

Event Display Status

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Tokyo Testbeam Analysis Workshop, Aug. 6-24th, 2018

Show Event Display in Outside DESY

- When you are outside DESY, in particular outside Europe, this method is recommend.
- Procedure
 1. Access this link : <https://nafhh-x2.desy.de:3443/auth/ssh>
 2. Input your User Name and pass of DESY account and log in
 3. Create a XFCE window and start it
 4. Open terminal emulator
 5. Access naf-ilc machine (ssh -X naf-ilc)
 6. Move your working directory
 7. Execute the following commands
 1. unset LIBGL_ALWAYS_INDIRECT
 2. export CED_PORT=XXXX
 3. glced&
 4. ./myMarlin EventDisplay.xml

Attention and CED Command

● Attention

- In XFCE window we must pay attention to US keyboard map.

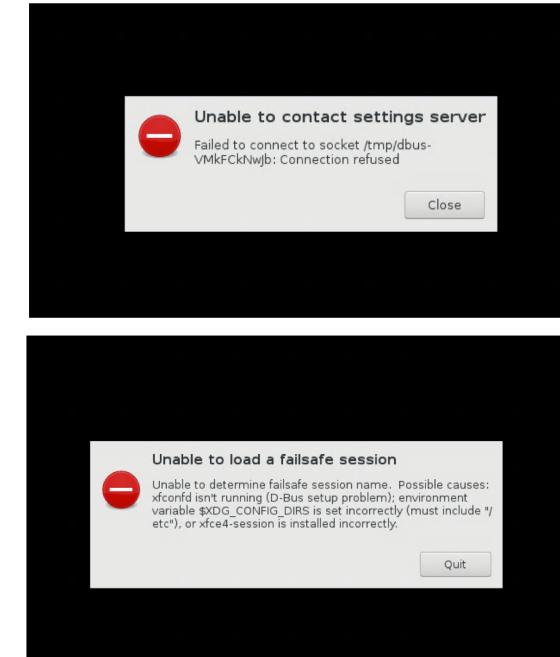
● Main CED command



Shortcut	Option	Shortcut	Option
ESC	Quit CED	c	Center object at mouseover
h	Toggle shortcut frame	Z	Hold to cut in z-direction
r	reset view	z	Hold to cut in -z-direction
R	Reset CED	>	Hold to increase transparency
f	Toggle front view	<	Hold to decrease transparency
s	Toggle side view	m	Hold to increase detector cut angle
F	Toggle front projection	M	Hold to decrease detector cut angle
S	Toggle side projection	←	Move view in z-direction
v	Toggle fisheye projection	→	Move view in -z-direction
+	Zoom in	b	Change background color
-	Zoom out	ctrl+z	Undo

Note

- Once you can enter a XFCE window, you should be able to do.
 - If you face the right warnings, I don't know what to do..
- Successful environment (I know for now)
 - Mac(Google Chrome, Safari)
 - Windows(Firefox)
 - If you can do in other environments, please tell me!
- When EventDisplay cannot be showed, confirm the following things.
 - Whether the port number when you execute the command(`export CED_PORT`) correspond with port number in EventDisplay.xml
 - Did you initialize ILCSof and CALICESoft?
 - Is reconstructed data used as input slcio file?
 - Is popup blocker permitted?
- ToDo : Edit the Confluence this procedure.
 - <https://confluence.desy.de/display/Calice/How+to+use+the+Event+Display>



Analysis of tail-catcher data

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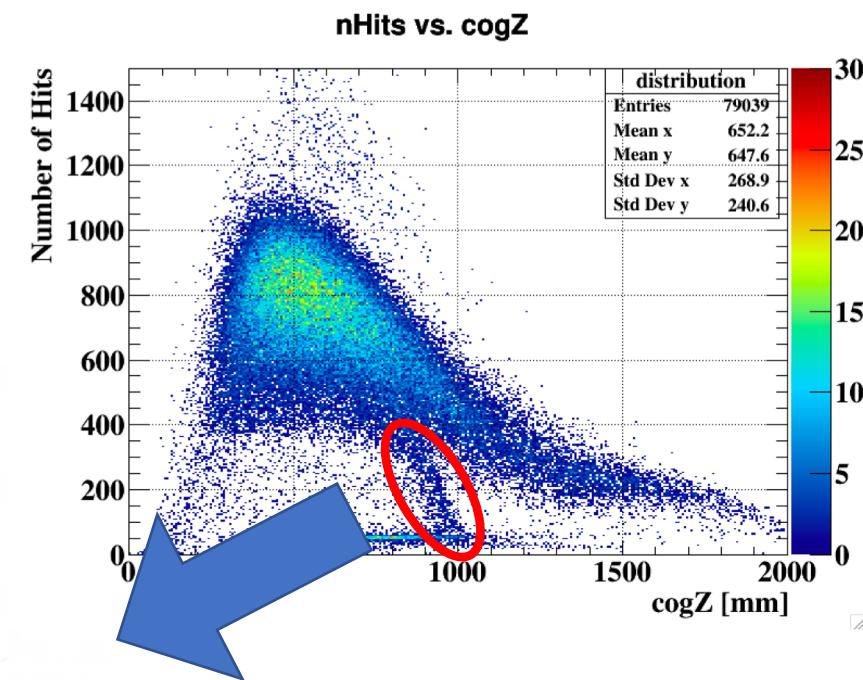
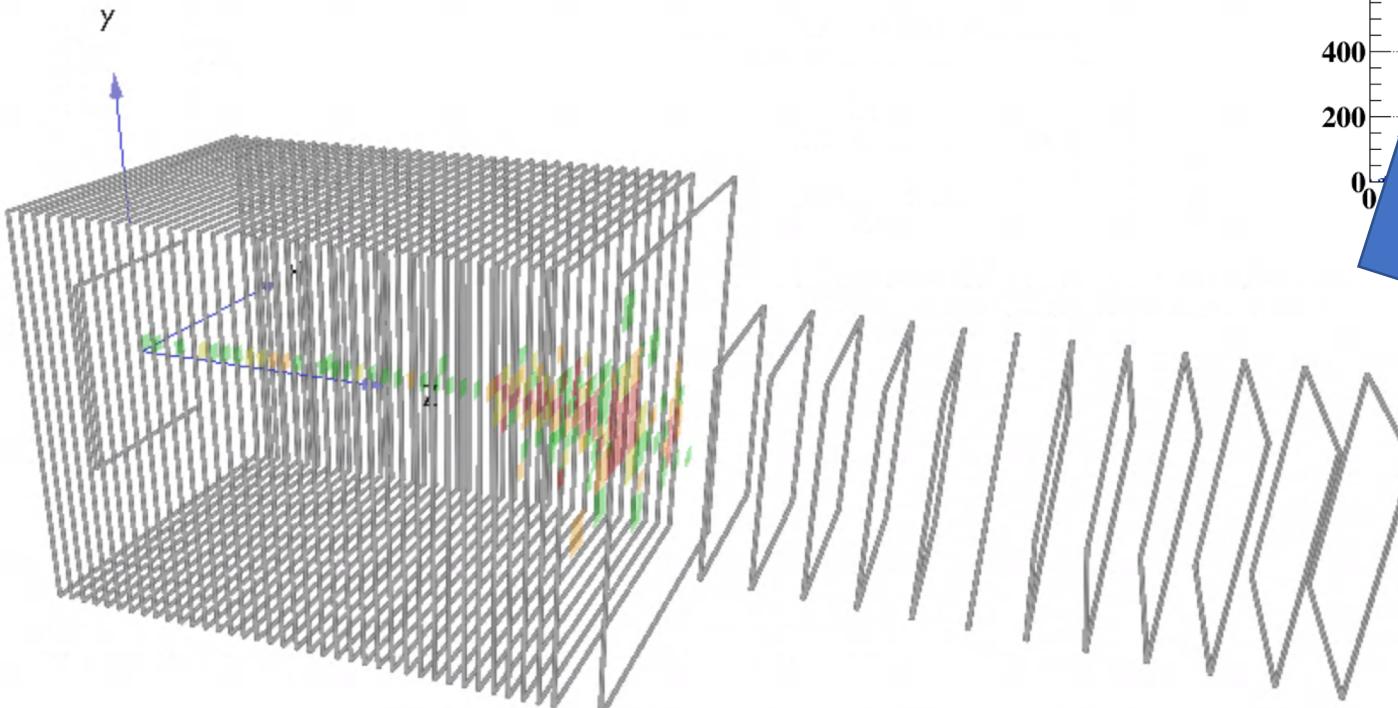
Steering File and Particle Type in this Analysis

