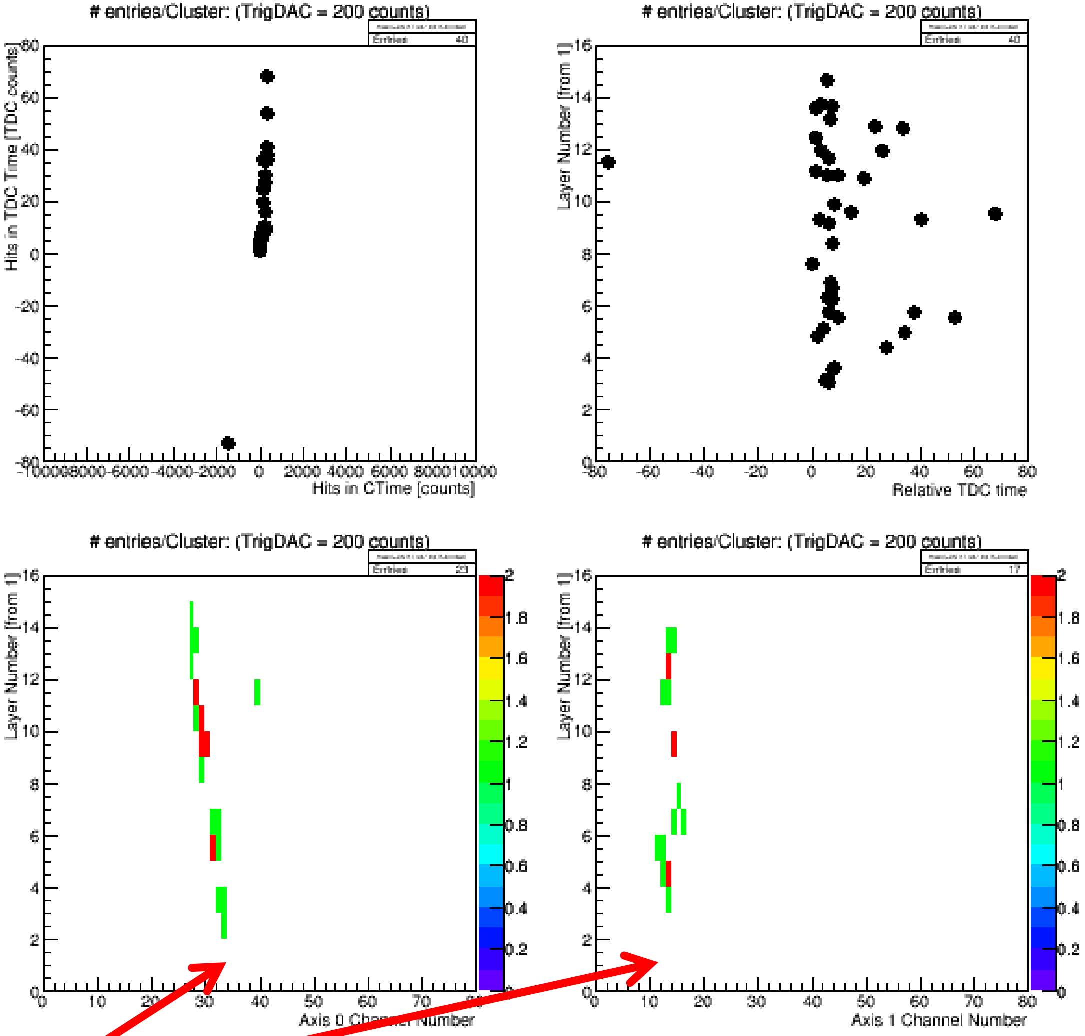
Scintillator Trigger Efficiency Update

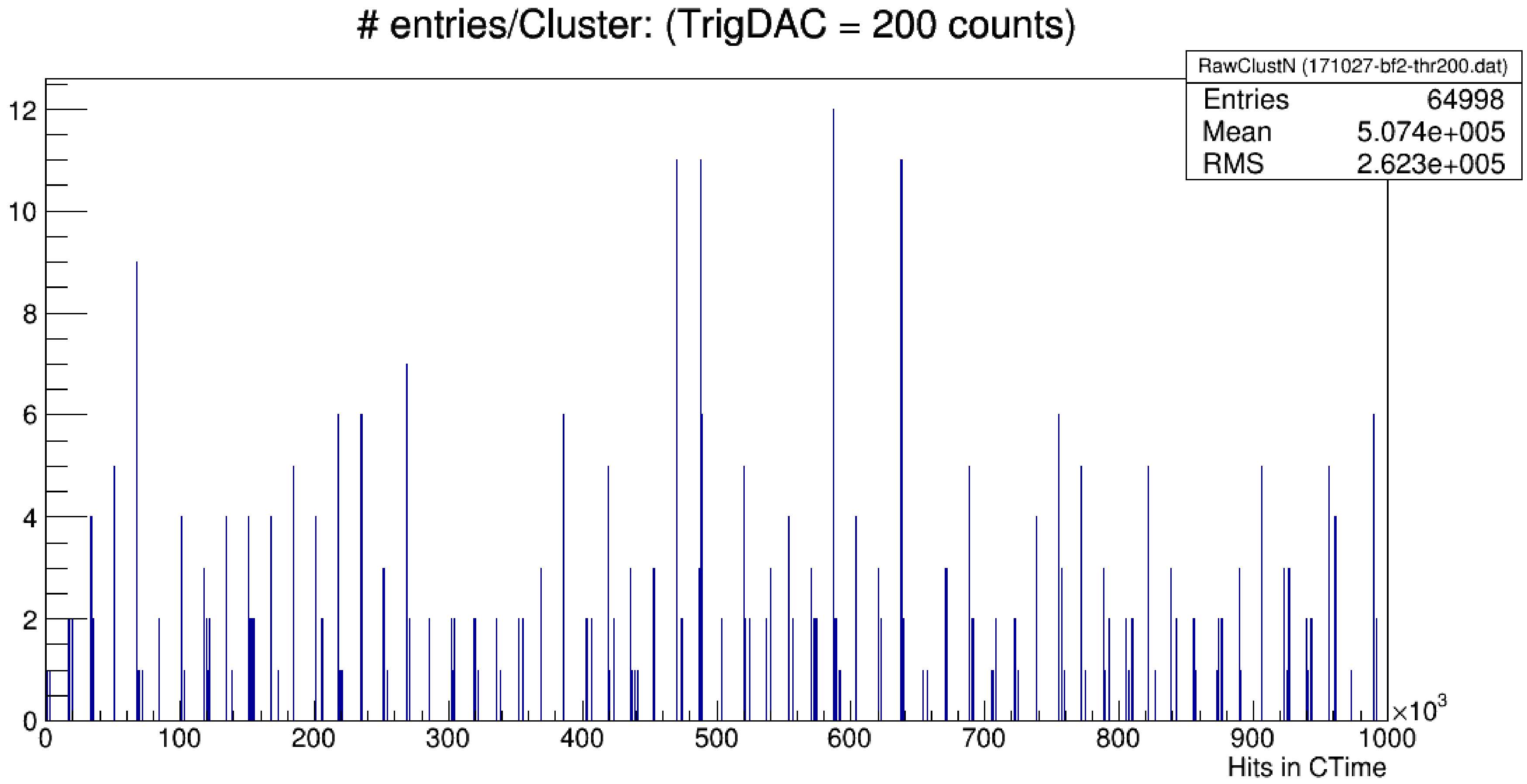


???

