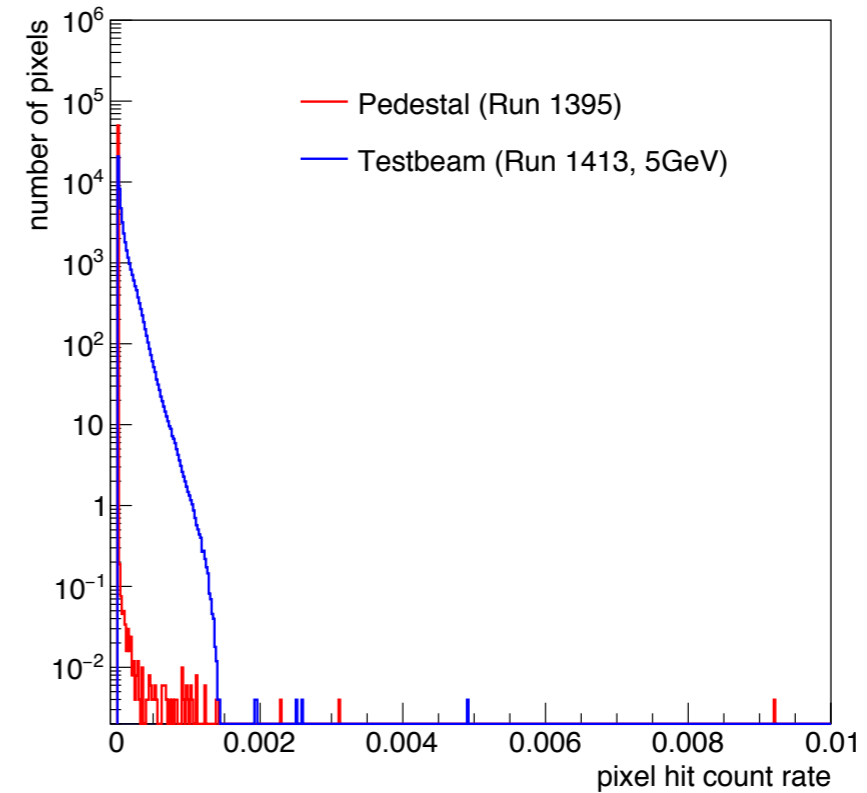
**data cleanup / energy profile**

**Hiroki Yokoyama**

**mTower Analysis meeting  
18/03/2020**