- I analyzed data with the latest calibration constants again.
 - Root file was reconstructed last Tuesday (14.8.2018).
- 100GeV Pion (Run 061230)

```
| <processor name="GeoConditions" type="ConditionsProcessor">
|   <parameter name="DBInit" type="string" value="flccaldb02.desy.de:calice:caliceon:Delice.1:3306"/>
|   <parameter name="DBCondHandler" type="StringVec">
|     Ahc2ModuleDescription          /cd_calice_Ahc2/TestbeamJune2018/ModuleDescription      HEAD
|     Ahc2ModuleConnection          /cd_calice_Ahc2/TestbeamJune2018/ModuleConnection      HEAD
|     Ahc2ModuleLocationReference  /cd_calice_Ahc2/TestbeamJune2018/ModuleLocationReference  HEAD
|     Ahc2HardwareConnection        /cd_calice_Ahc2/TestbeamJune2018/HardwareConnection    HEAD
|     Ahc2DetectorTransformation   /cd_calice_Ahc2/TestbeamJune2018/DetectorTransformation HEAD
|     E4DPedestal                  /cd_calice_Ahc2/TestbeamJune2018/Pedestal           HEAD
|     E4DGainConstants            /cd_calice_Ahc2/TestbeamMay2018/gain_constants       HEAD
|     E4DGainSlopes                /cd_calice_Ahc2/TestbeamMay2018/gain_slopes         HEAD
|     E4DMipConstants             /cd_calice_Ahc2/TestbeamJune2018/mip_constants       HEAD
|     E4DMipSlopes                 /cd_calice_Ahc2/TestbeamMay2018/mip_slopes         HEAD
|     E4DDeadCellMap              /cd_calice_Ahc2/TestbeamMay2018/DeadCellMap        HEAD
|     E4DSaturationParameters    /cd_calice_Ahc2/TestbeamMay2018/SaturationParameters HEAD
|     E4DIntercalibration         /cd_calice_Ahc2/TestbeamMay2018/Intercalibration    HEAD
|     E4DPhysicsCalibIntercalibration /cd_calice_Ahc2/TestbeamMay2018/PhysicsCalibIntercalibration HEAD
|     E4DTimeSlopes                /cd_calice_Ahc2/TestbeamMay2018/TimeSlope          HEAD
|     E4DTimeOffset                /cd_calice_Ahc2/TestbeamMay2018/TimeOffset         HEAD
|   </parameter>
| </processor>
```

