CRT Report

Feb. 2017
CRT with new RPC boards on BF6

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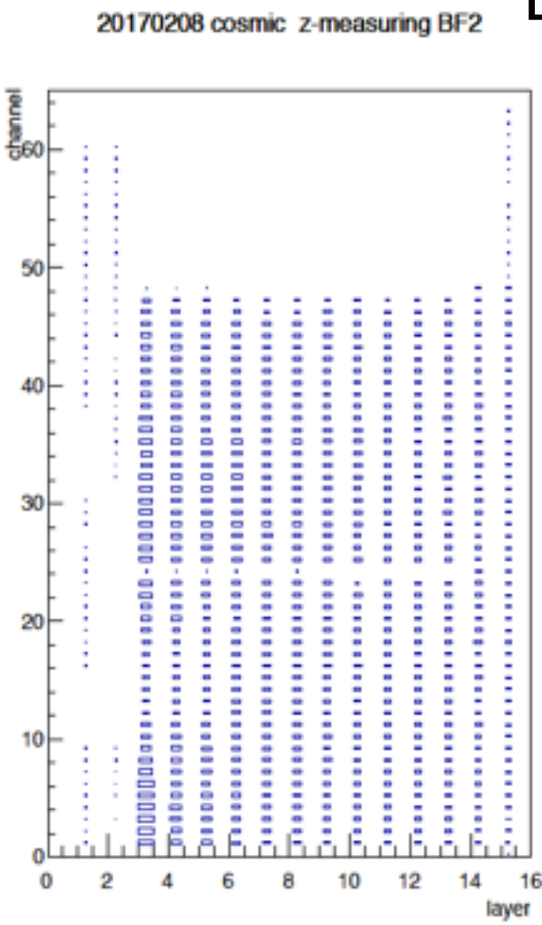
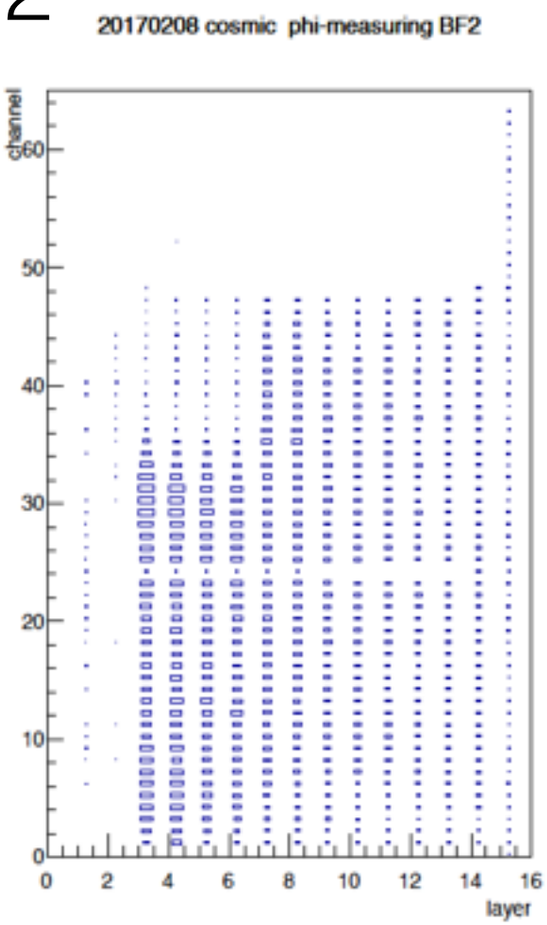
CRT@20170208

