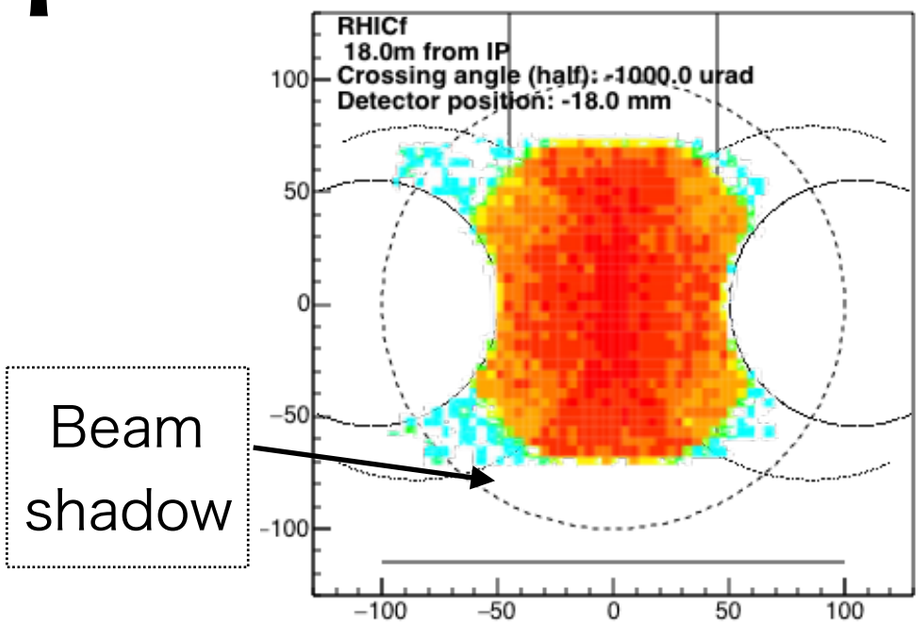
MC status and todo

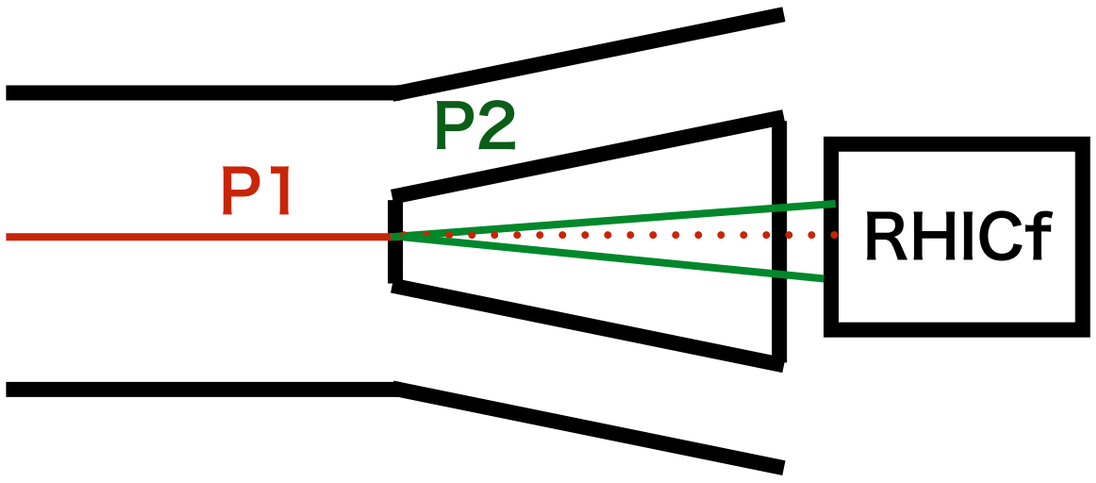
2017/04/05

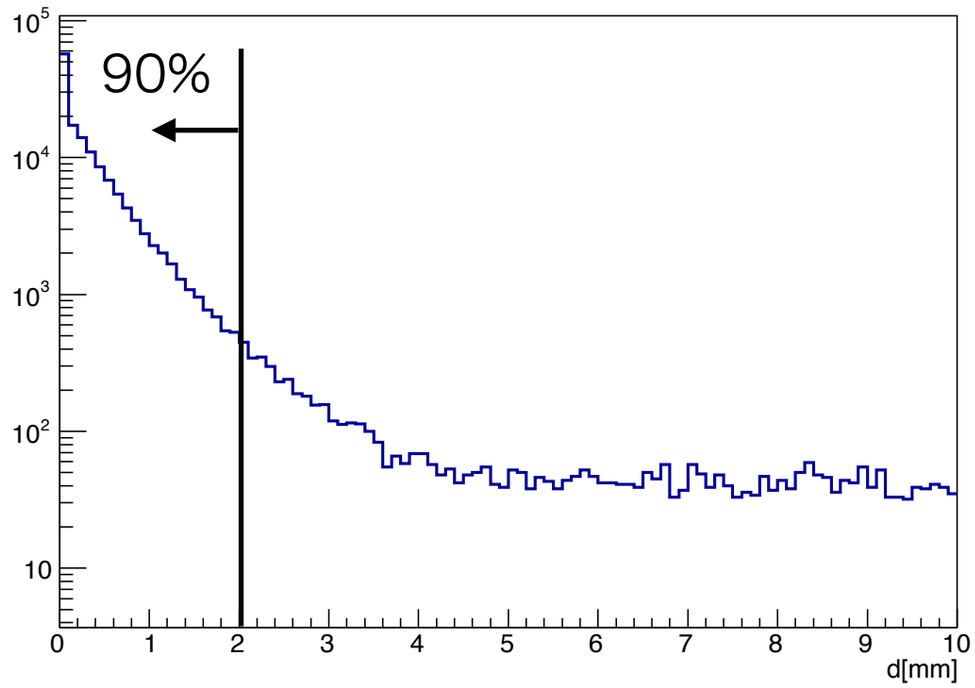
T.Suzuki

Photon

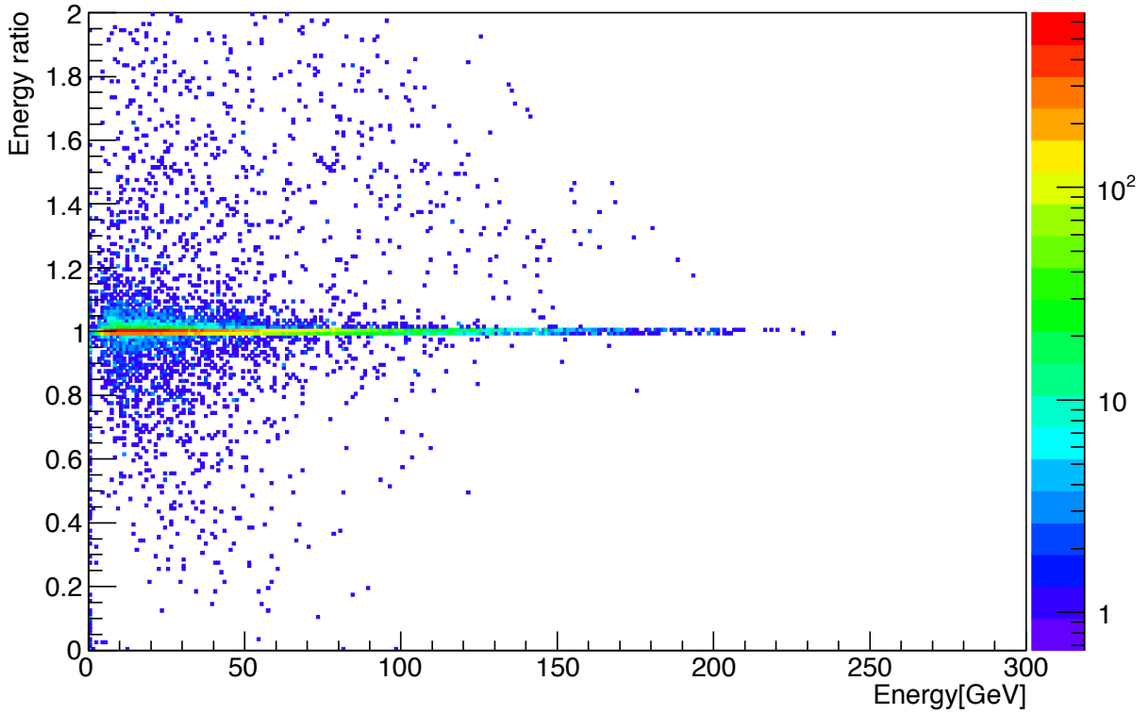
Additional information for particles reaching the end of the beam pipe.
For photon / electron / positron above 10 GeV reaching the detector, 90% are inside 2mm of the projection of the incident photon.