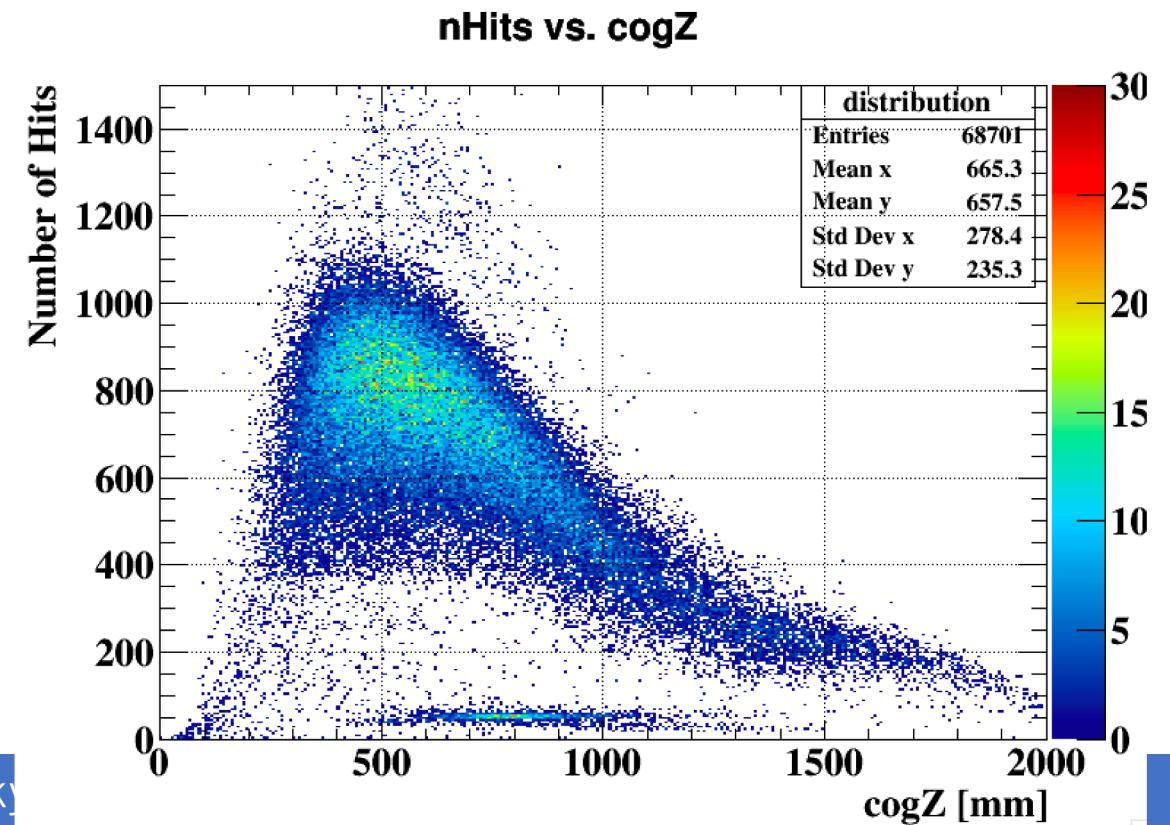
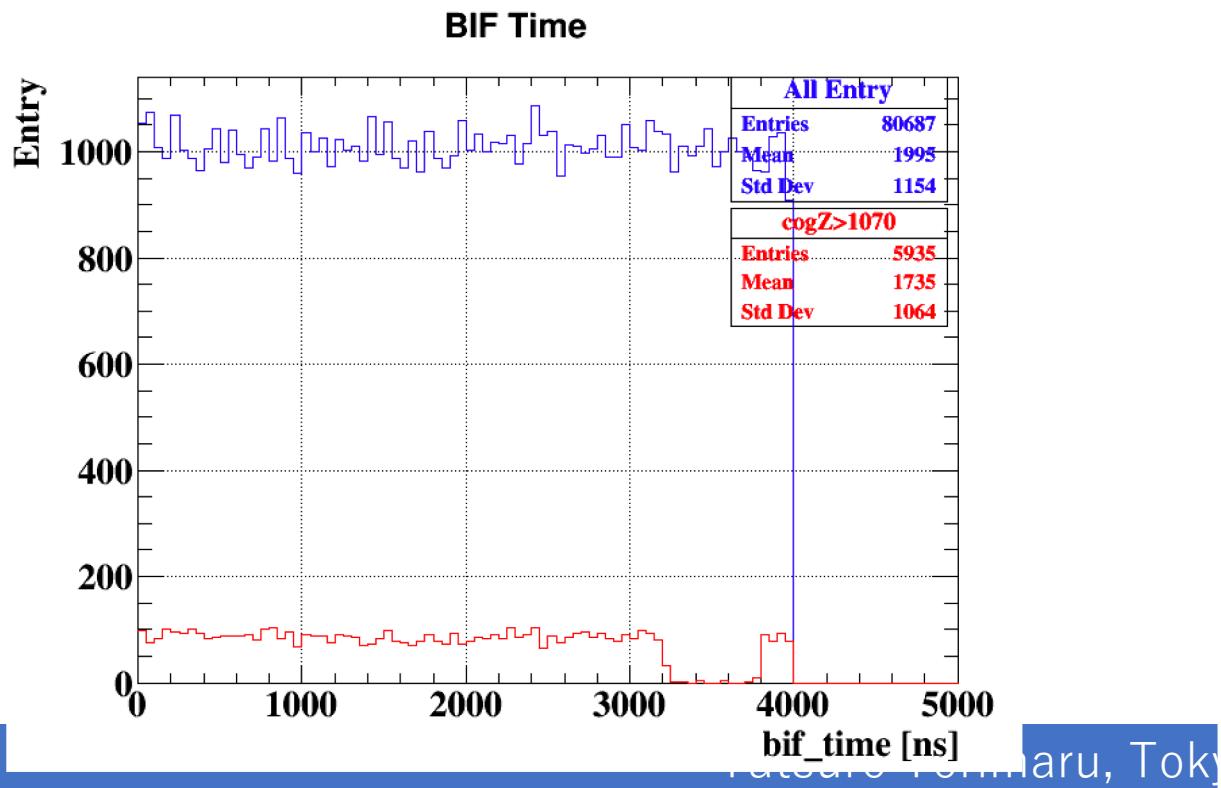
Events where TC Information is Missing

- If TC information is missing due to validation, cogZ becomes smaller.
- EventDisplay -> Even though shower starts late, there is no hit in TC



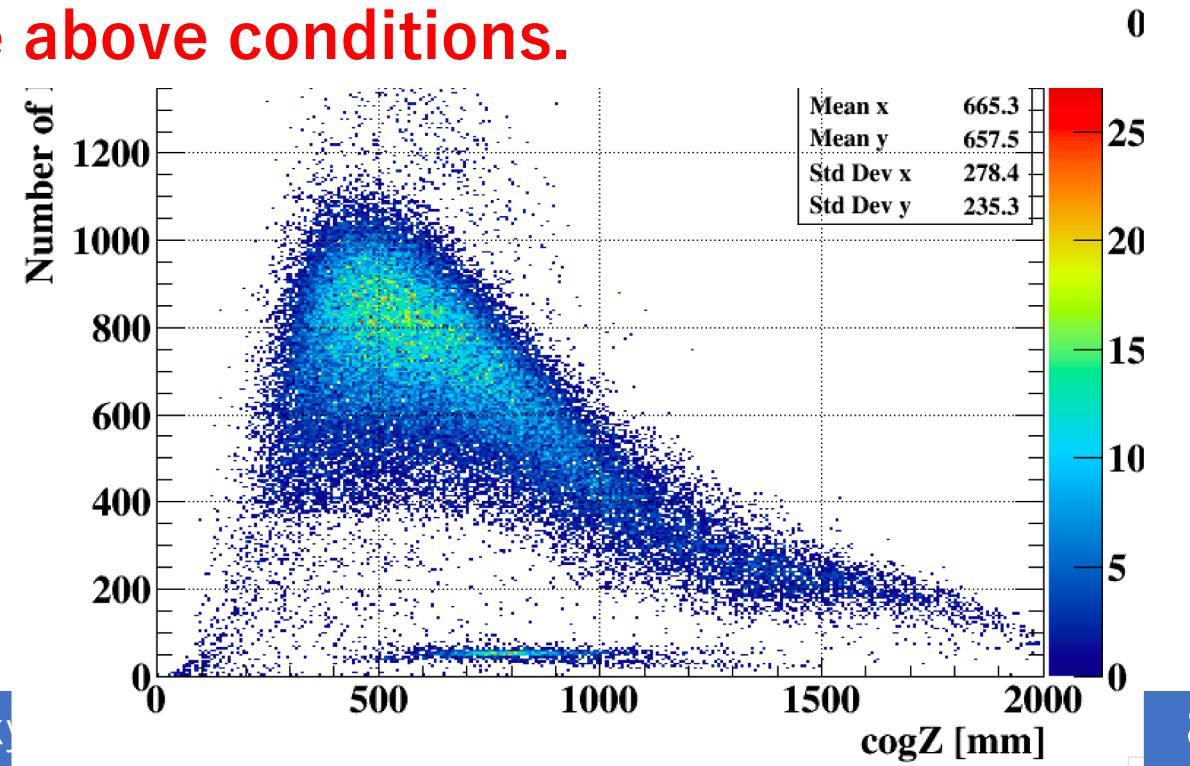
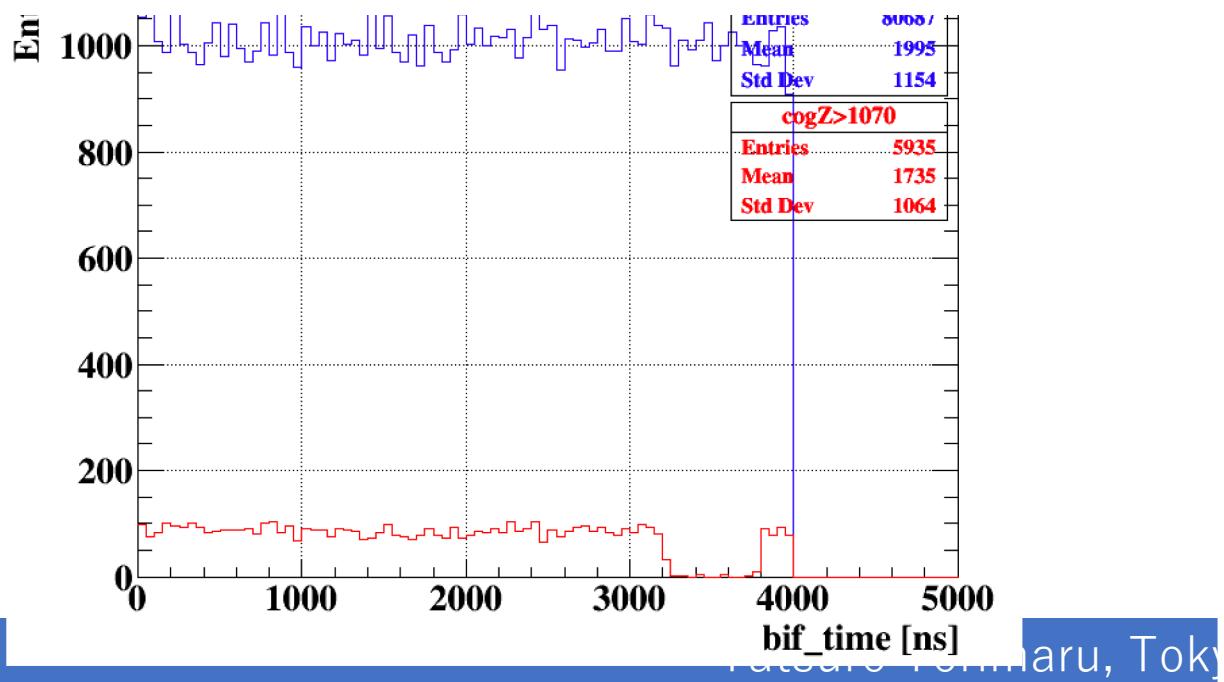
Cut Only Signals from Scintillator Trigger