BF2

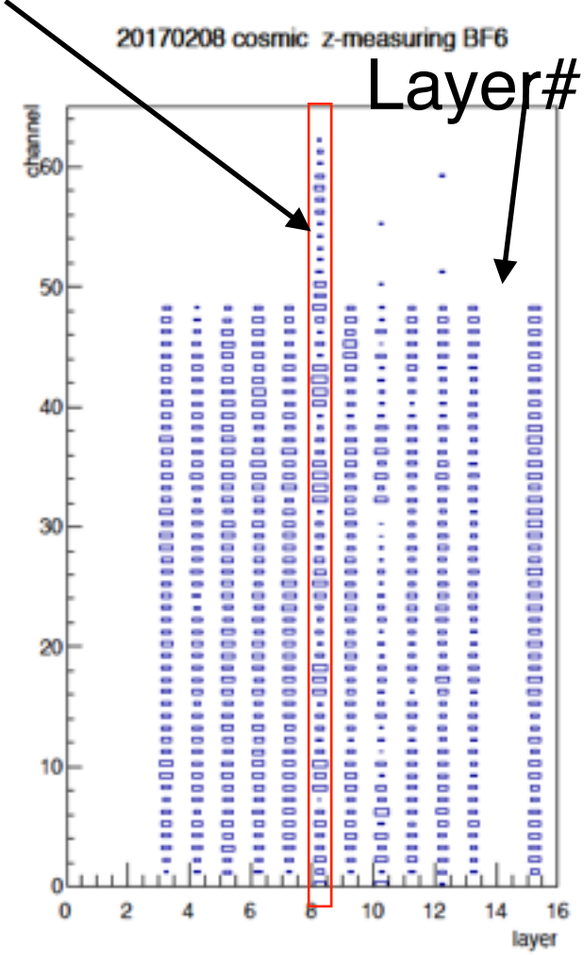


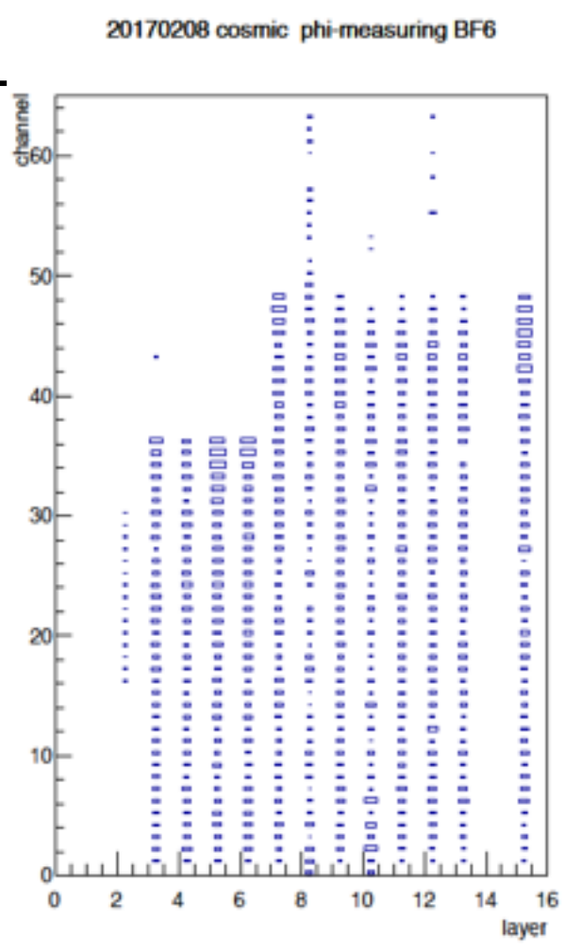


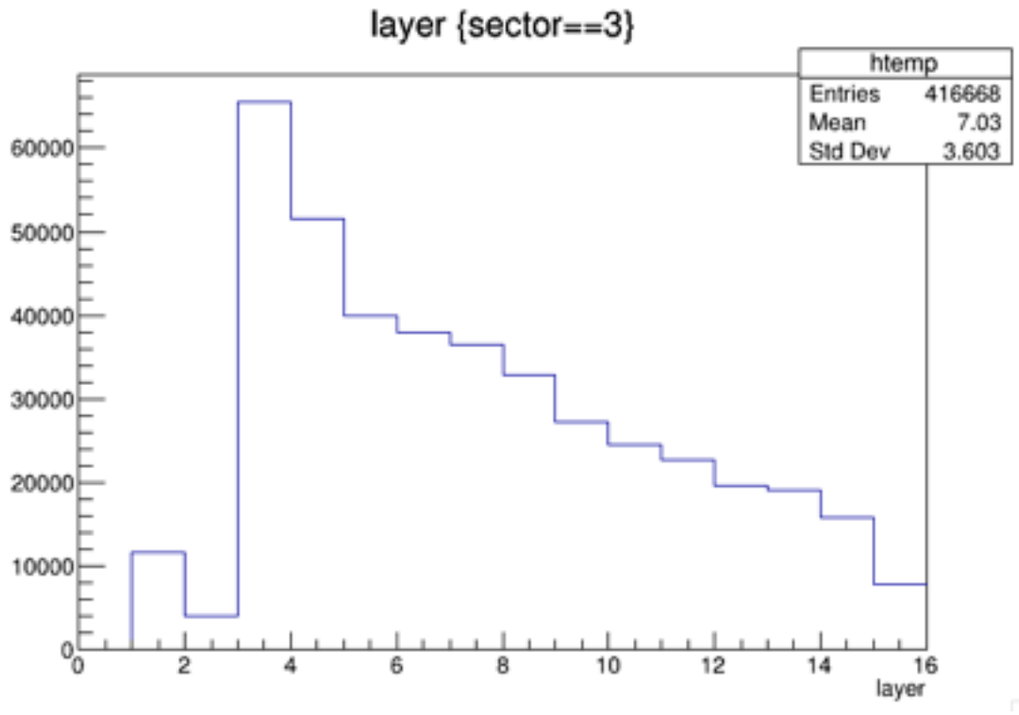
