

# CRT Report

02. 22. 2017

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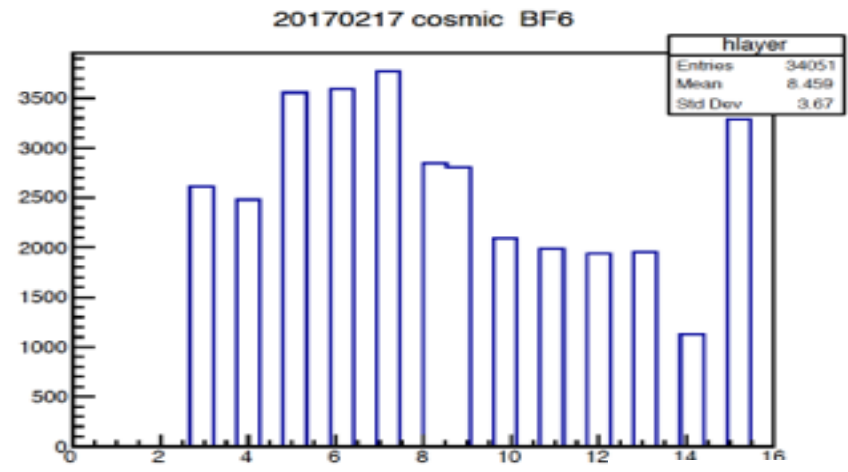
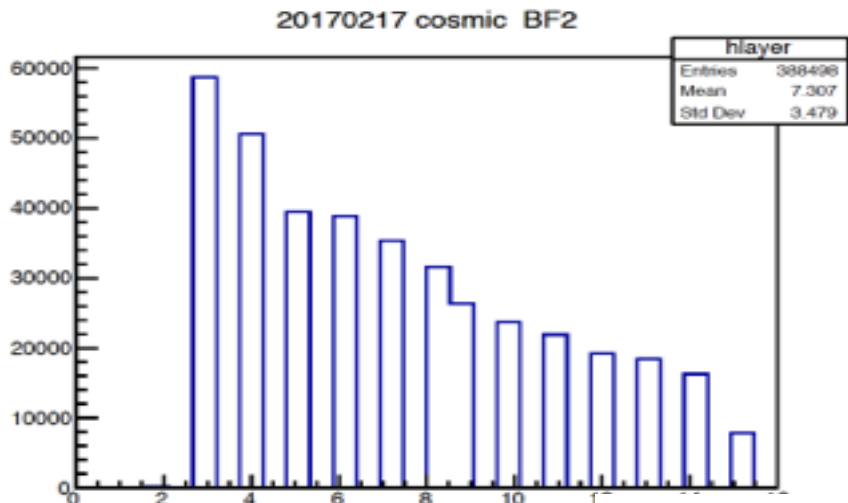
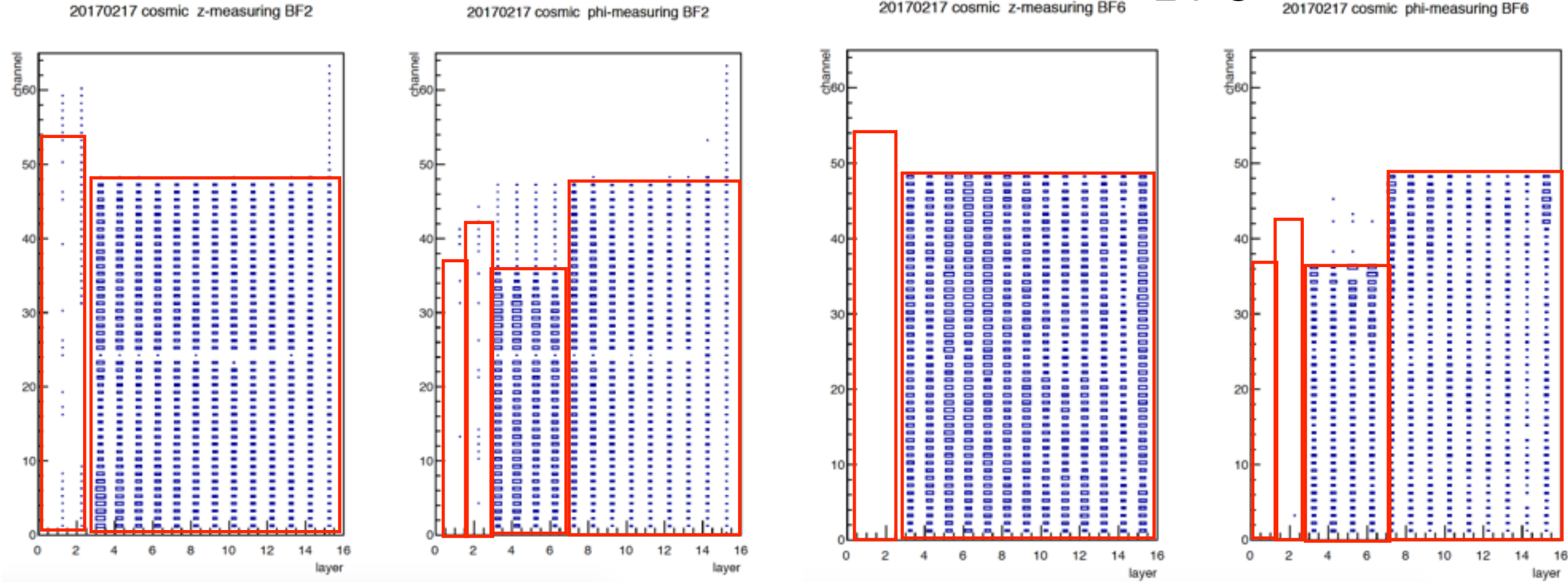
# Timeline