- Extract events where signals come from trigger scintillator (source = 3).
- Contain events have every nTrigger.
- Cut if timestamp is between 3200 and 3800.



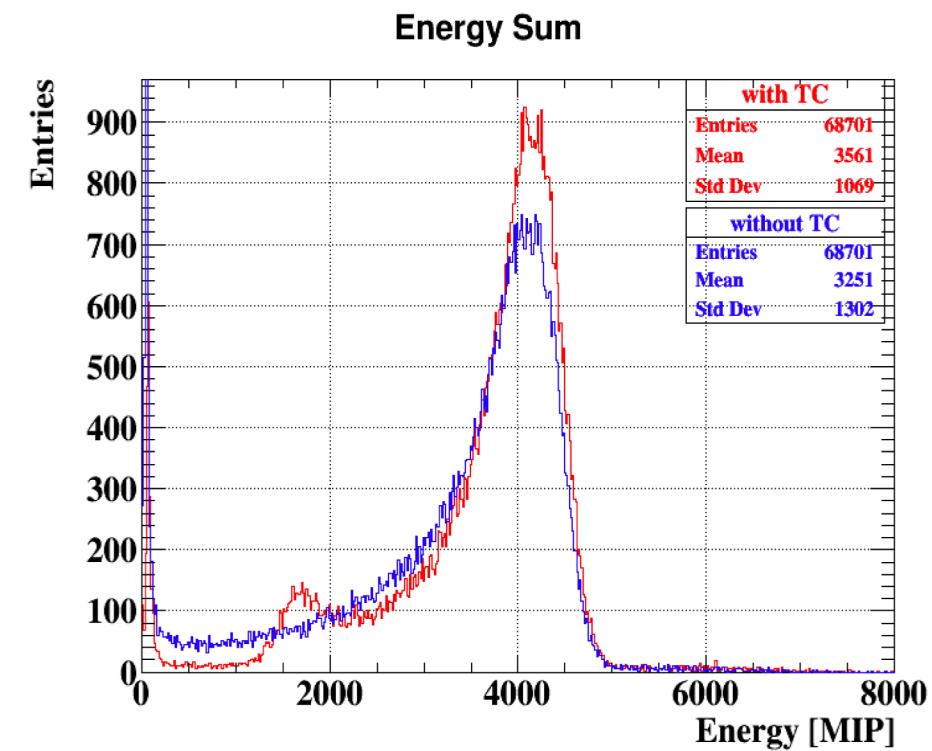
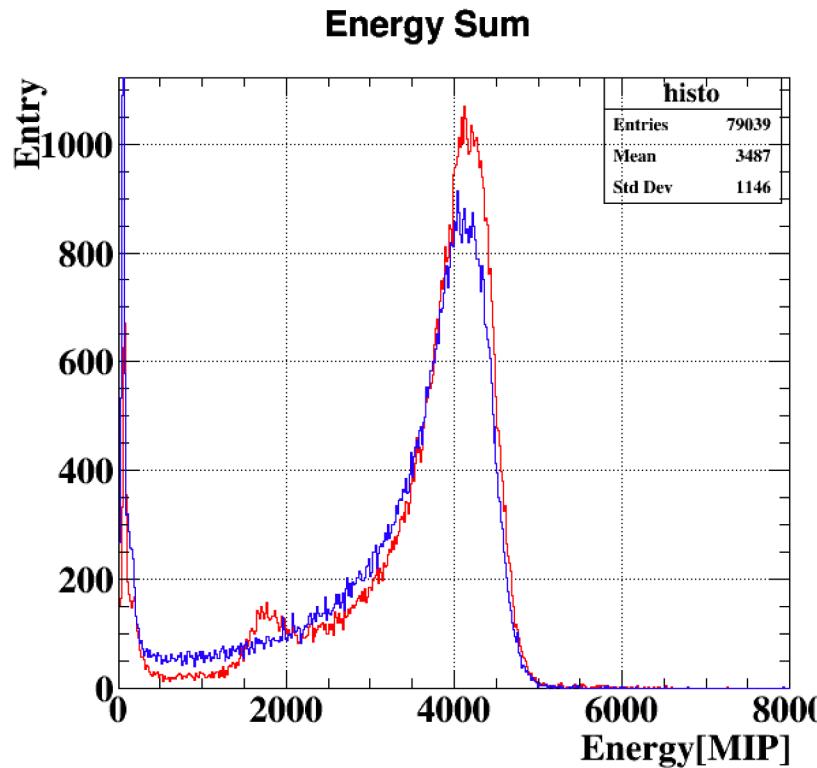
Cut Only Signals from Scintillator Trigger