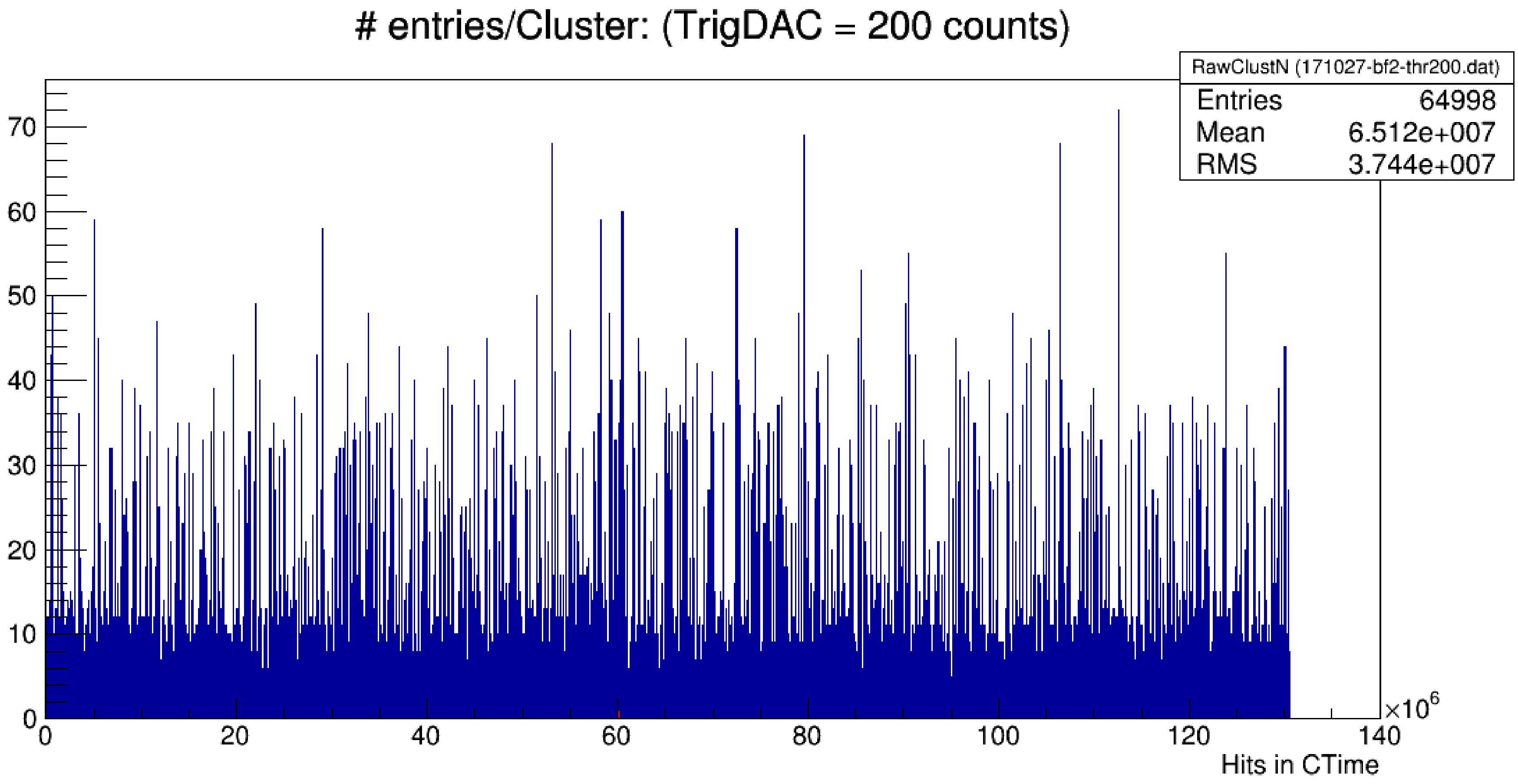
G.S. Varner

30oct2017

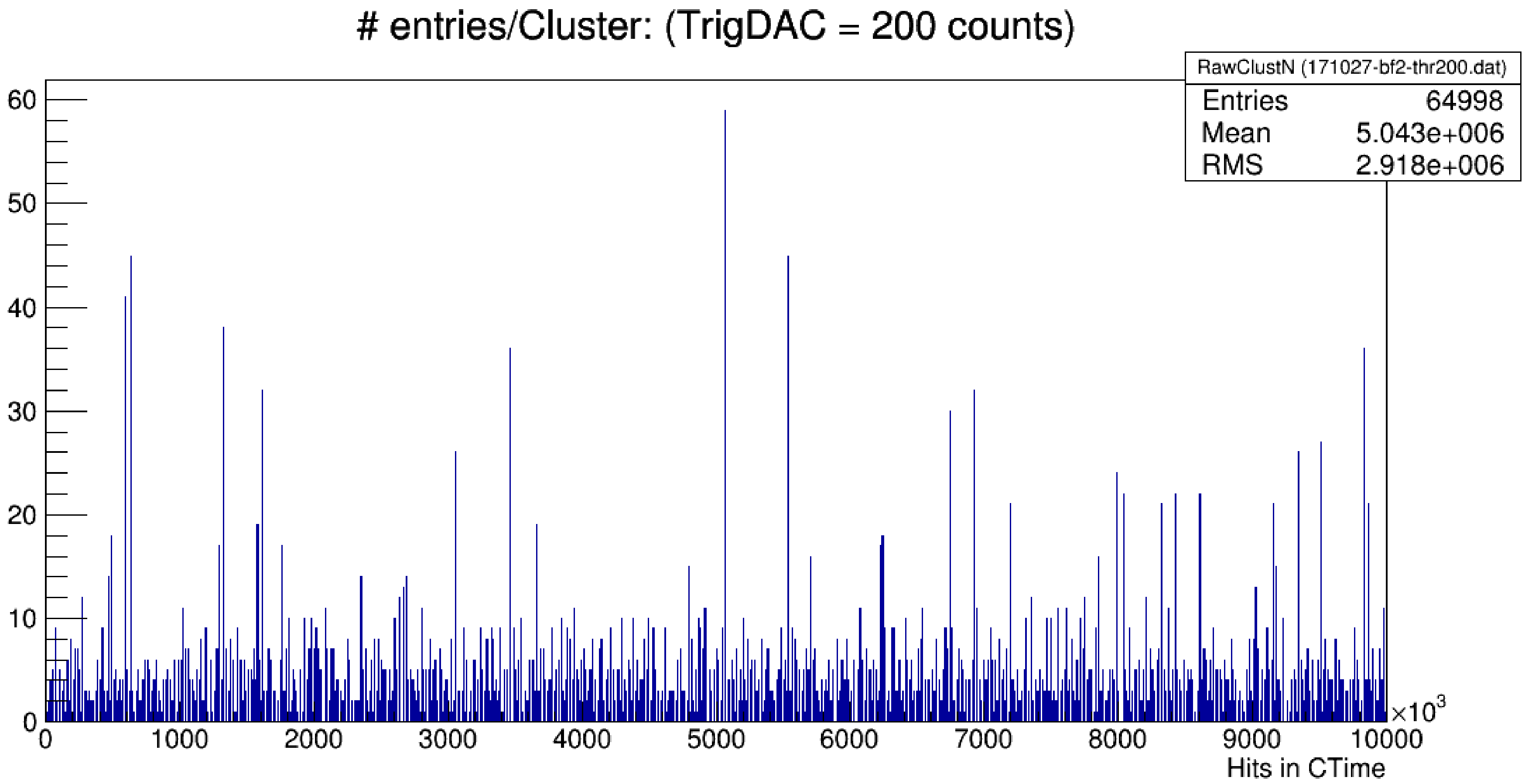
Previous Clustering Failed (periodic structure)