DAQ@		
20170208	test new RPC boards	BF6, layer#13 (0-based) is missing. It turns out later that the problem is on the board.
20170213	RPC threshold test	
20170215	recable BF6, correct the order of card addresses and screw boards down; Also Isar found “BF6L13-IN” HV problem, it could cause B2Link down. Turn it off.	with “BF6L13-IN” HV off, DAQ is back.
20170216	data concentrator of BF6 was switched to another spare DC. The former was brought back to Italy.	The DC works normally.
20170217	include Barrel Backward (BB) in DAQ;	We have entire barrel (BF+BB). Aux trigger; limited statistics; few channels of BB were present.
...	Debugging BB	
20170221	Trigger signal is lost.	

# Hit rate

BF2

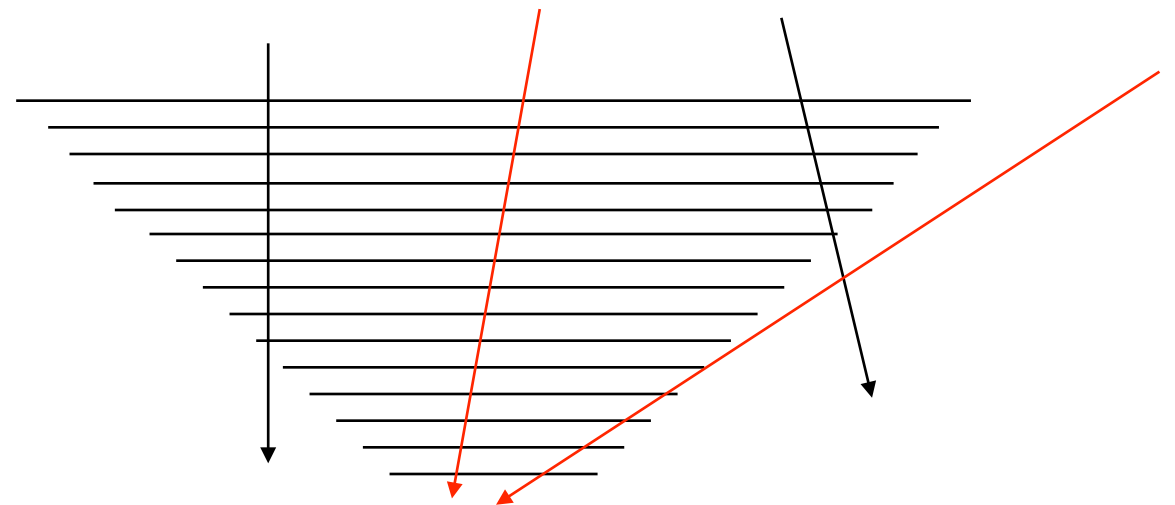
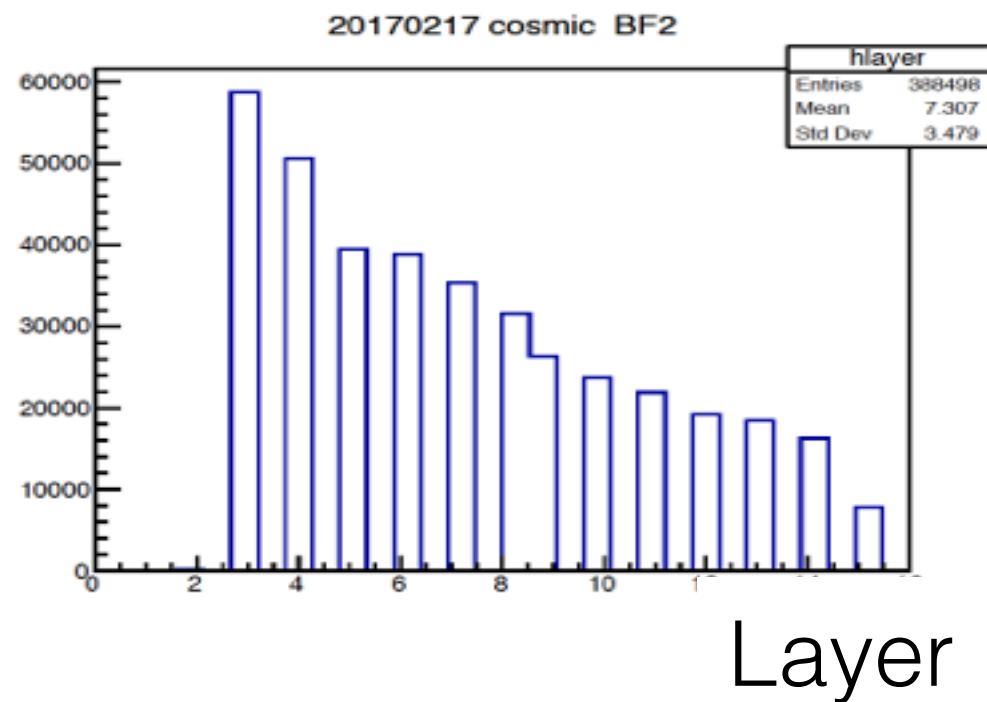
BF6