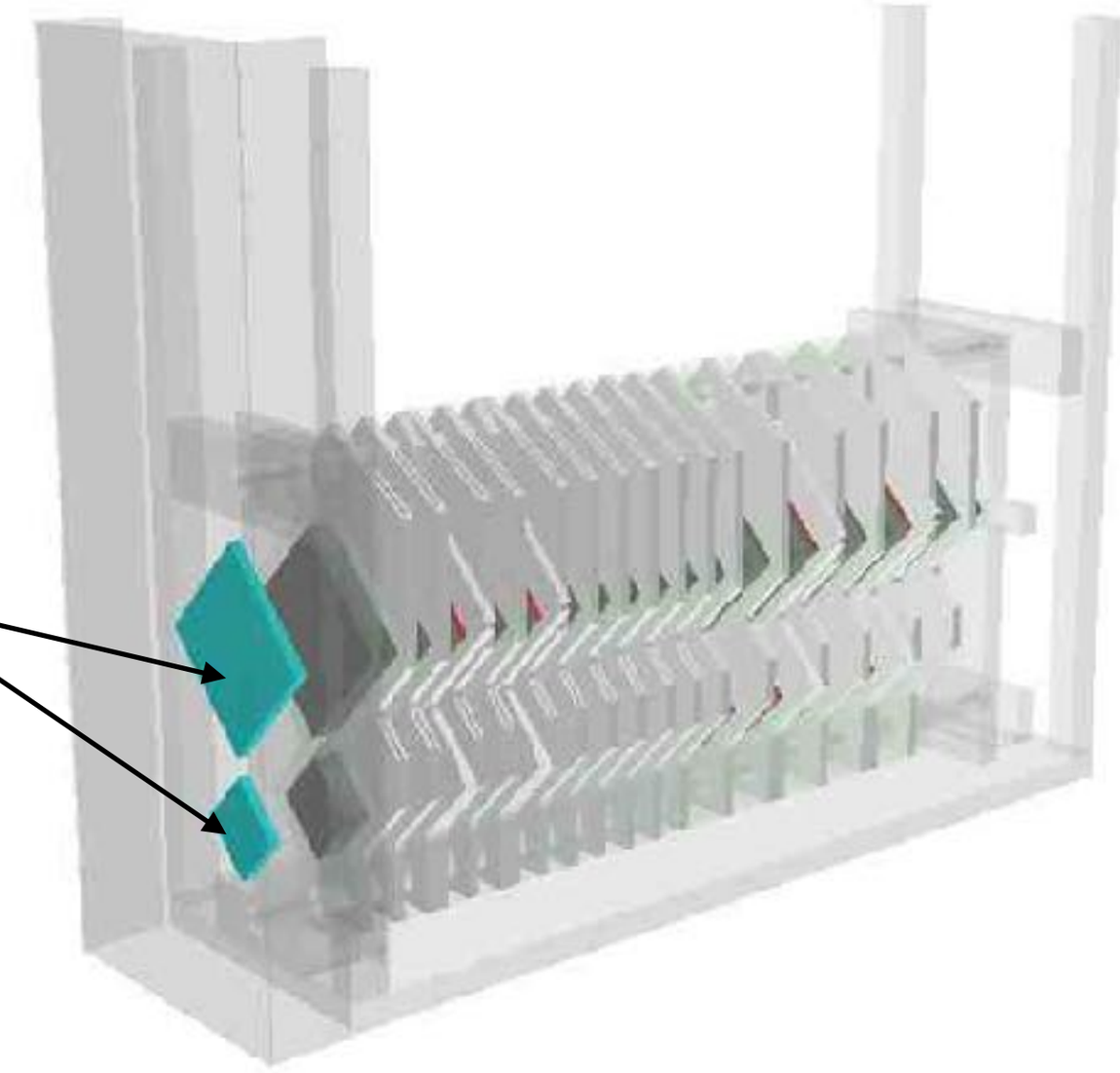
Photon



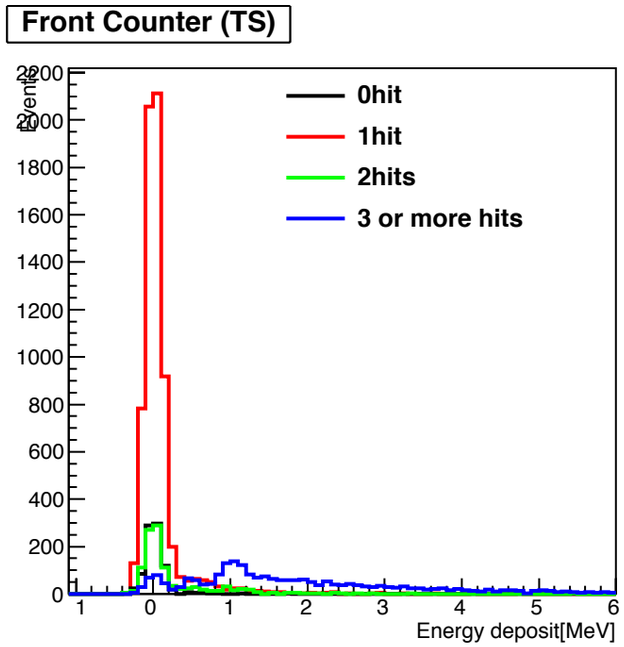
Σ (Sum of electromagnetic particle)/
(Incident photon)