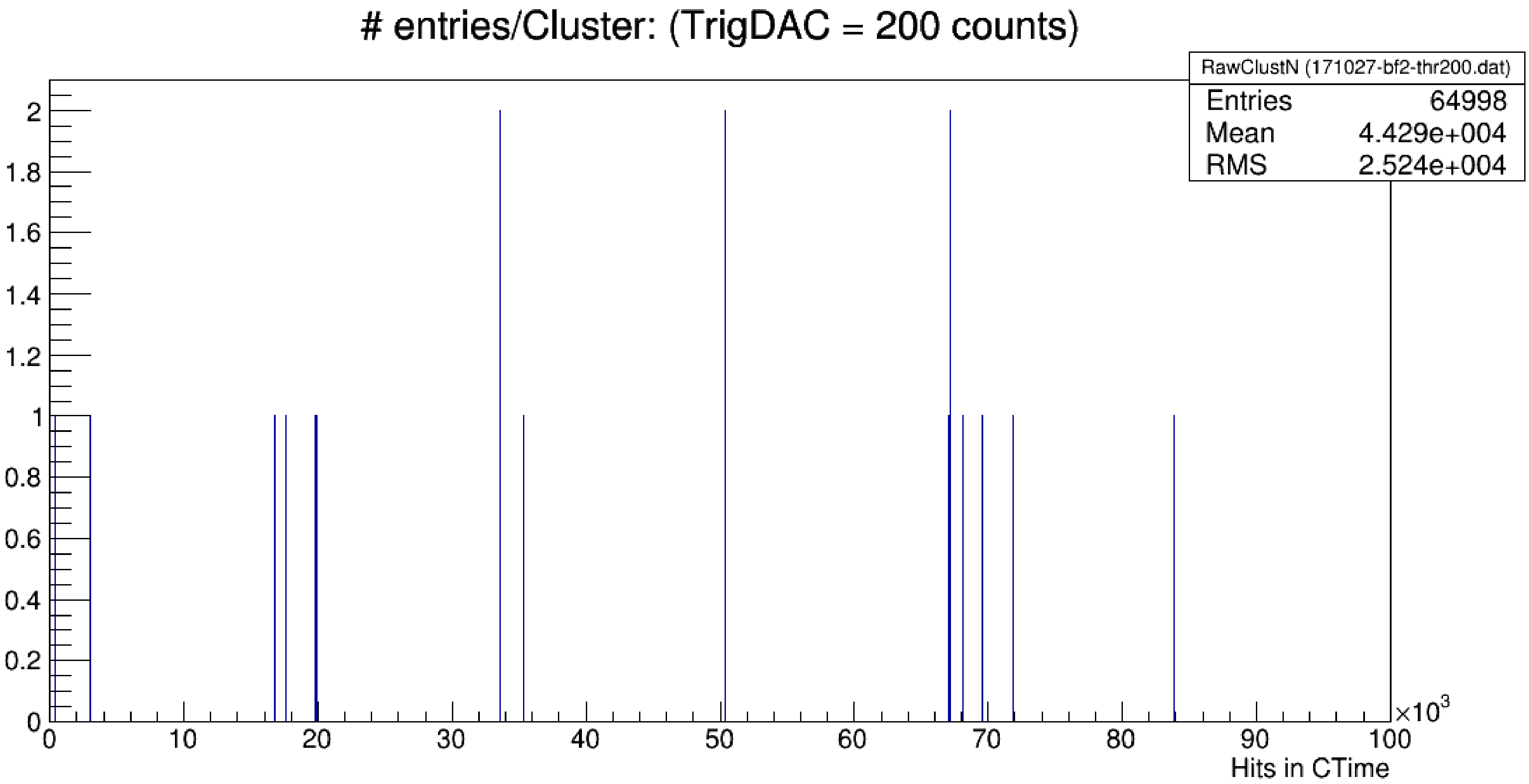
Full 0.1 second live time (64k hits)