Layer

Layer

# Hit rate on BF2

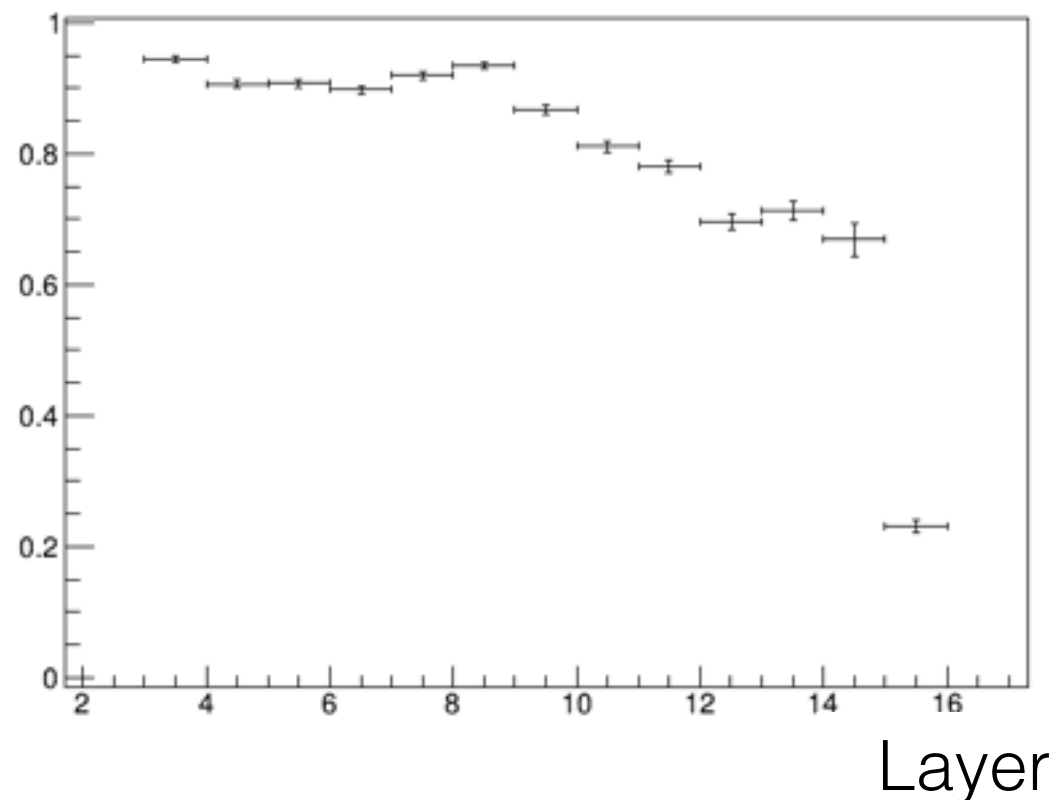


- Hit rate on BF2 decreases with the layer number, should be related to the current trigger scheme. Cosmic ray that does not go through BF2 layer#2 is not triggered.
- Could understand that hit rate on BF2 decreases with layer number, but not sure how much the decrease is reasonable.