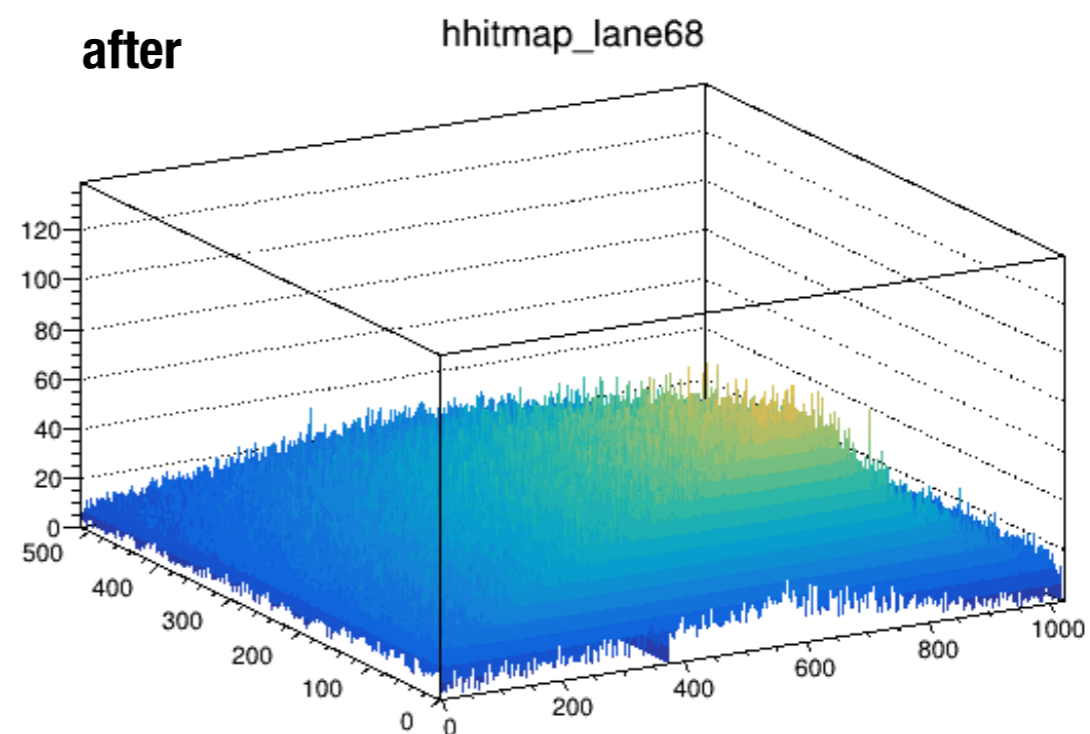
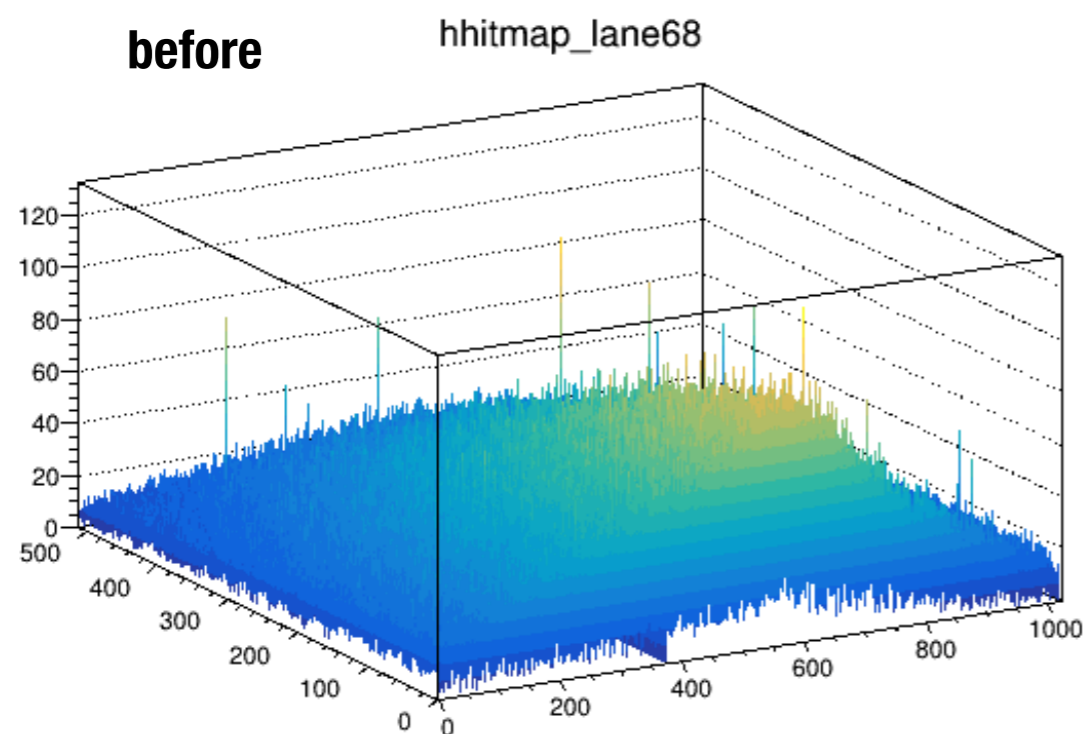
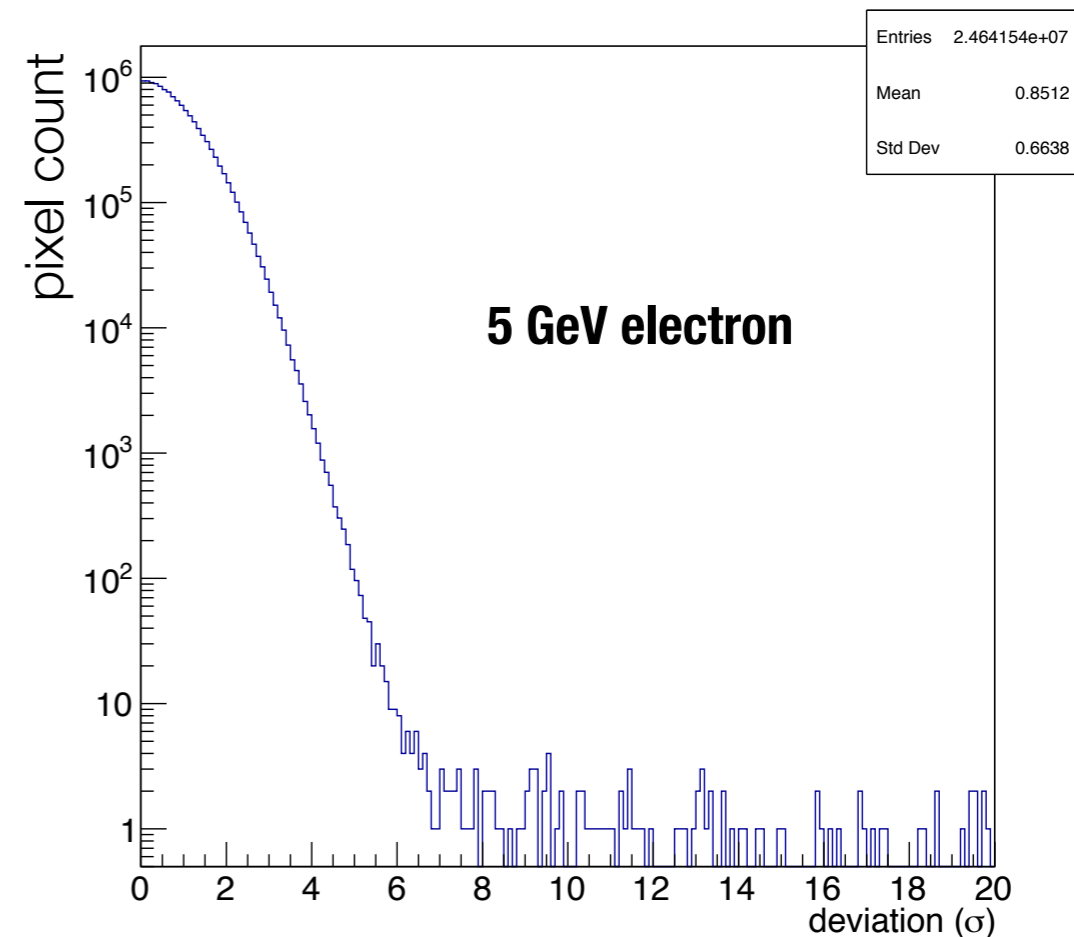
## from last meeting