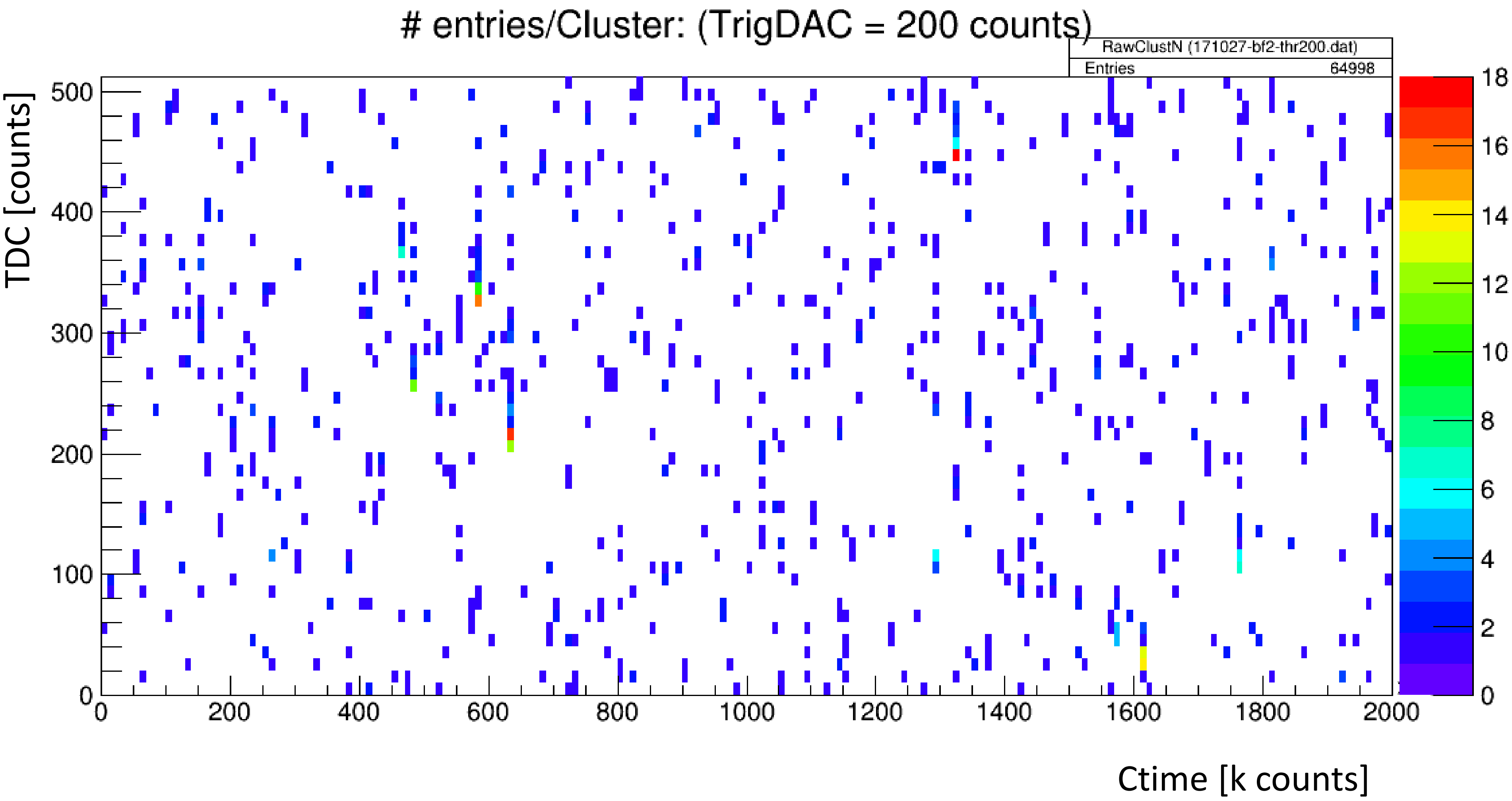
10M Ctime interval (~10ms)