# RPC Efficiency

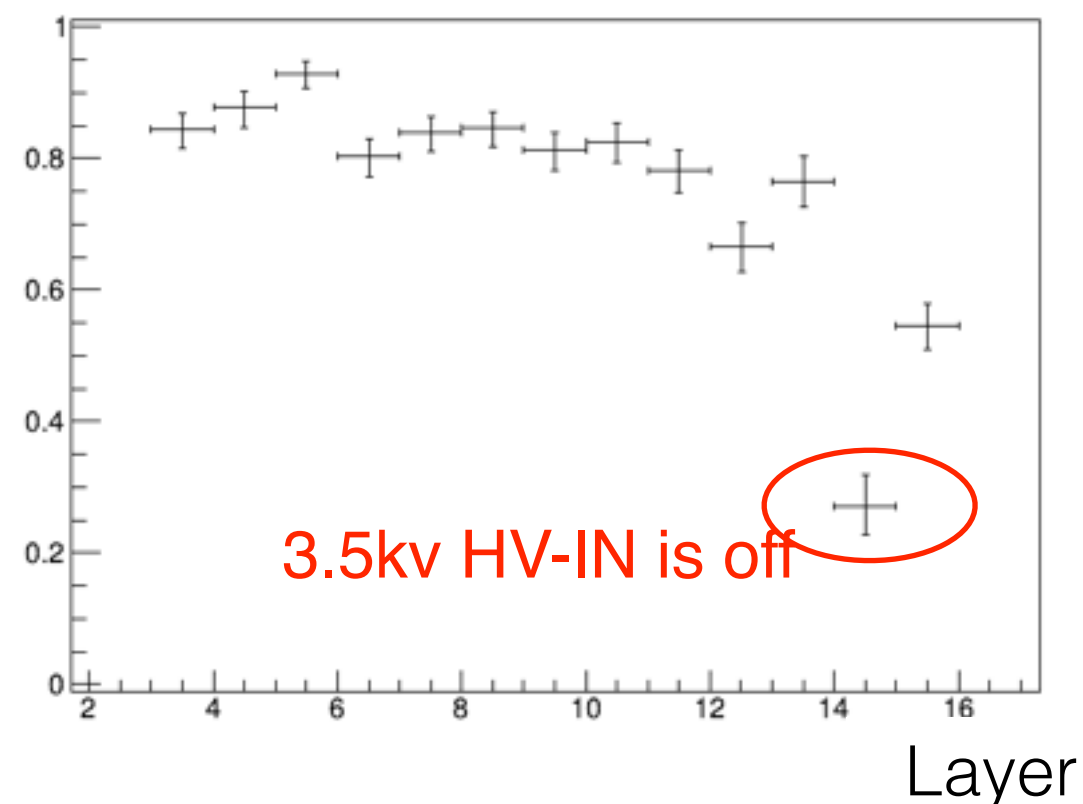
BF2

isForward1\_Sector3



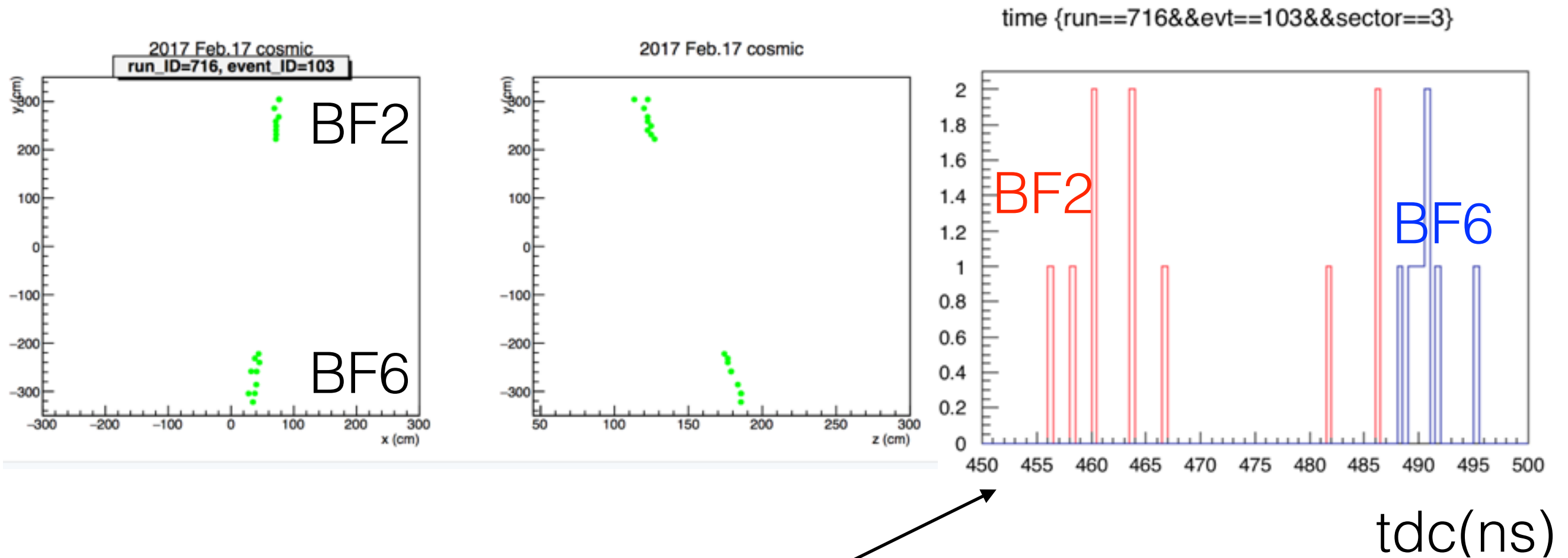
BF6

isForward1\_Sector7

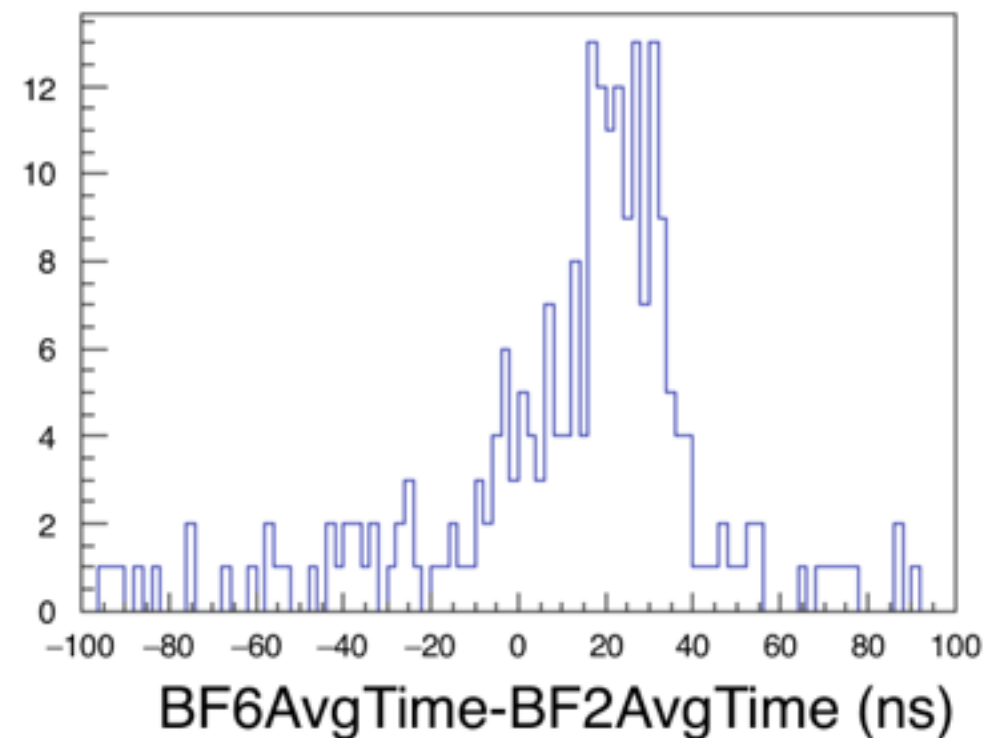


- Track finding is performed within each sector. The efficiency of layer #N is under study. Hits on this layer are not allowed to use in track finding.
- The expected position of the fitted track going through layer #N is estimated. We require at least one hit of the track is on layer N-1 (except N=3) and at least one hit on layer N+1 (except N=15). We count the number Ntotal.
- If any reconstructed hit on layer N satisfies (distance < 8 sigma), it is assumed being associated with the track. We count Npass.
- Efficiency = Npass/Ntotal.