Layer#8

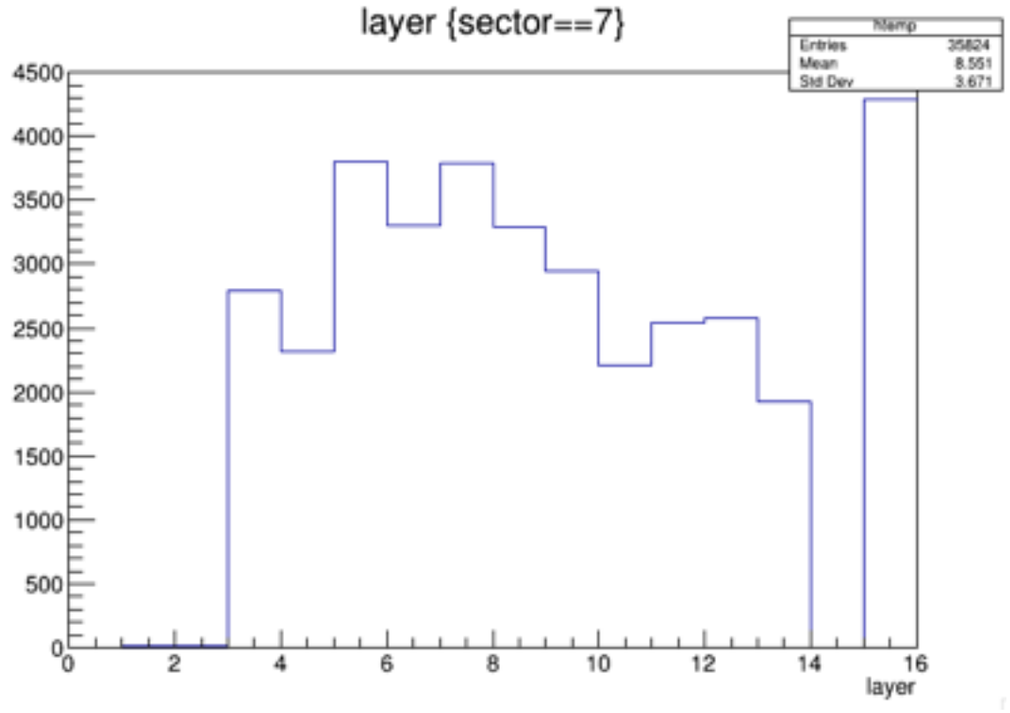
BF6

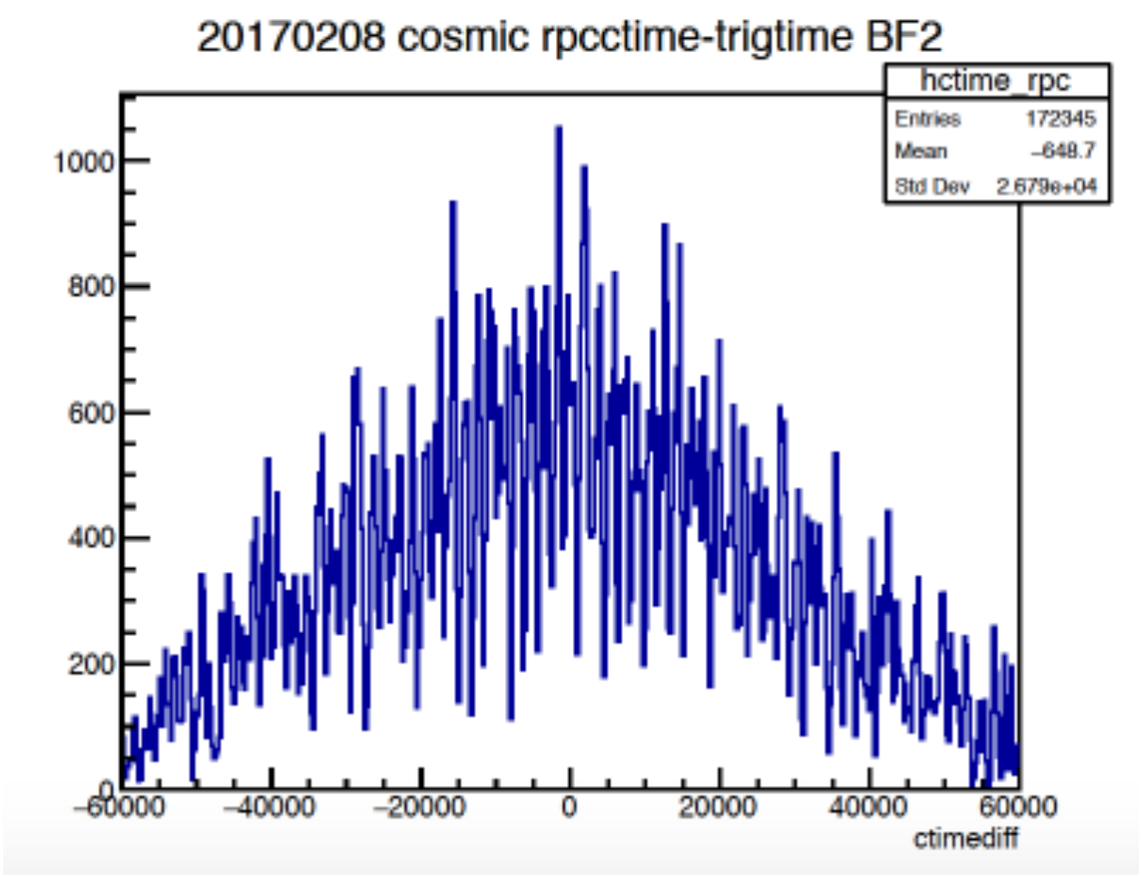
Layer#14

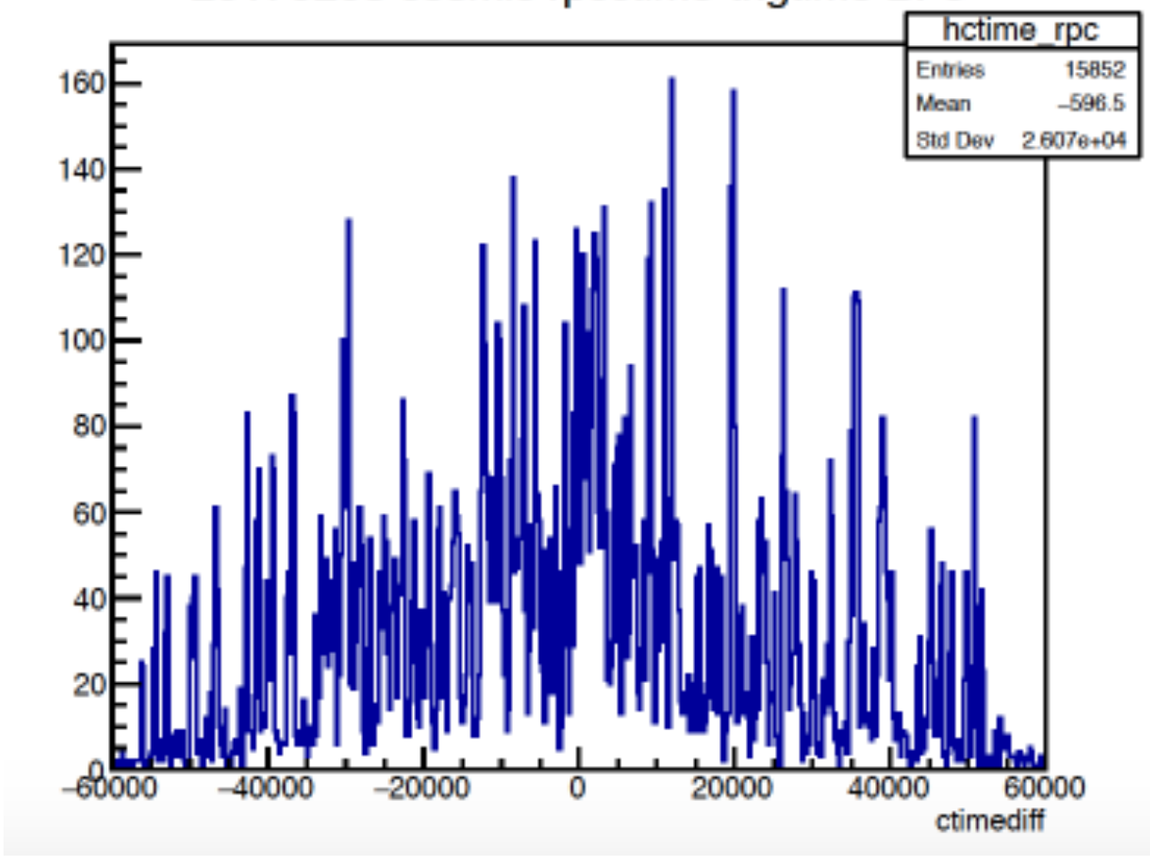