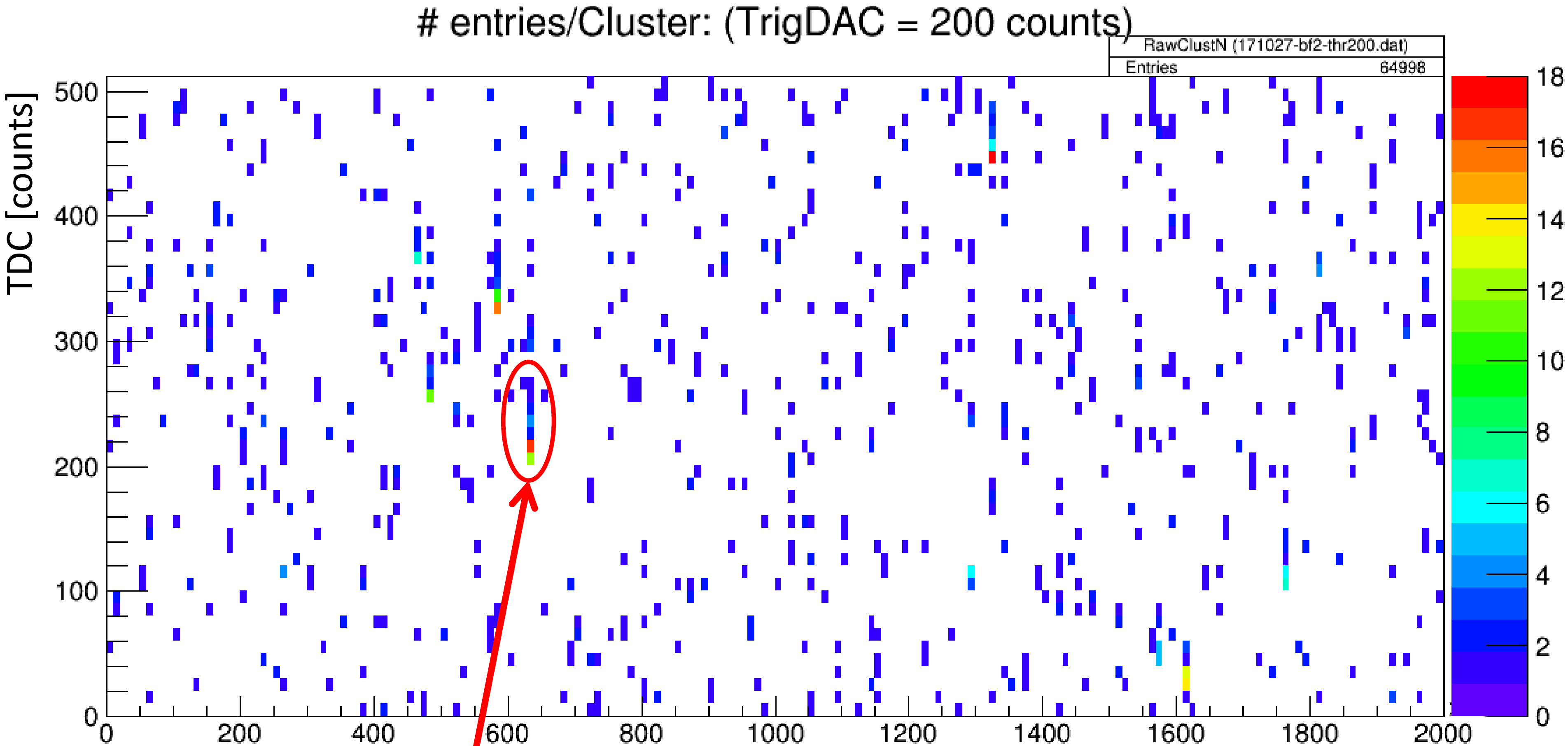
100k Ctime interval
(can't identify bachelor hits)