## TDC

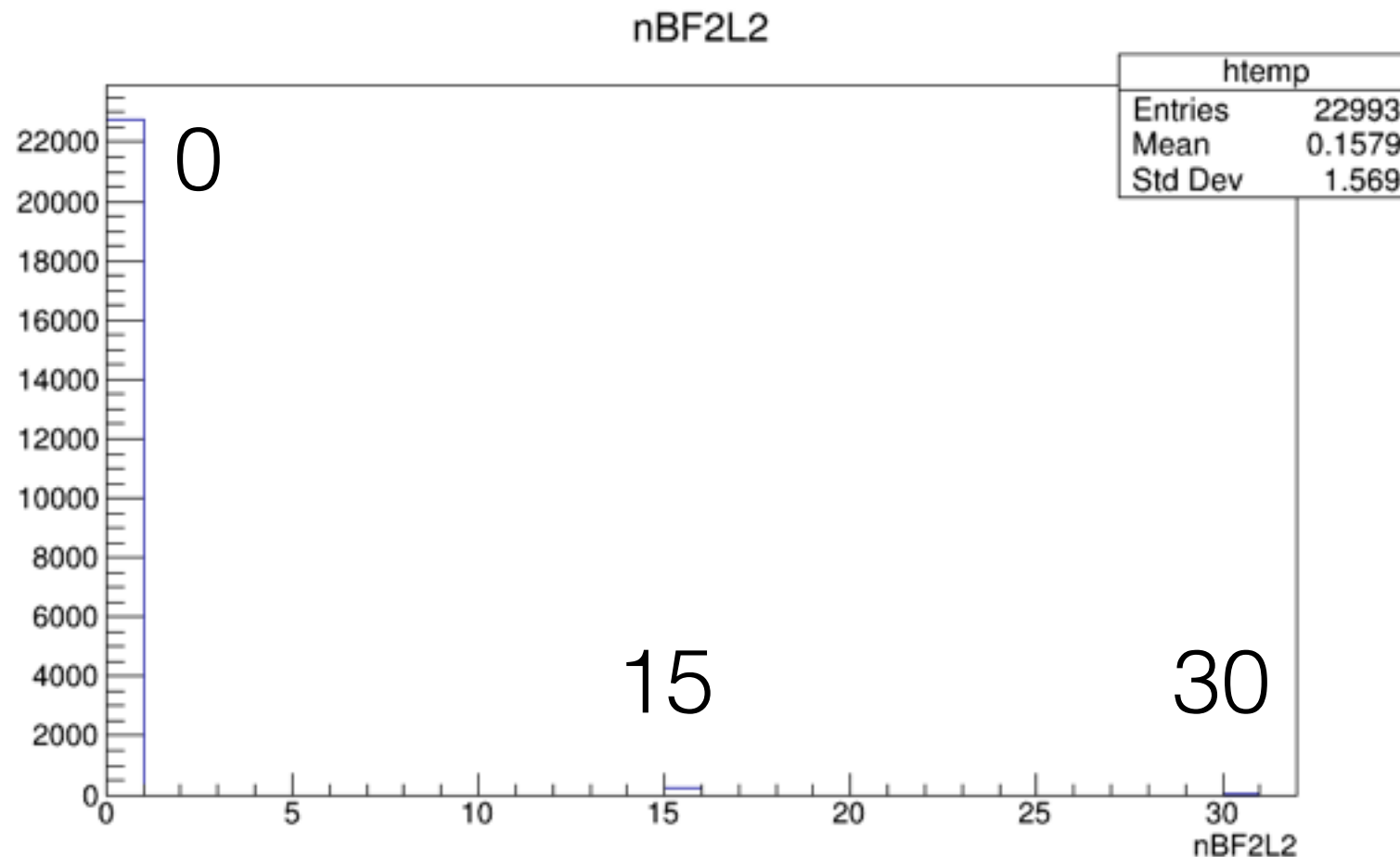


- TDC of hits on BF6 and BF2 in same event.
- Time difference between BF6 and BF2 is roughly  $\sim 20$  ns. Looks reasonable. And is consistent with tracks going from top (BF2) to bottom (BF6).