- ☑ hot pixel removal with pedestal run does not cut small peaks in the hitmap
- ☑ need to try another way for hot-pixel identification



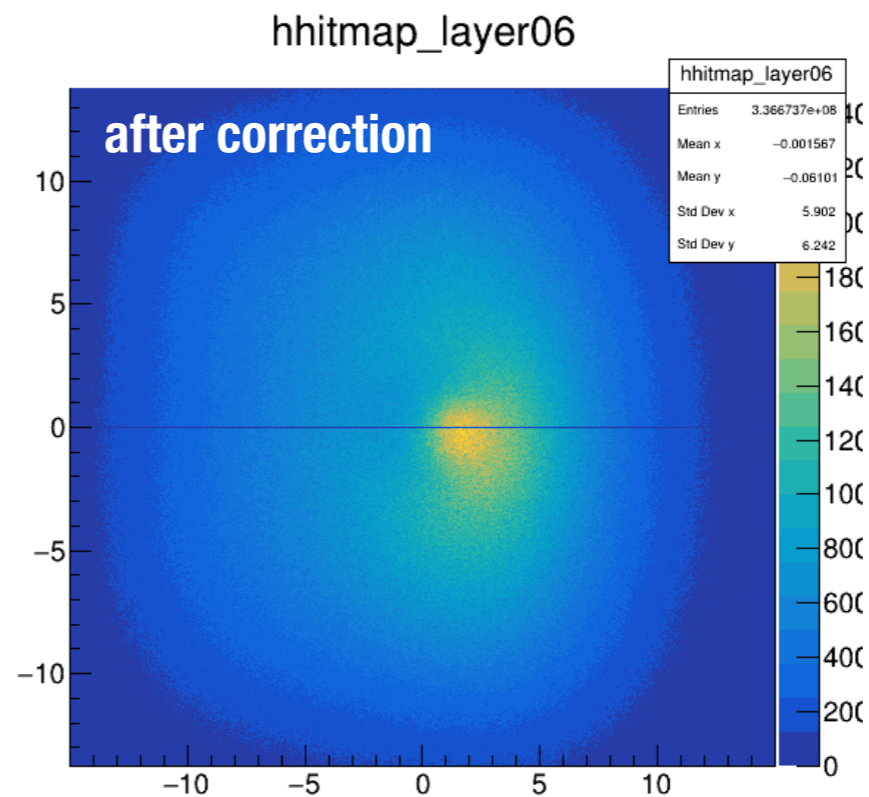
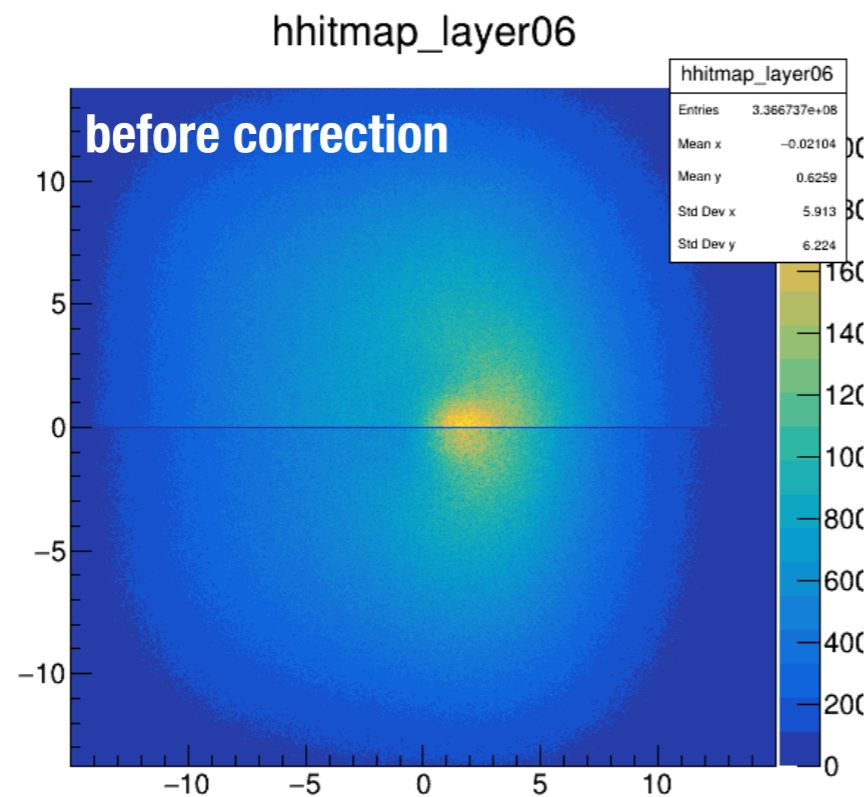
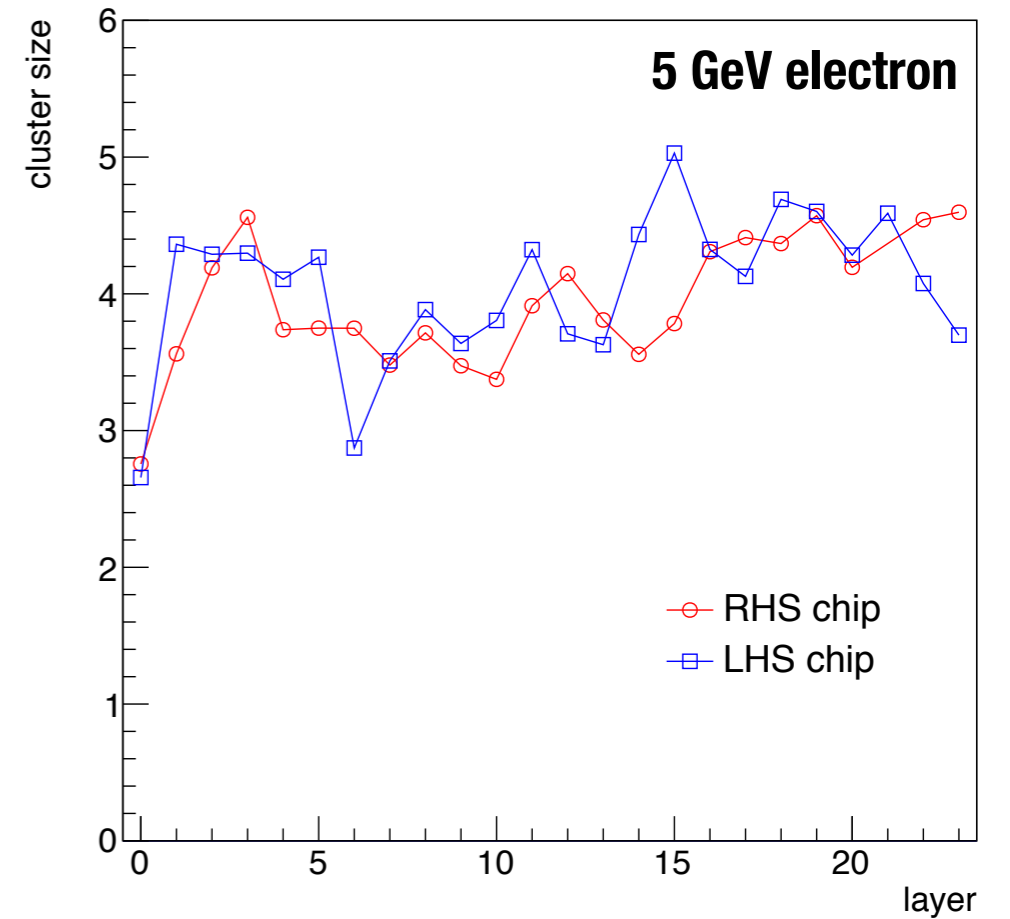
# hot pixels identification