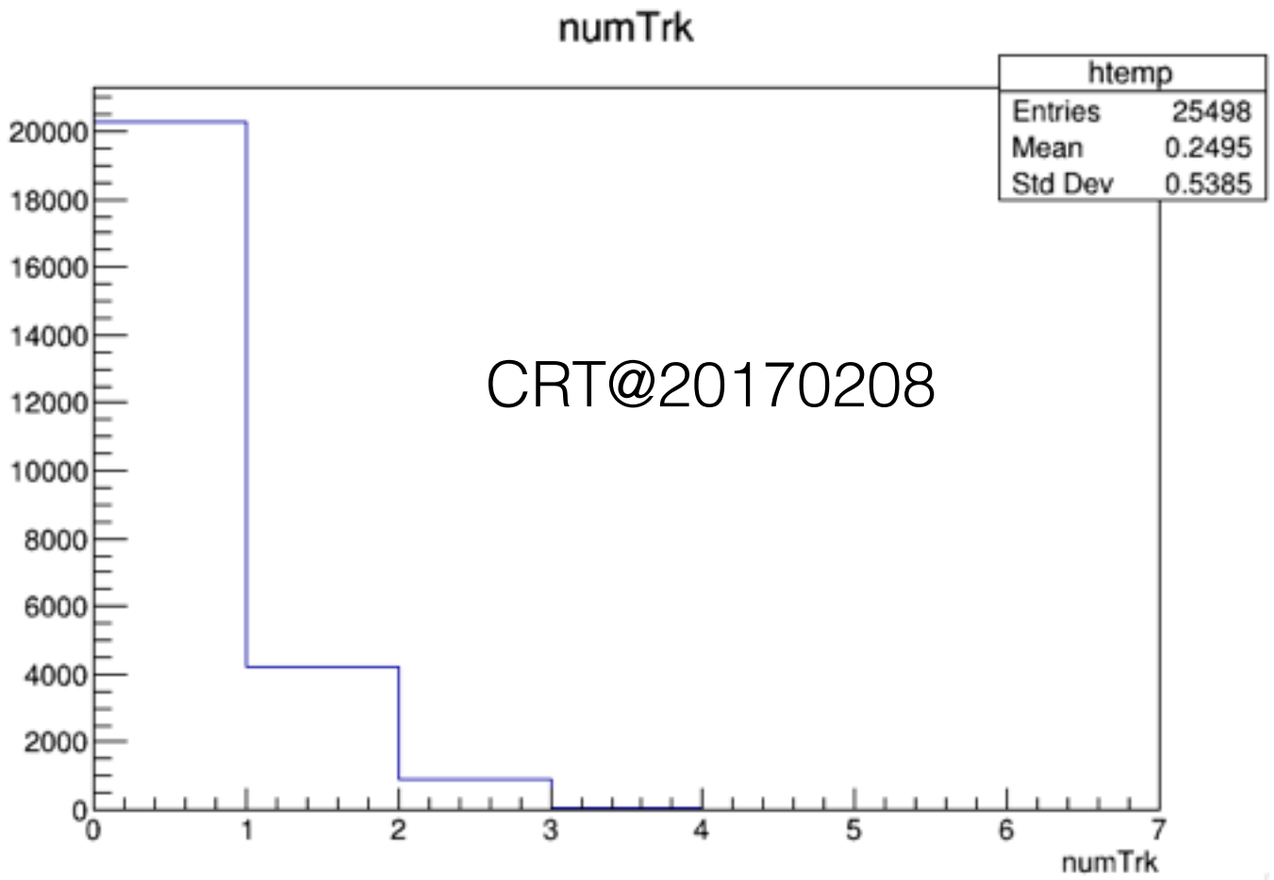






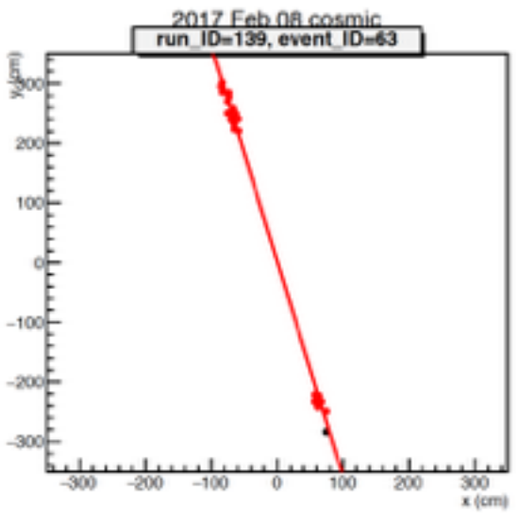

20170208 cosmic rpcctime-trigtime BF2
hctime_rpc
Entries 172345
Mean −648.7
Std Dev 2.679e+04
1000
800
600
400
200
0
−60000
−40000
−20000
0
20000
40000
60000
ctimediff