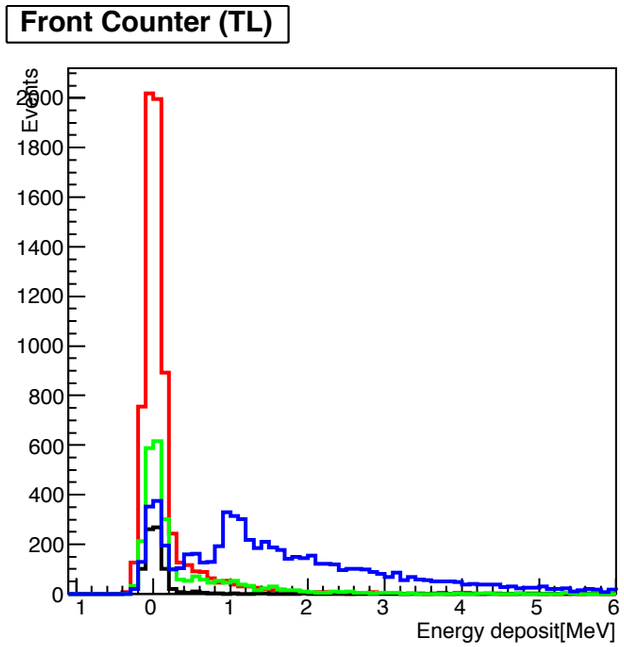
Geometry updates

Add Front Counters



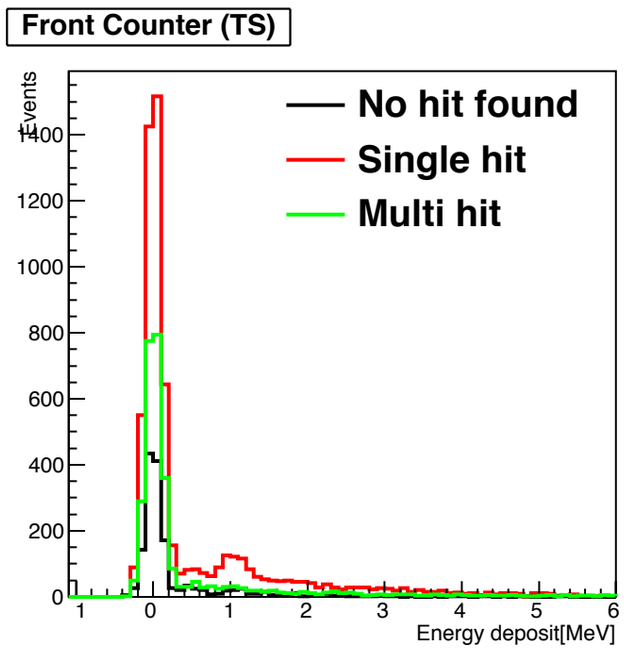
Front counter

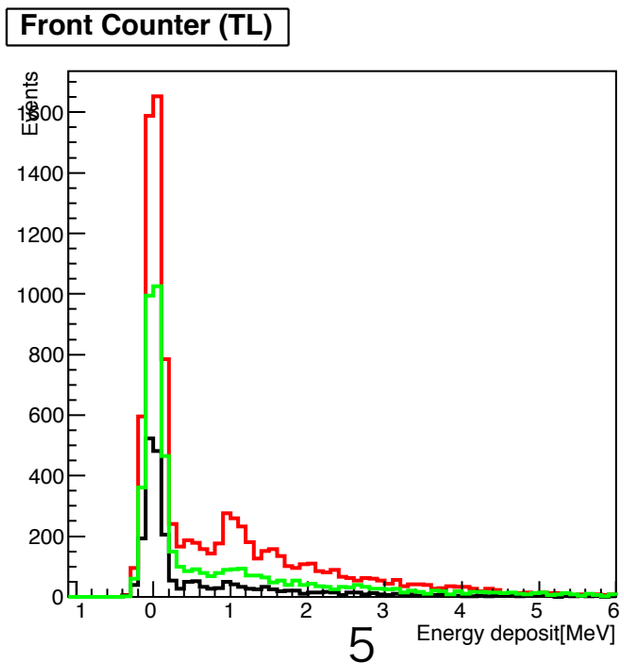




Check response of FC for triggered events.
Assuming 100keV noise.