- ☑ another way to find hot-pixels
  - ▶ divide chip into 32x32 pixels region
  - ▶ make Nhit distribution in each region
  - ▶ find hot-pixels with  $(N_{hit}(i) - \text{mean})/\text{RMS} > 8.0$



# cluster size

- ☑ average cluster size v.s. nr\_layer
  - ▶ smaller in the first layers
  - ▶ the others looks similar...
    - \* to be checked with simulation
- ☑ correct pixel amplitude with
  - ▶ average cluster size of first 2 chips (first layer)
  - ▶ average cluster size of the others (2-24th layers)
- ☑ correction w/ cosmic-run result might be better...



5 GeV electron

# dx-dy

## ☑ event cut

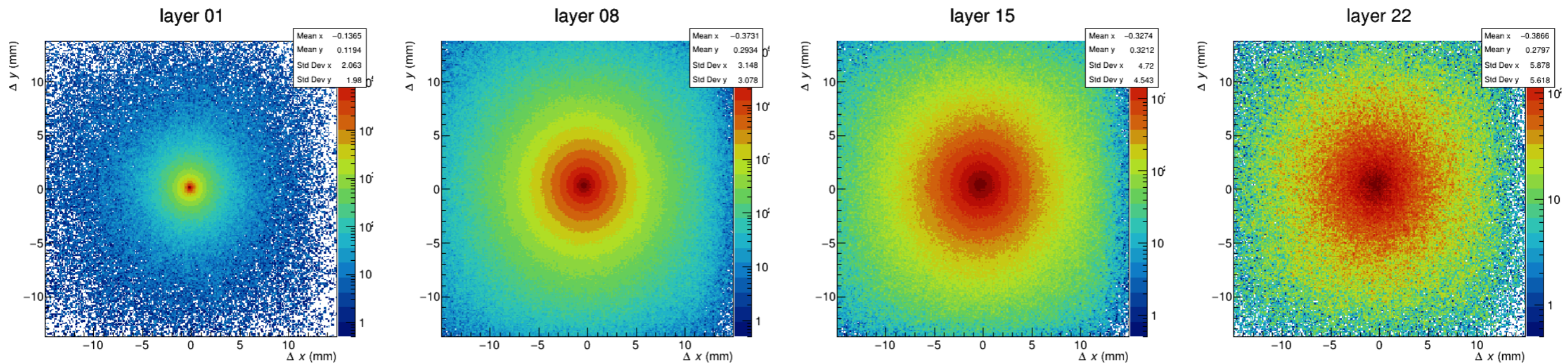
- ▶ one cluster in first layer
- ▶ the position of the cluster within 5 mm from detector center