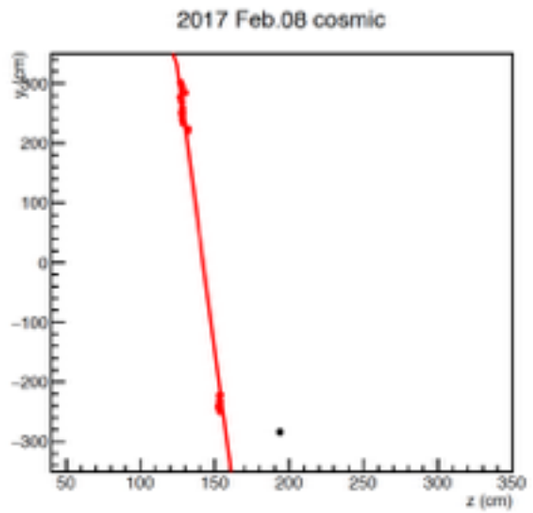

20170208 cosmic rpcctime-trigtime BF6
hctime_rpc
Entries 15852
Mean −596.5
Std Dev 2.607e+04
160
140
120
100
80
60
40
20
0
−60000
−40000
−20000
0
20000
40000
60000
ctimediff



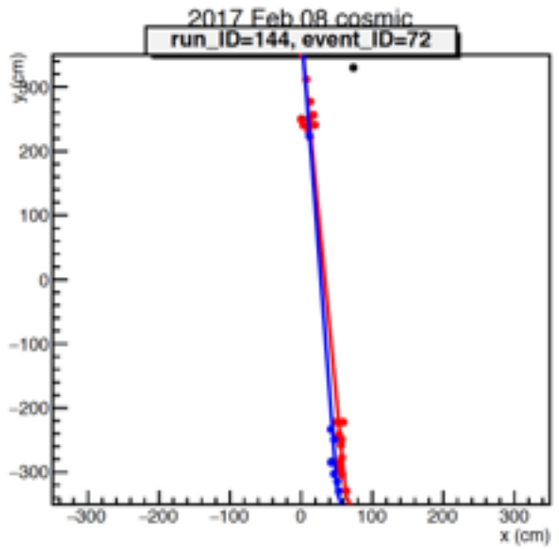
- 5215/25498, ~20% events have fitted tracks.
- ~1.4% events have track going through both BF2 and BF6.