TDC % Ctime correlations



TDC % Ctime correlations

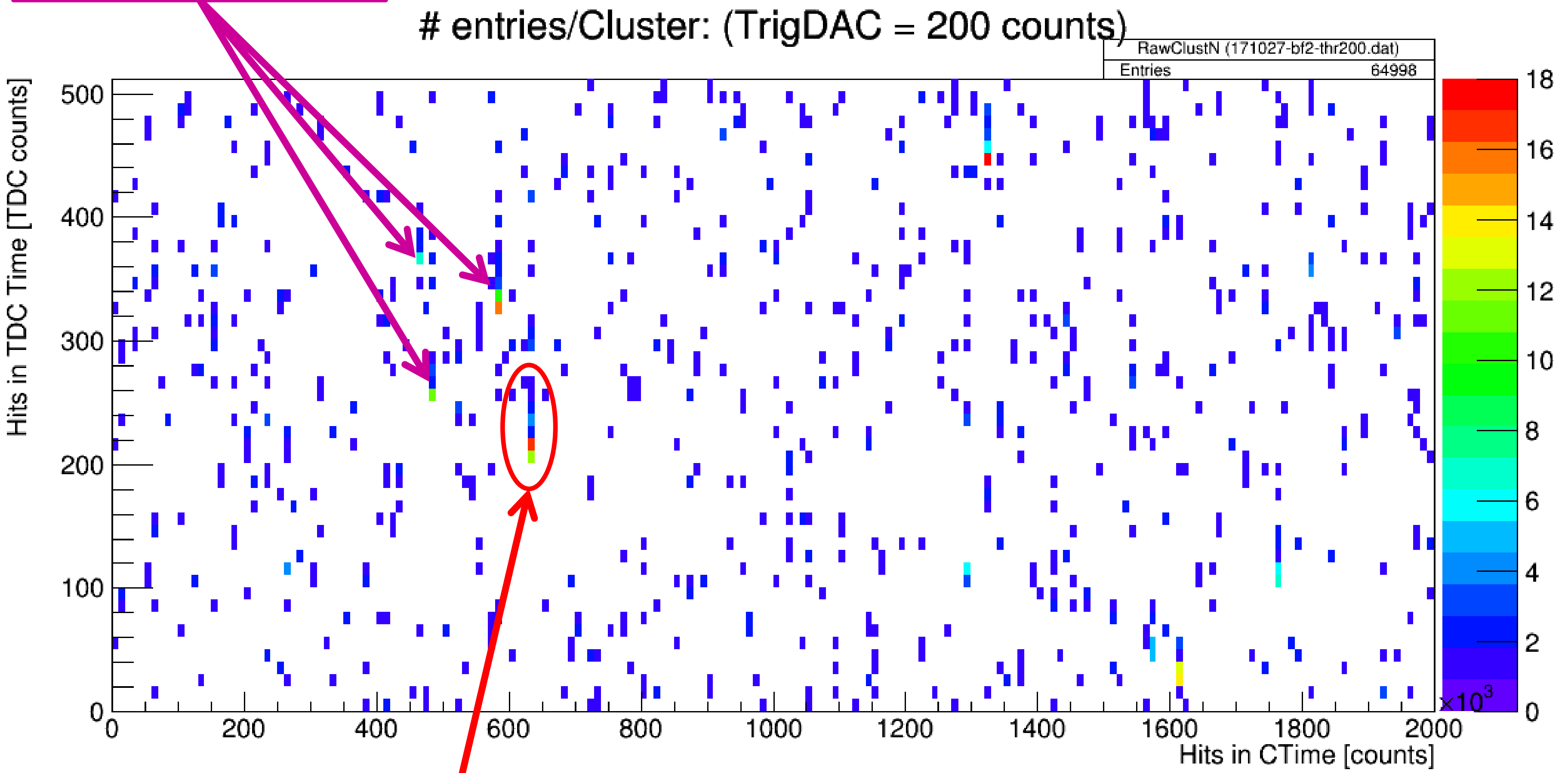


Clear Event Cluster

Ctime [k counts]