## ☑ [dx, dy] from the cluster in 1st layer

- ▶ alignment isn't applied yet

## ☑ NEXT

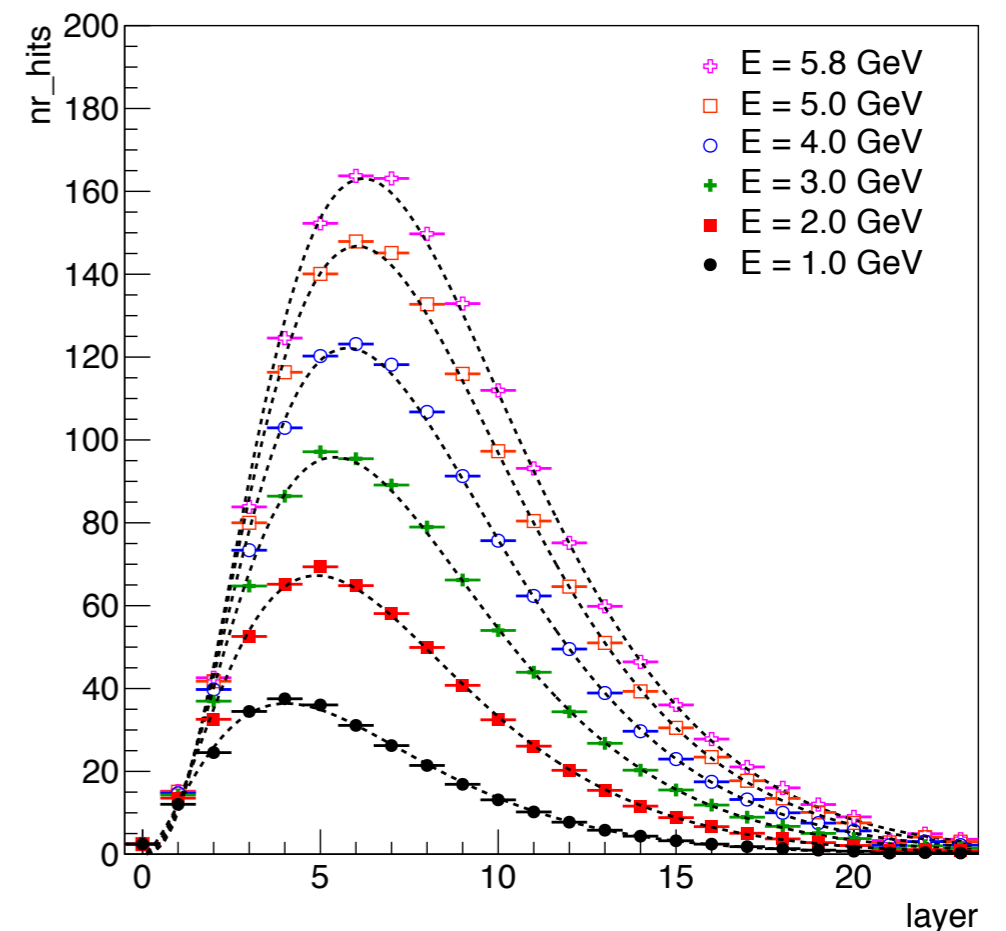
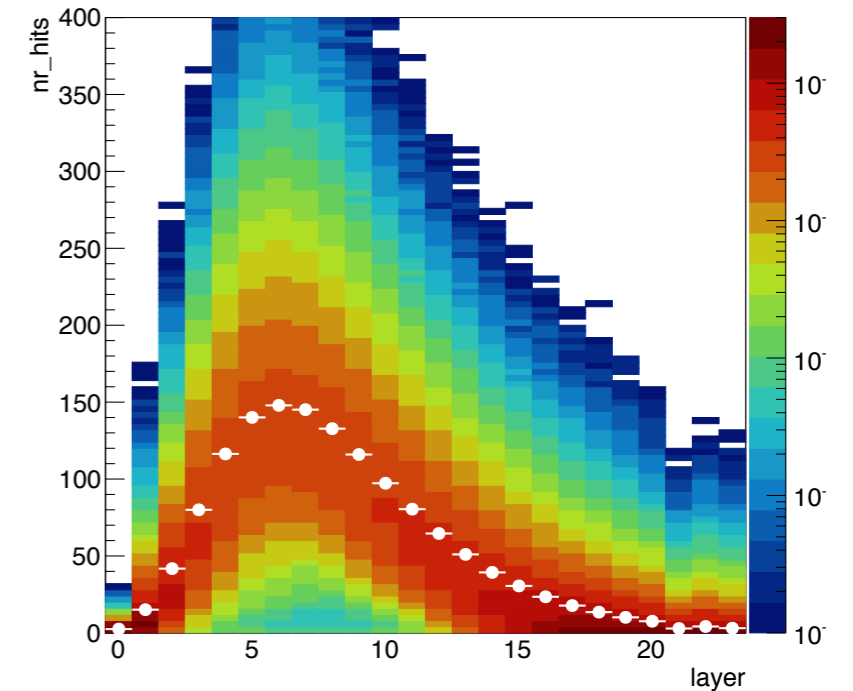
- ▶ radial profile, beam energy dependence