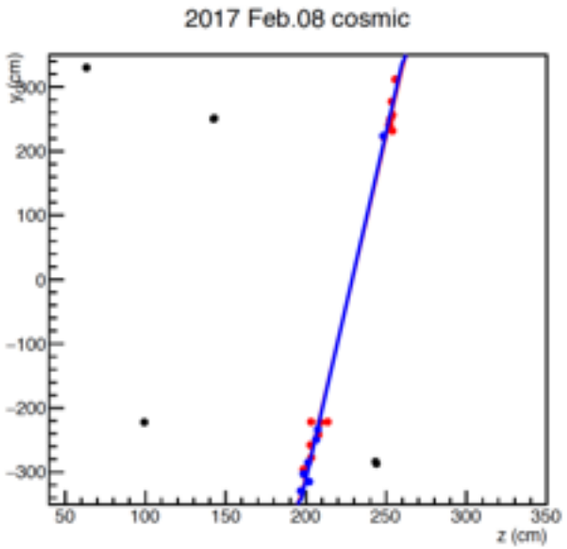
Some typical events



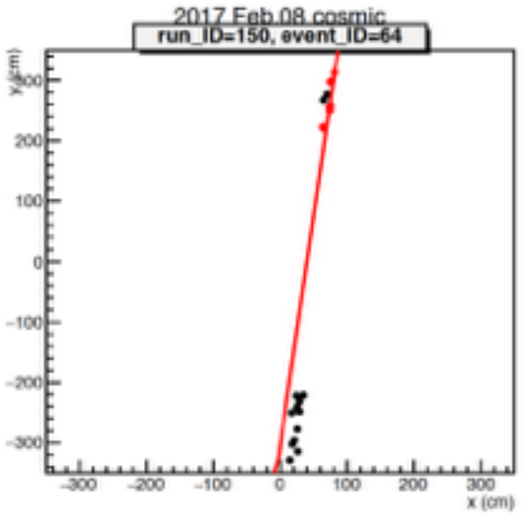


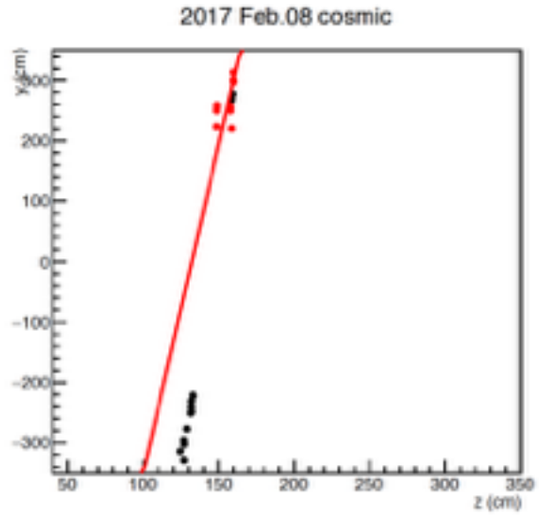
- Hits from BF2 and BF6 are fitted reasonably.



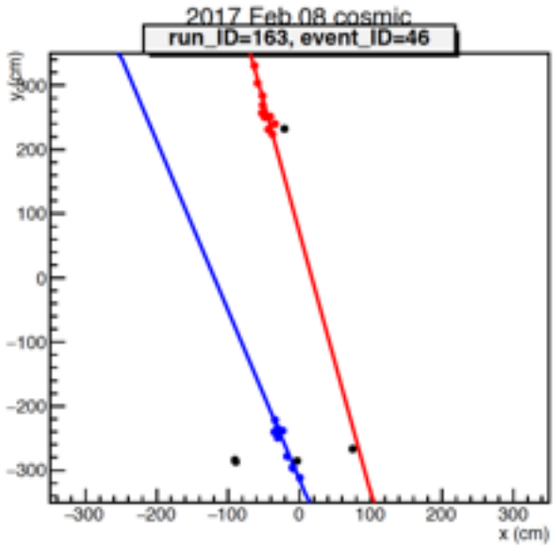


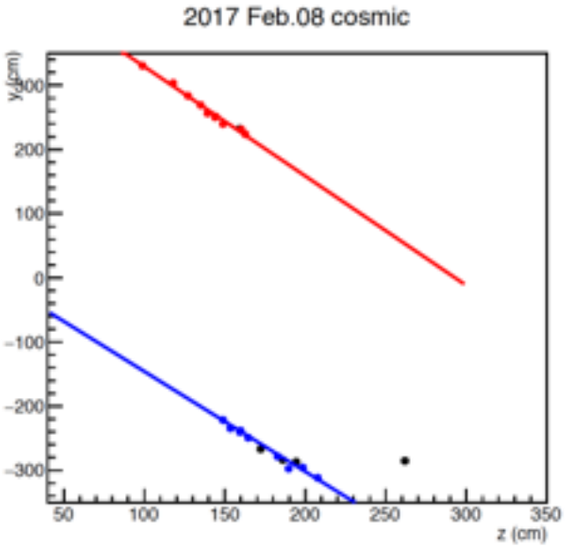
- seems should be one track, but two tracks are found.





- track fitting is not perfect.





- two tracks show in one event.