- Extract events where signals come from trigger scintillator (source = 3).
- Contain events have every nTrigger.
- Cut if timestamp is between 3200 and 3800.
- **Figures in the following slide meet the above conditions.**



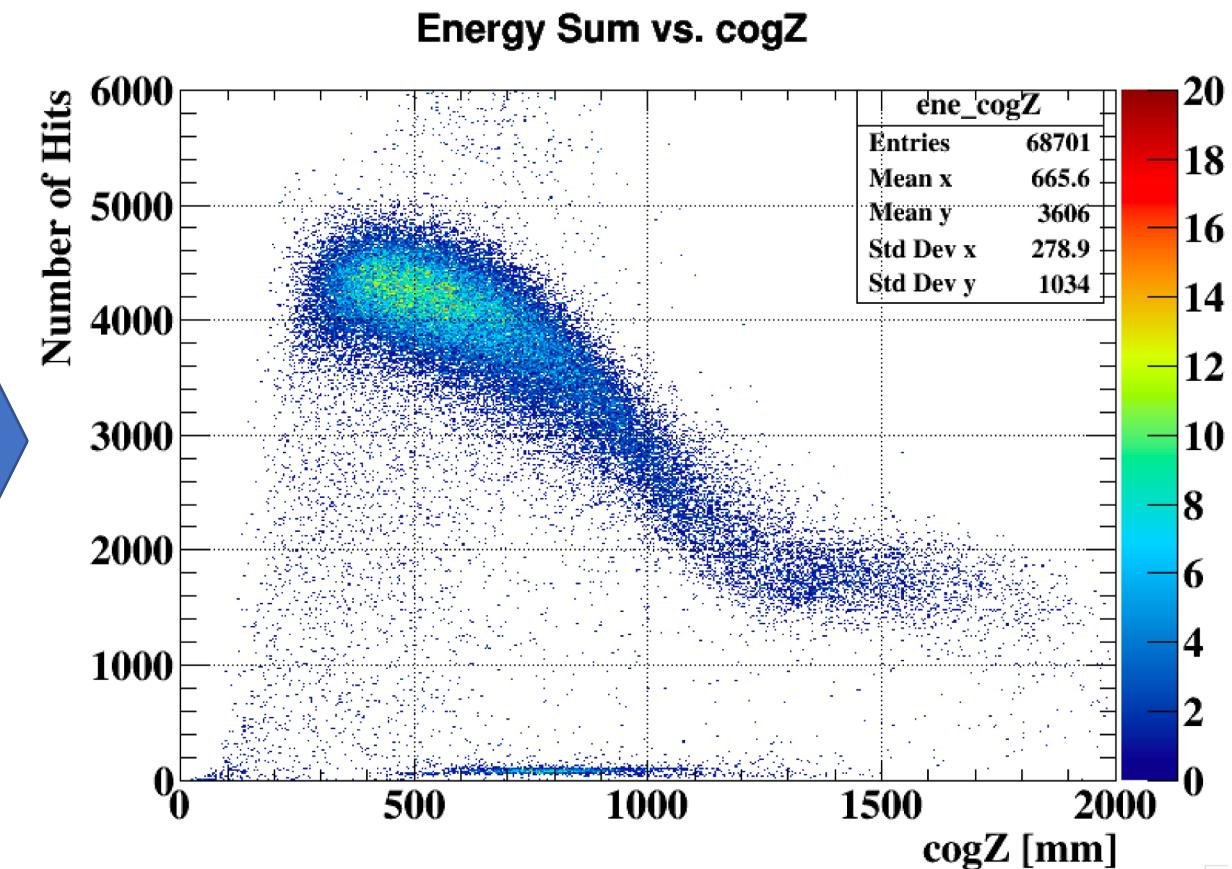
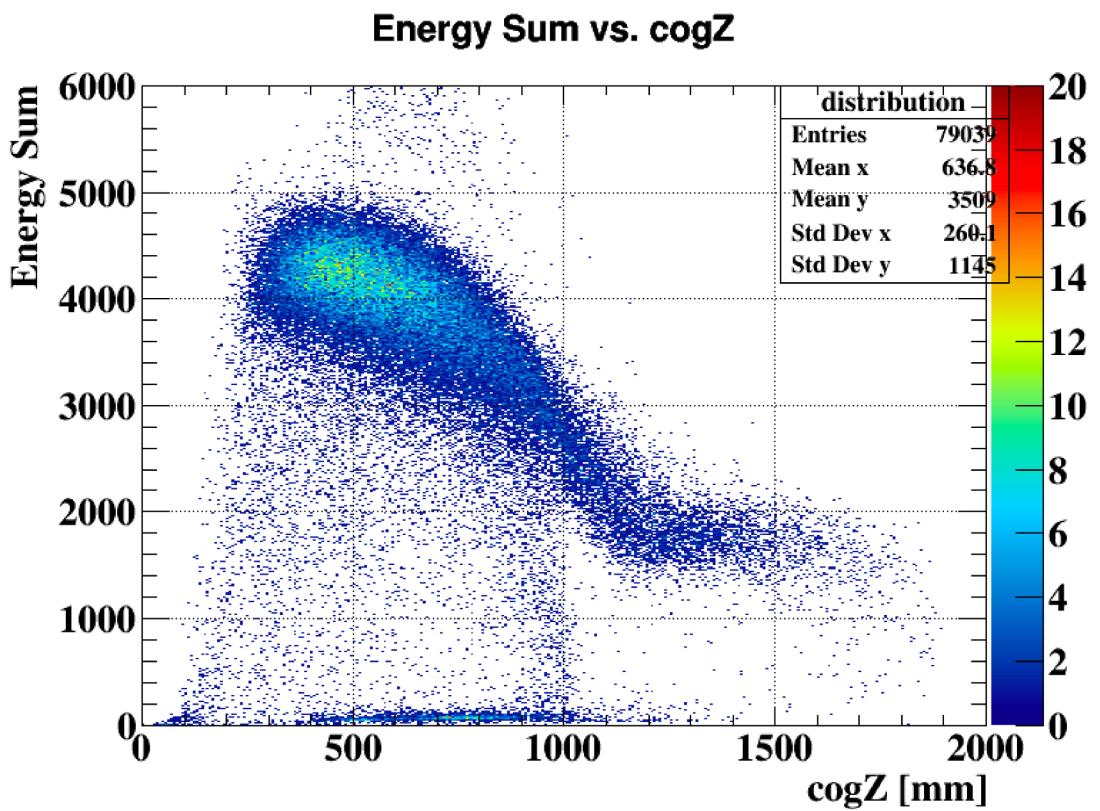
Energy Sum

- Peak shapes are changed.
- It appears that the number of events whose energy is high increase a little.
-> Because calibration constants are changed.