# longitudinal profile

- ☑ event cut
  - ▶ one cluster in first layer
  - ▶ the position of the cluster within 5 mm from detector center
- ☑ amplitude vs. layer
  - ▶ one chip in 21st layer is excluded from data taking

5 GeV electron



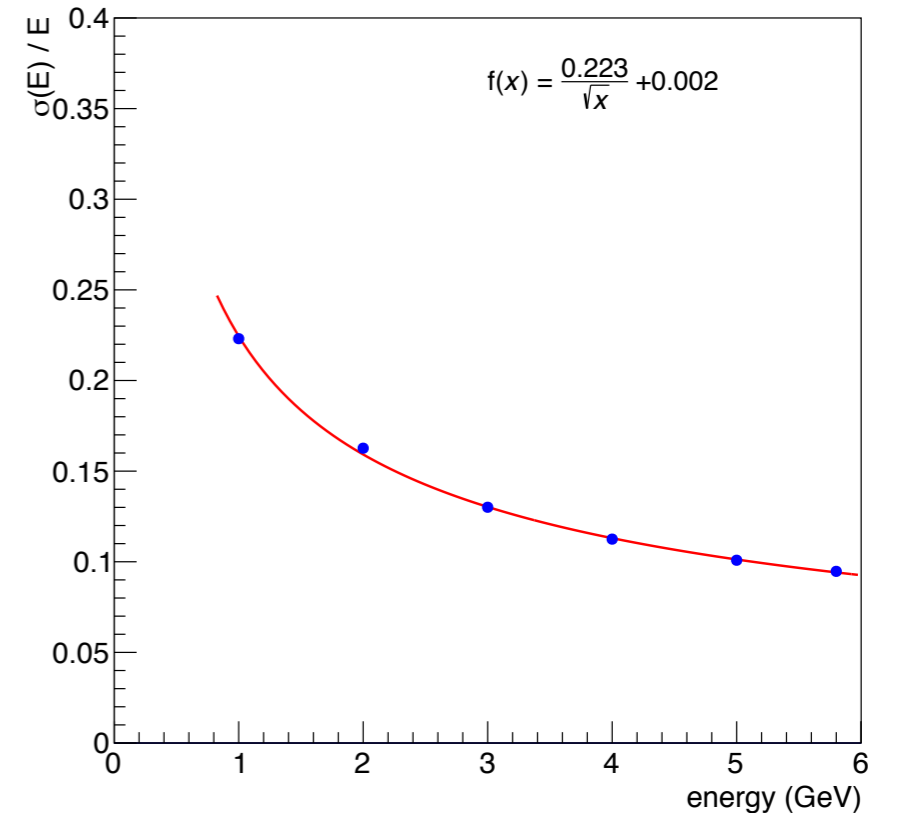
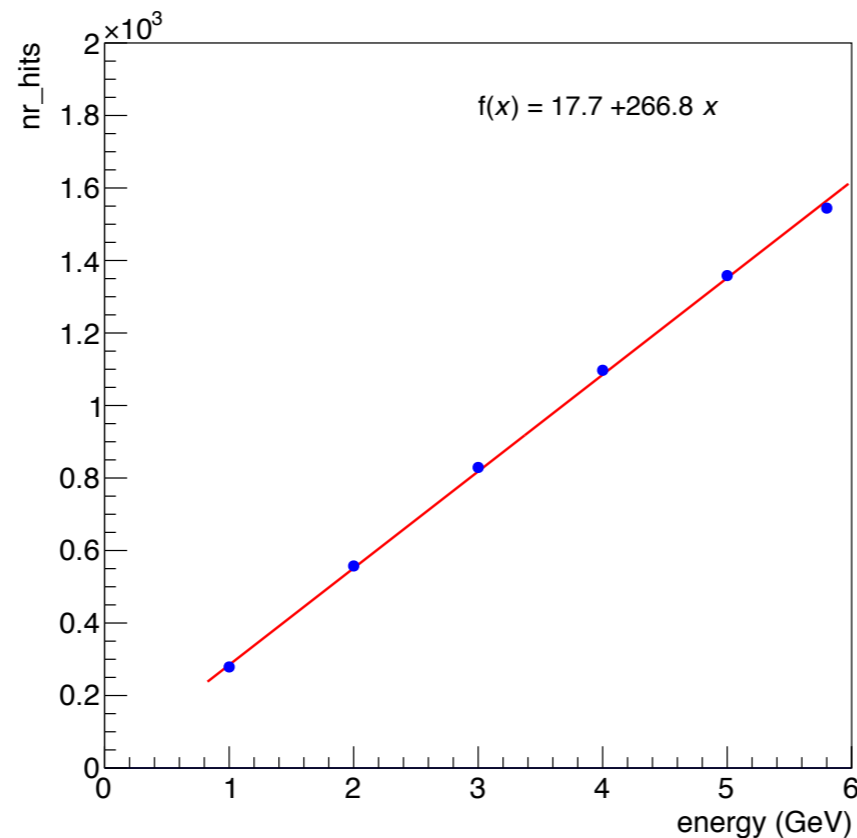