Efficiency

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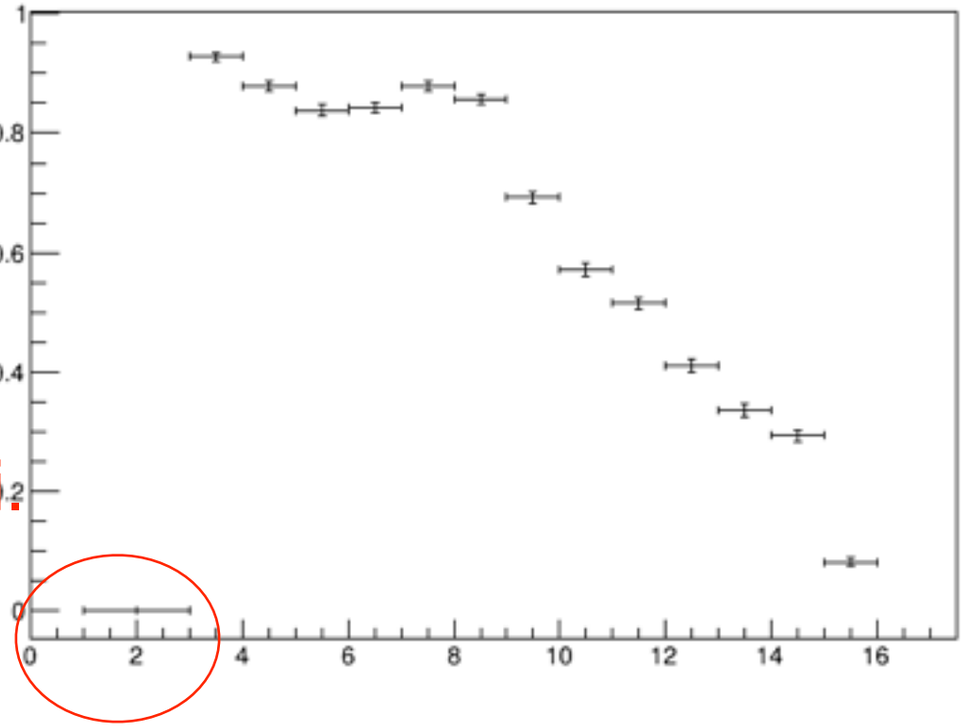
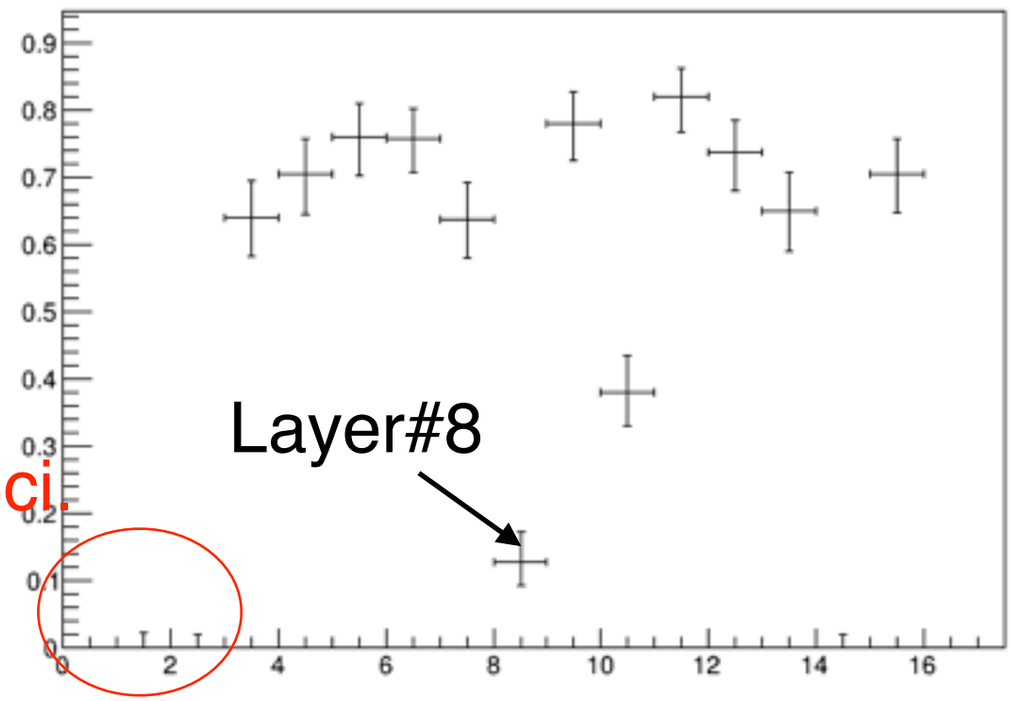
BF2 isForward1_Sector3



BF6 isForward1_Sector7



- Track finding is performed within each sector. The layer #L 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 #L is estimated. We count the number Ntotal.
- If any reconstructed 2D hit on layer #L satisfies (distance < 5 sigma), it is assumed being associated with the track. We count Npass.
- Efficiency = Npass/Ntotal.

- There seems a pattern in layer#8 z-plane of BF6. (page.2)

- ~20% events have tracks. We see tracks going through BF2 and BF6, the rate of this kind of events is ~1.4%.

- Efficiency is estimated roughly based on KLM-stand-alone tracks. Which also gives the hint that the scintillator vs. RPC lookback windows need to be optimized.

- One question: The hit rate of BF2 RPC decrease seriously with layer number. So does the RPC efficiency.