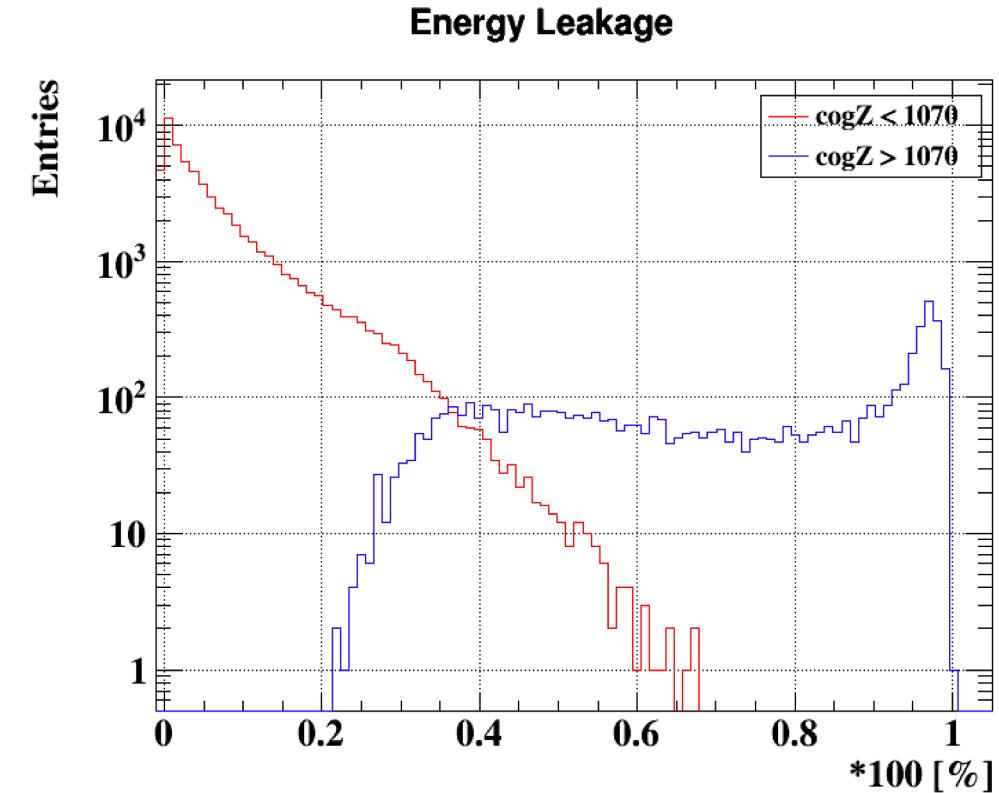
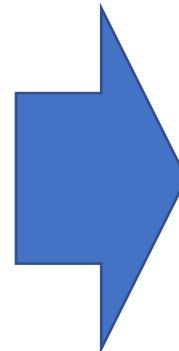
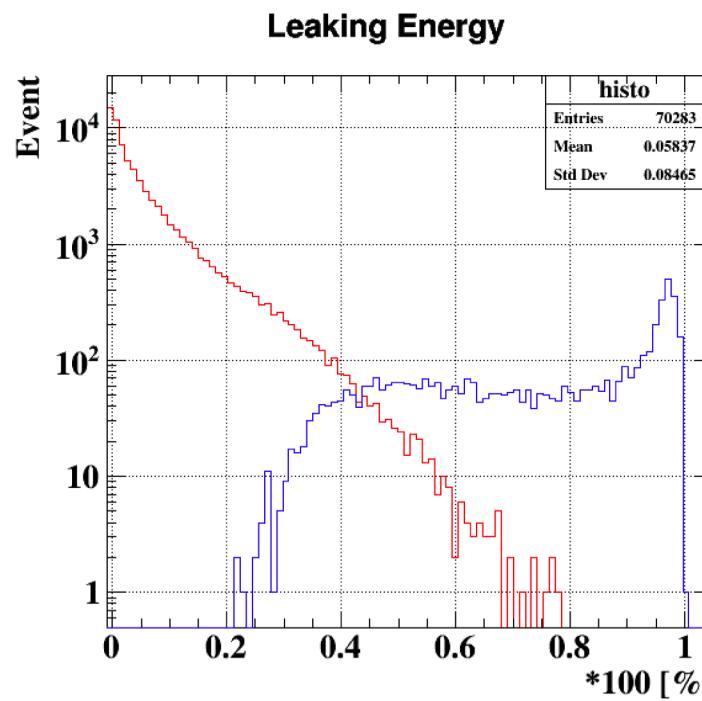
Energy Sum vs. cogZ

- Events where TC information is missing can be removed.