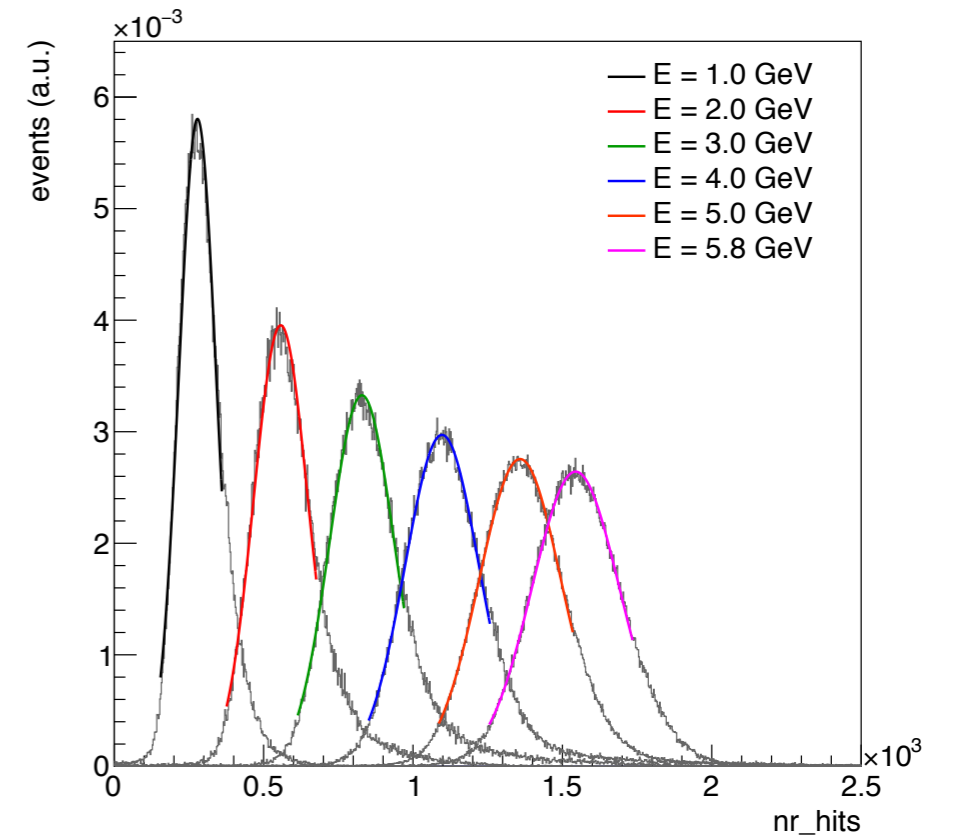
# energy resolution

## ☑ event cut

- ▶ one cluster in first layer
- ▶ the position of the cluster within 5 mm from detector center

## ☑ energy linearity and resolution

- ▶ noise term is not considered



**backup**



# cluster size

5 GeV electron