# Number of hits on BF2 layer2

**CRT@20170217**

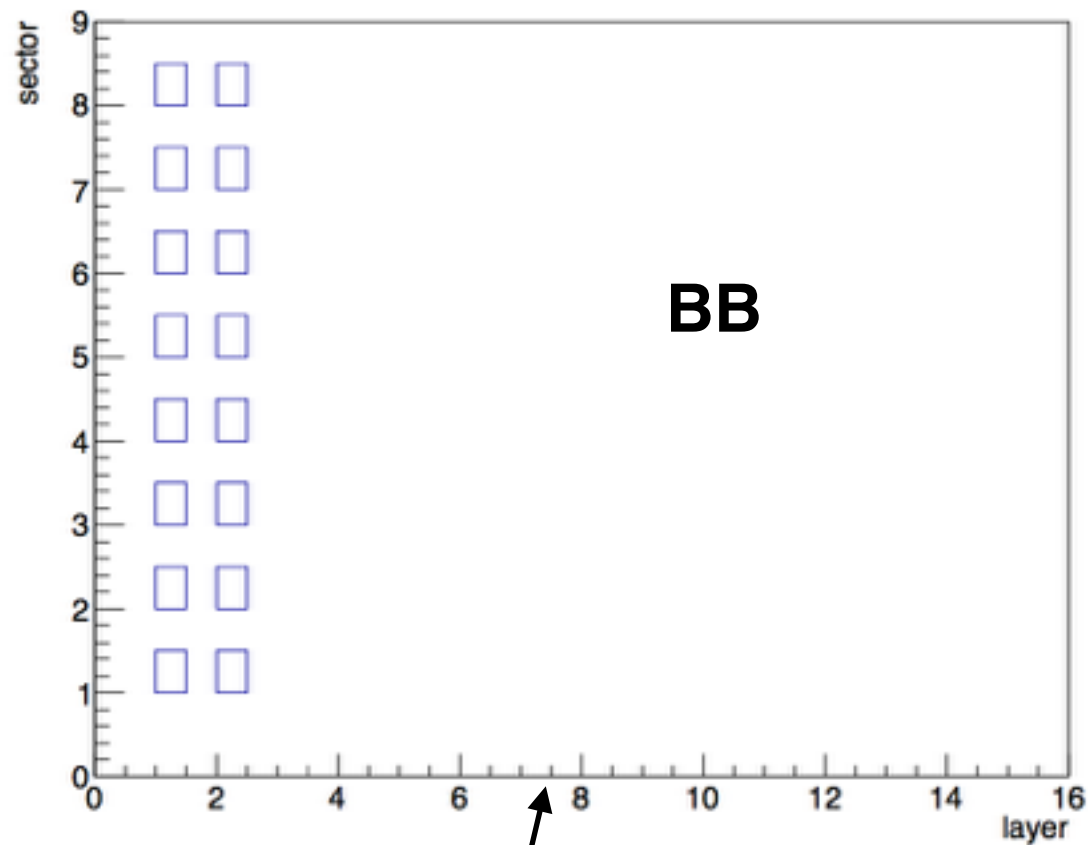


- Number of hits on BF2-Layer2 in each event are some discrete numbers: 0, 15, 30.... , most is 0.