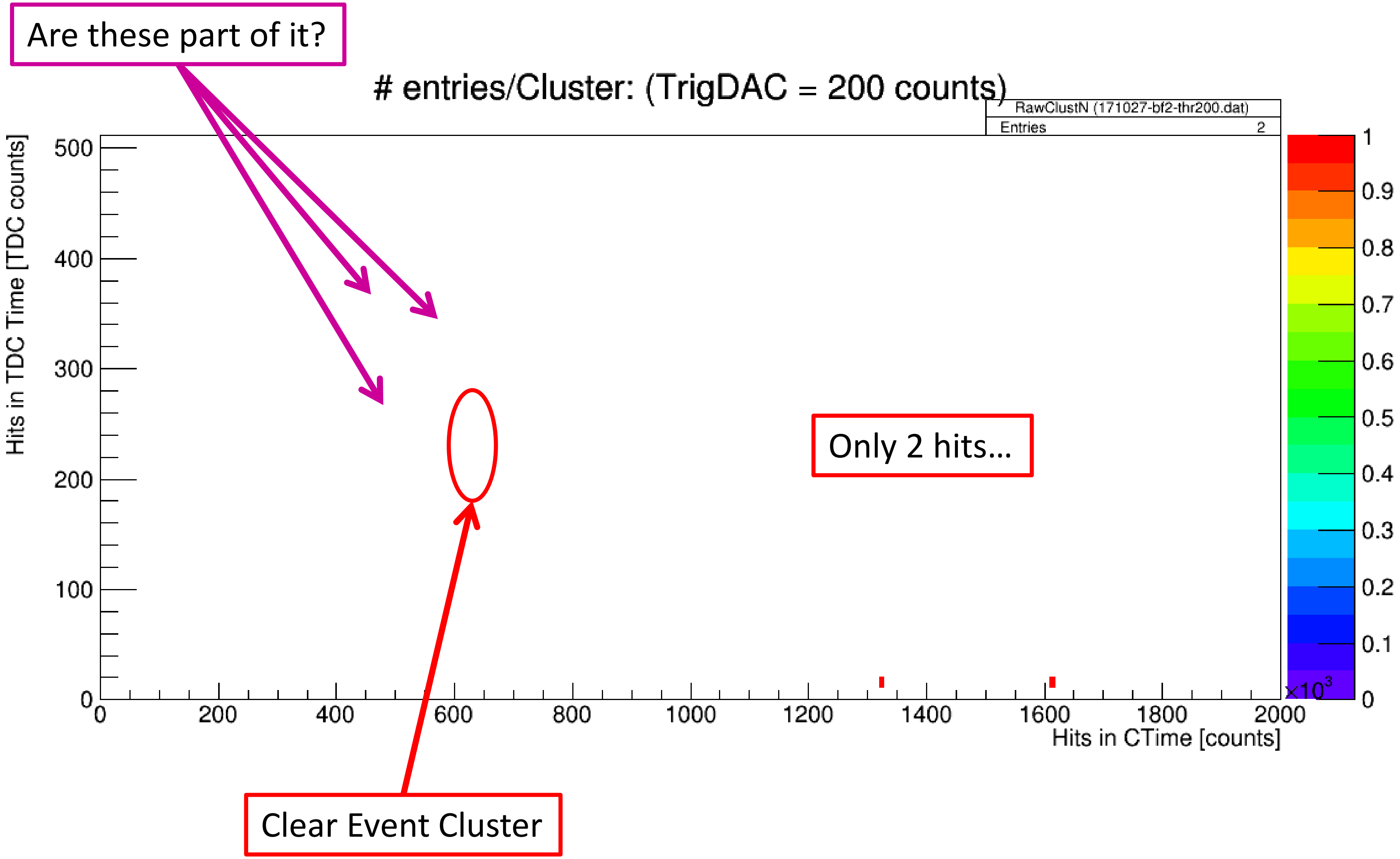
TDC % Ctime correlations

Are these part of it?



Clear Event Cluster