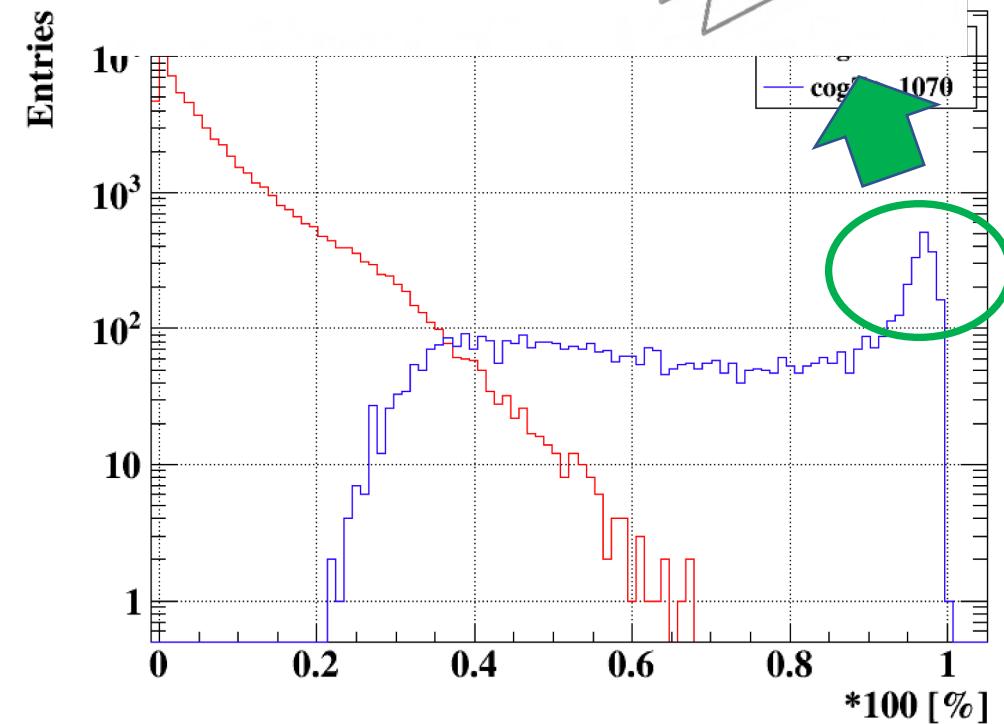
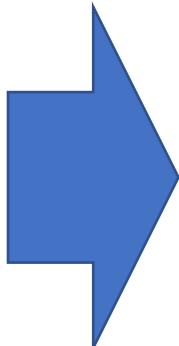
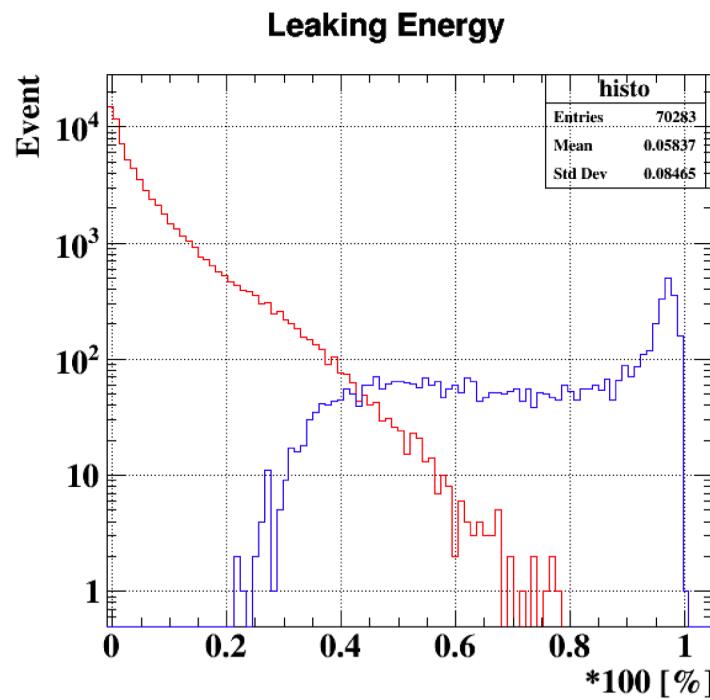
Energy Leakage

- Fractional energy in TC = A/B
 - A : Energy which tail-catcher obtains
 - B : Energy sum
- Events ($cogZ < 1070$) decrease a little.
- Events (fraction ~ 0.4) increase a little.



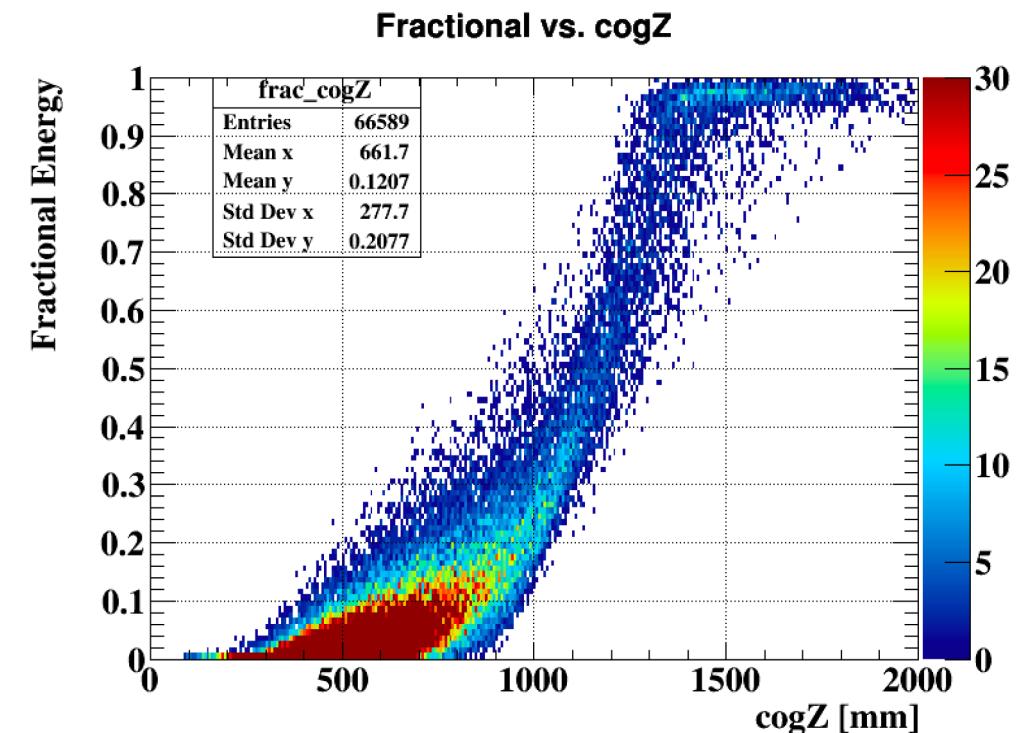
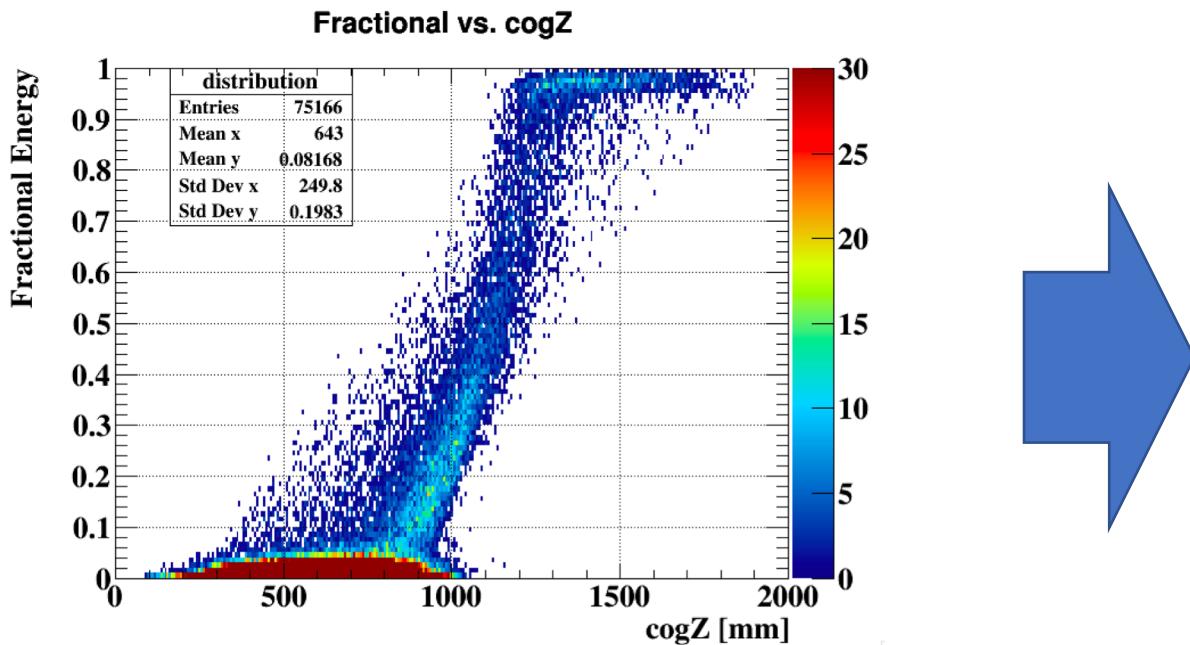
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Fraction vs. cogZ

- Events which fraction is ~ 0 decrease because many of those come from missing information in TC.
- Events which fraction is ~ 0.1 increase.