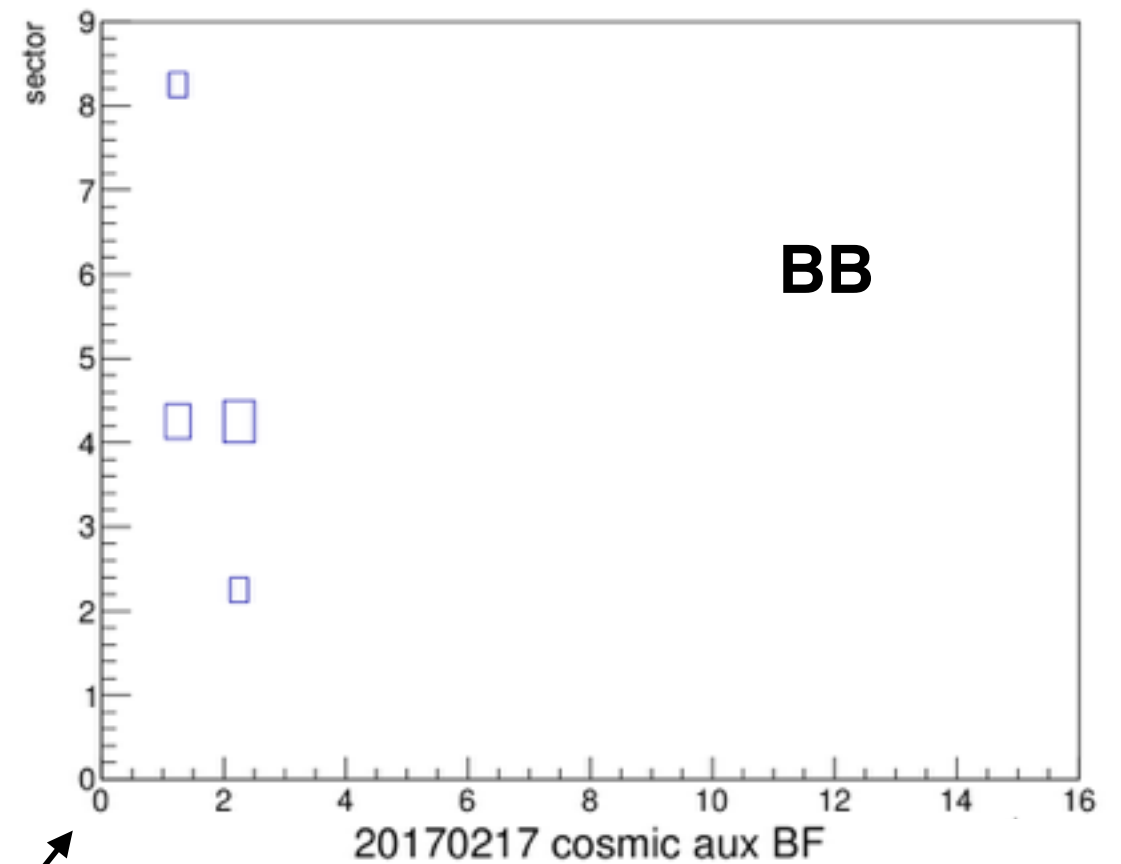
# CRT (BF+BB)@20170217

## Aux trigger

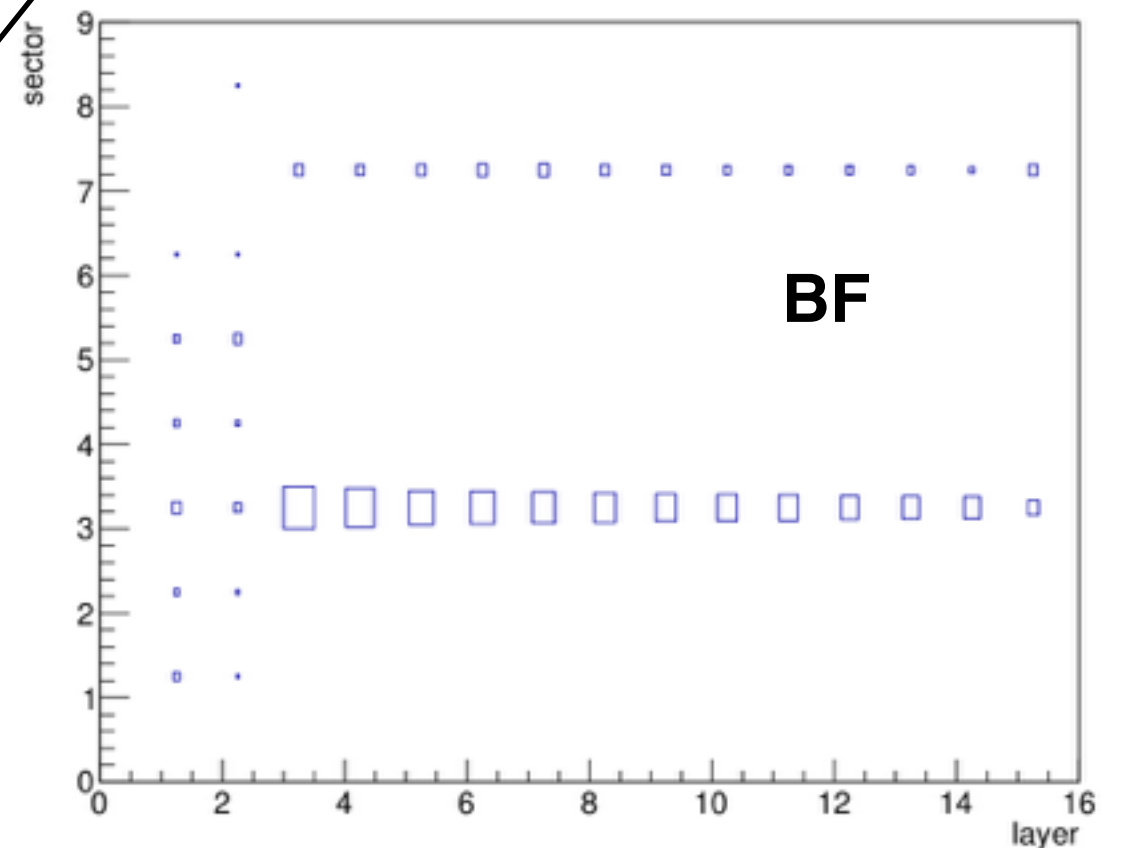
20170217 cosmic cal. BB



20170217 cosmic aux BB



20170217 cosmic aux BF



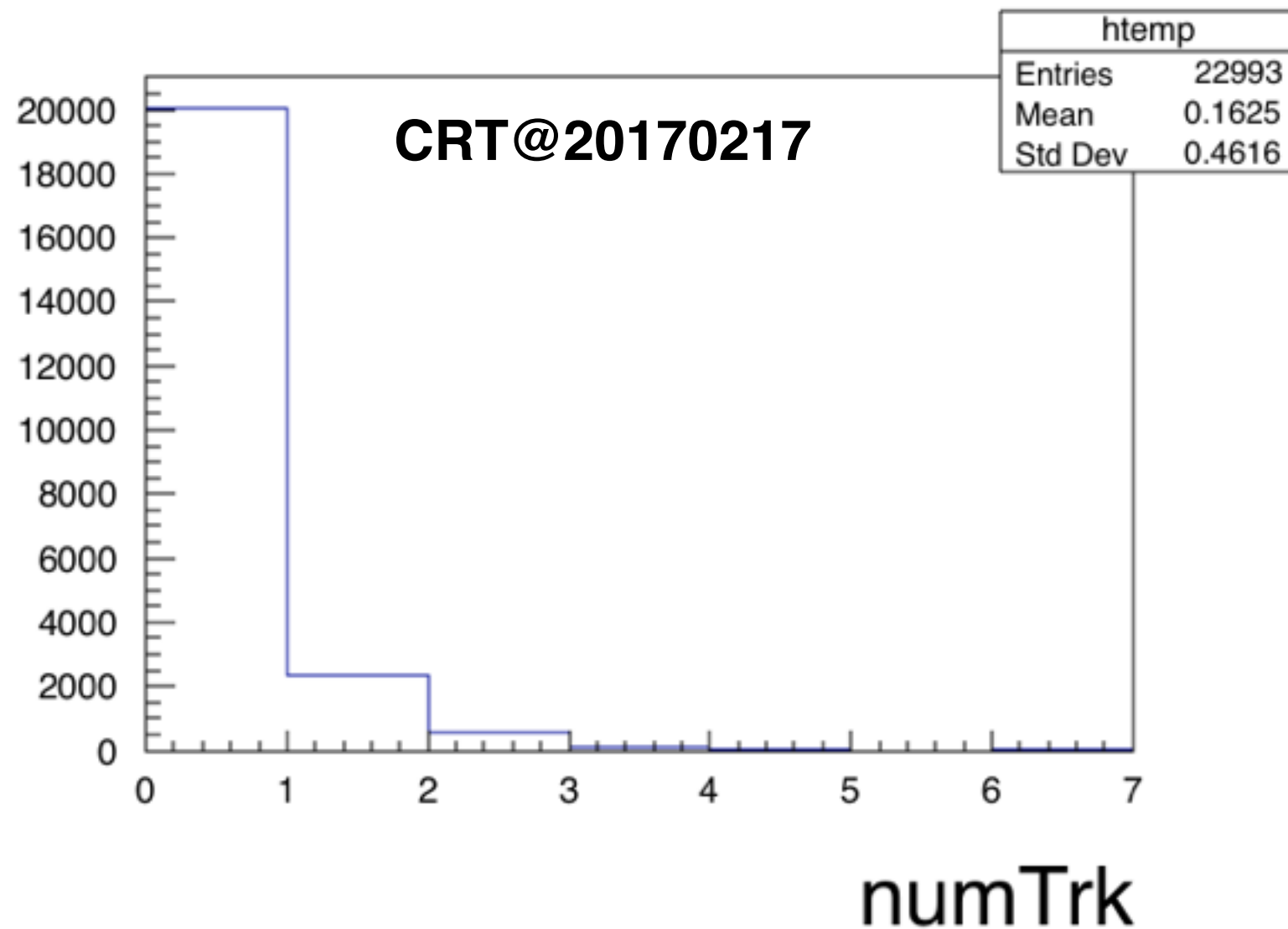
- Calibration data. free triggered read out.
- Limited statistics with Aux trigger, few channels of BB were present.
- BF is normal.