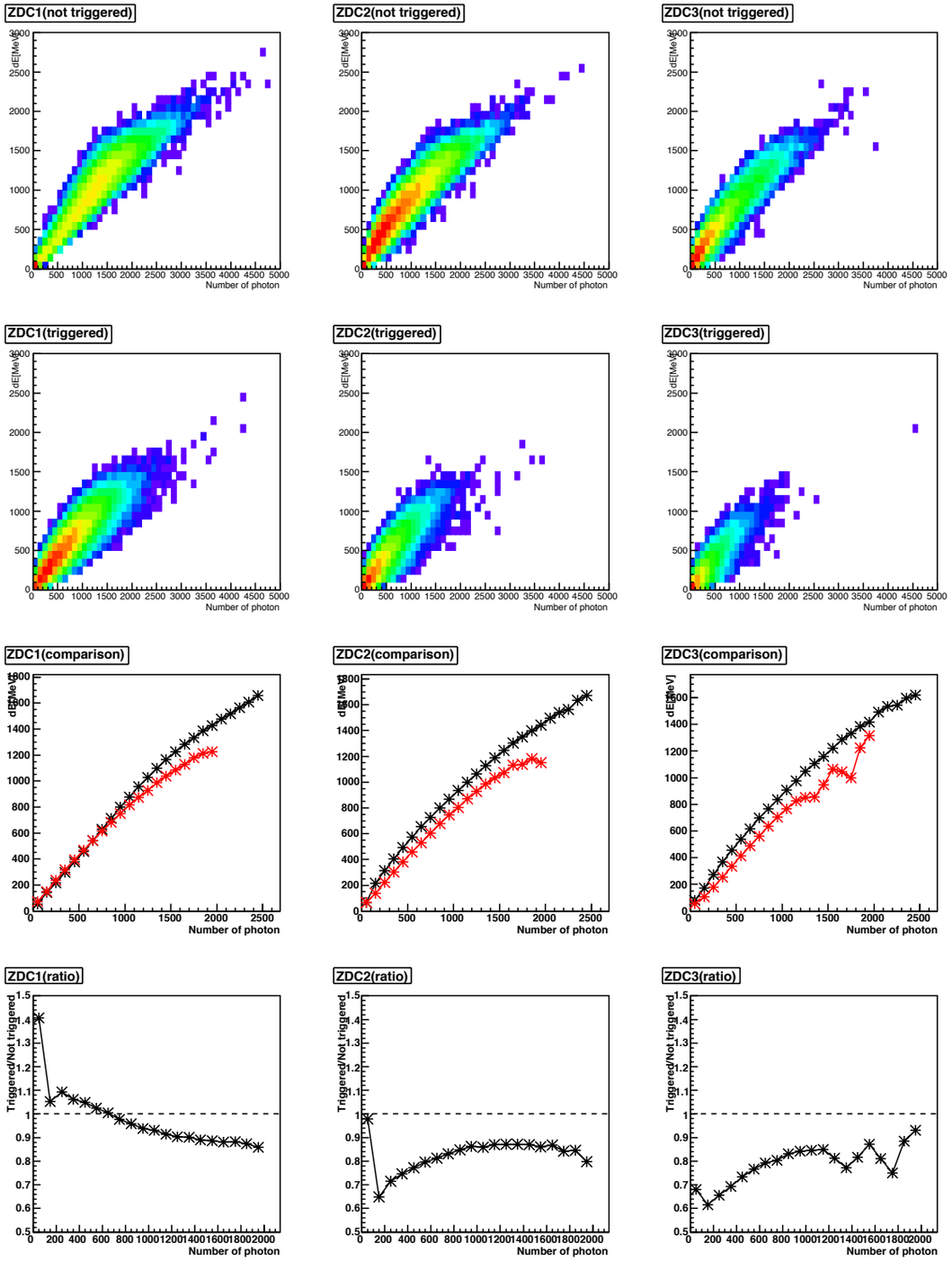
number of hits: number of electromagnetic particles





Number of peaks found after position reconstructed

ZDC



Correlation between number of photoelectron and energy deposit in each ZDC module.

1. Energy deposit in RHICf scintillators is below 10MeV (equivalent to neutron event where shower does not occur in RHICf)
2. Triggered by RHICf (3 successive layer above 25MeV)
3. Mean values in each photoelectron bin
4. Ratio of the previous plot

The relation is not proportional.
Conversion factor for number of p.e. to energy deposit is 20% smaller in RHICf

MC mass production

Full simulation	Whole geometry structure	All use
Tuned simulation	Only smaller pipes are taken into account Magnetic field is applied	High energy trigger study Pi0 study
Fast simulation	Without beam pipe structure Only magnetic field applied	For statistics?

QGSJETII-04, EPOS-LHC 6×10^6 collisions
DPMJET3.06, Pythia8.219 3×10^6 collisions
are available with old geometry (wo FC)

Summary

- I checked the effect of beam pipe for photons. Most of the energy is found inside 2mm according to the incident photon.
- Geometry is updated and response of FC can work as the pre-sampler of the photon shower.
- ZDC conversion factor changes with the presence of RHICf by 20%