ToDo

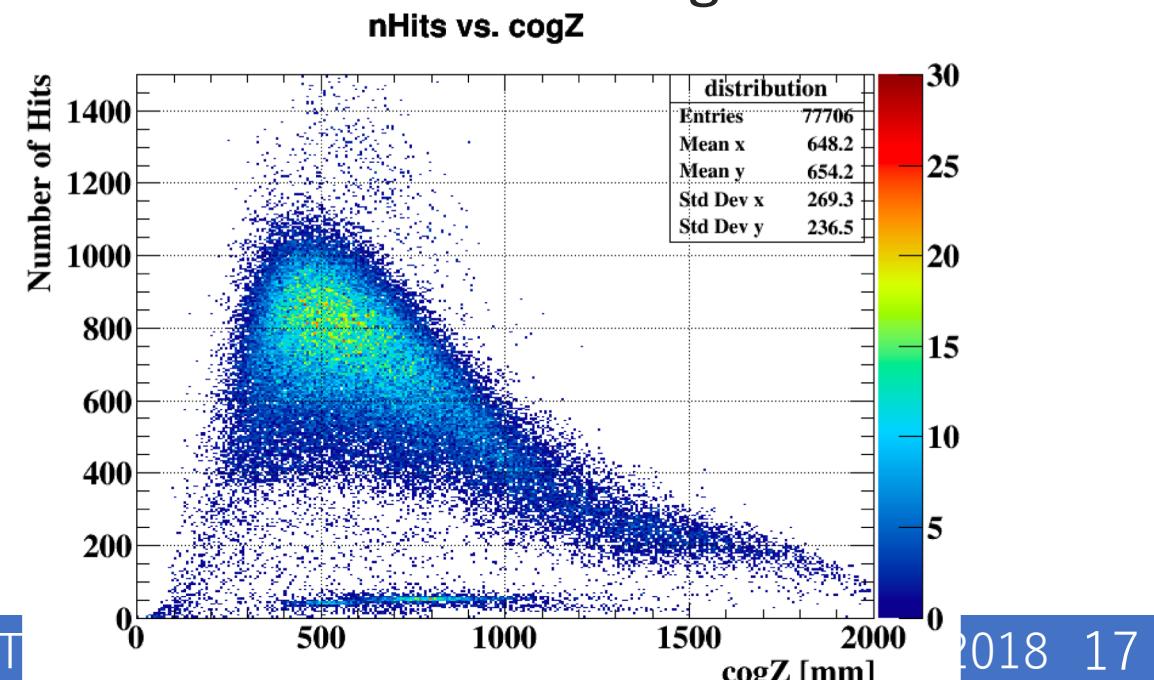
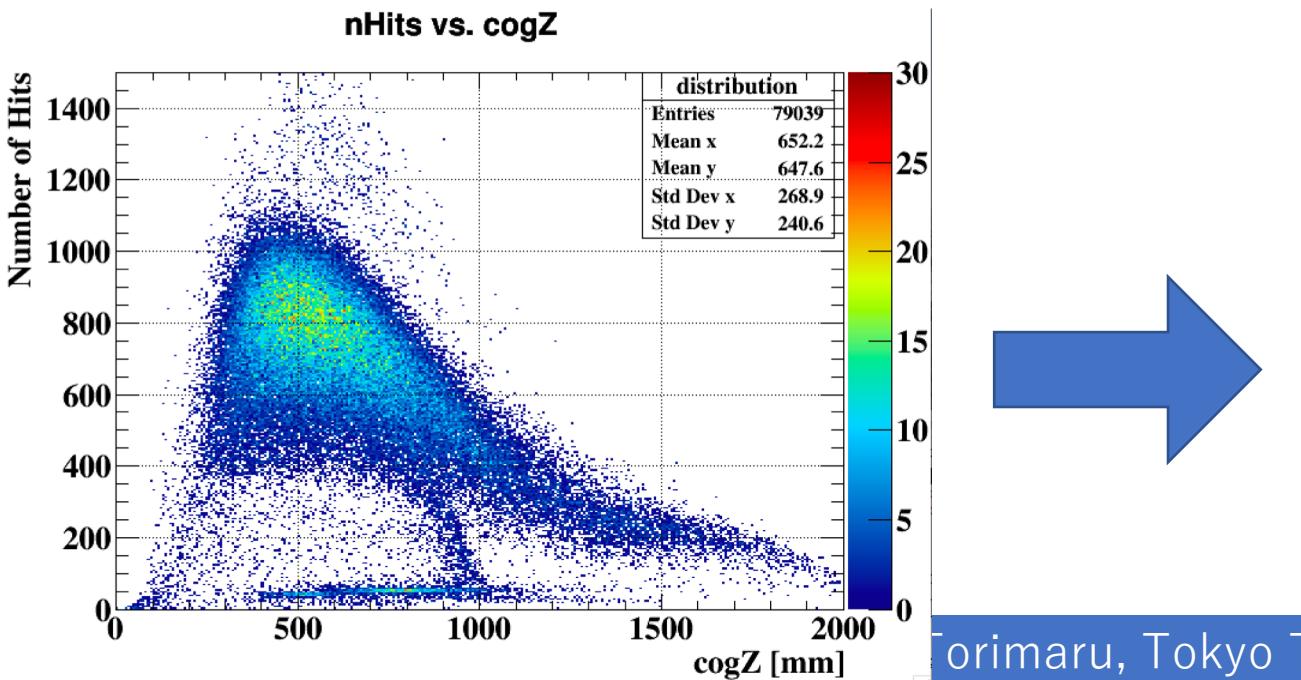
- Redo with the calibration constants of June data.
- Check other data with different particle energies.
- Compare with MC -> condor problem..
- Estimate expected leakage from MC.
 - Need MC with TC with large layers (2*2 HBUs) and more TC layers

Thank you for your cooperation in this workshop!

backup

Restriction to Cut

- Energy leakage = 0
 - I defined energy leakage as A/B.
 - A : Energy which tail-catcher obtains
 - B : Energy sum
- BIF time is b/w 3200 and 3800
- cogZ is bigger than 800 [mm].
 - Not to cut events whose showers finish in main stacks without entering TC



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