# CRT Status

- BF6 RPC works normally. One HV (3.5kv, BF6L13-IN) is off.
- Barrel Backward is included in DAQ. But still under debugging.
- Trigger signal is lost since last Tuesday.
- Efficiency is estimated roughly based on KLM stand-alone track.
- Scintillator vs. RPC lookback window remains as an issue. Tracks with RPC+Sci. are rare.

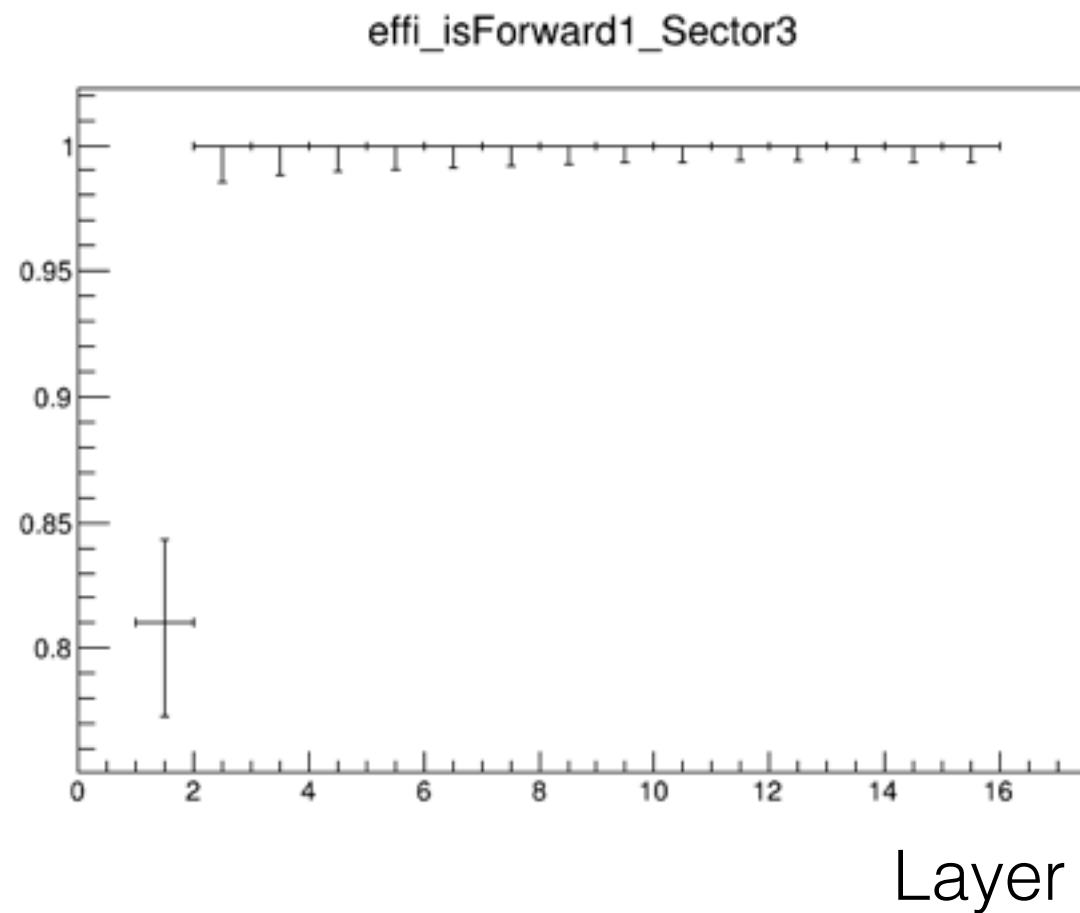
backup



- ~13% events have track.
- ~2% events have track going through both BF2 and BF6.

# Efficiency@MC cosmic ray

BF2



BF6