Scintillator Only



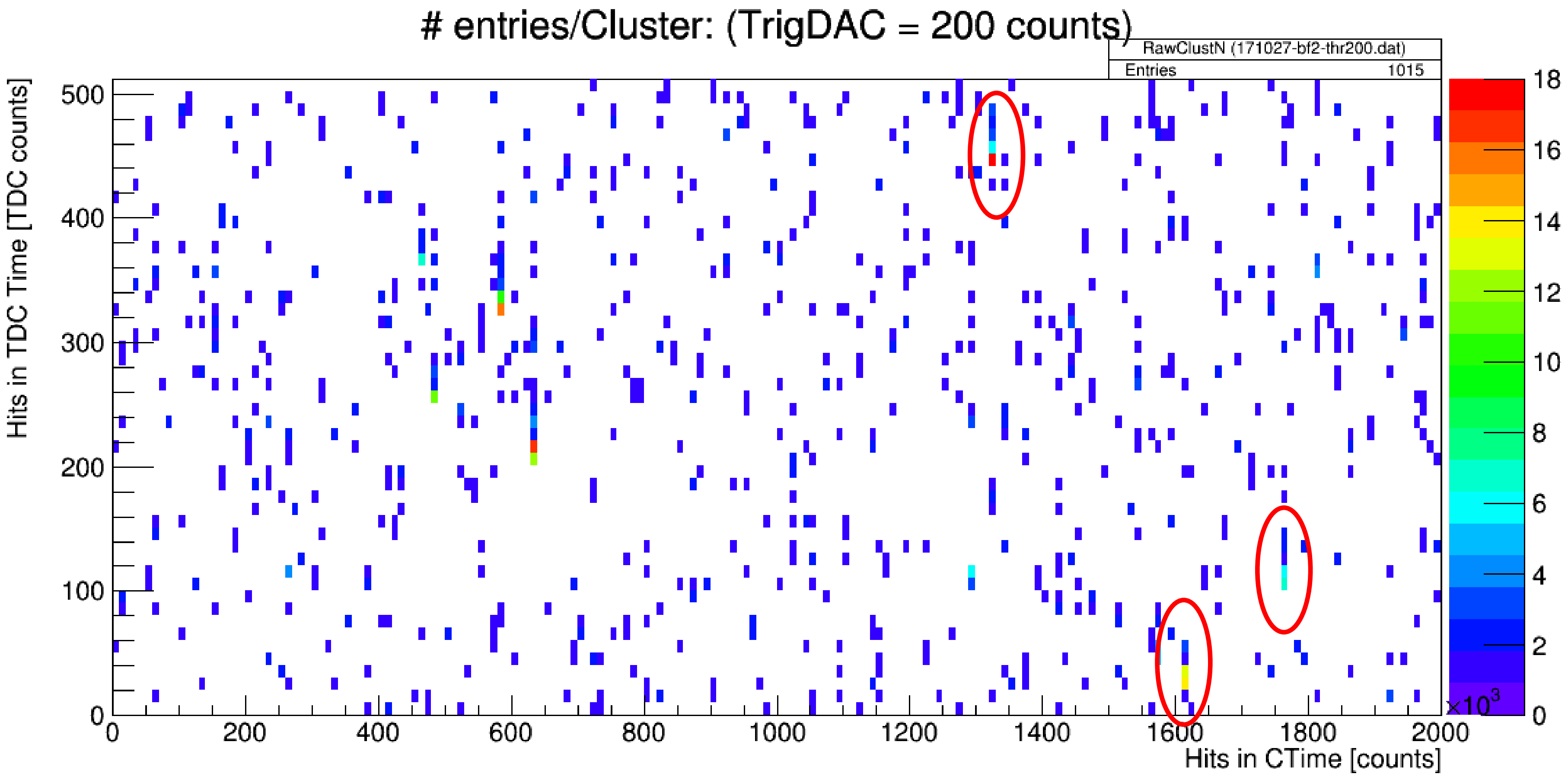
Are these part of it?

Only 2 hits…

Clear Event Cluster

All layers

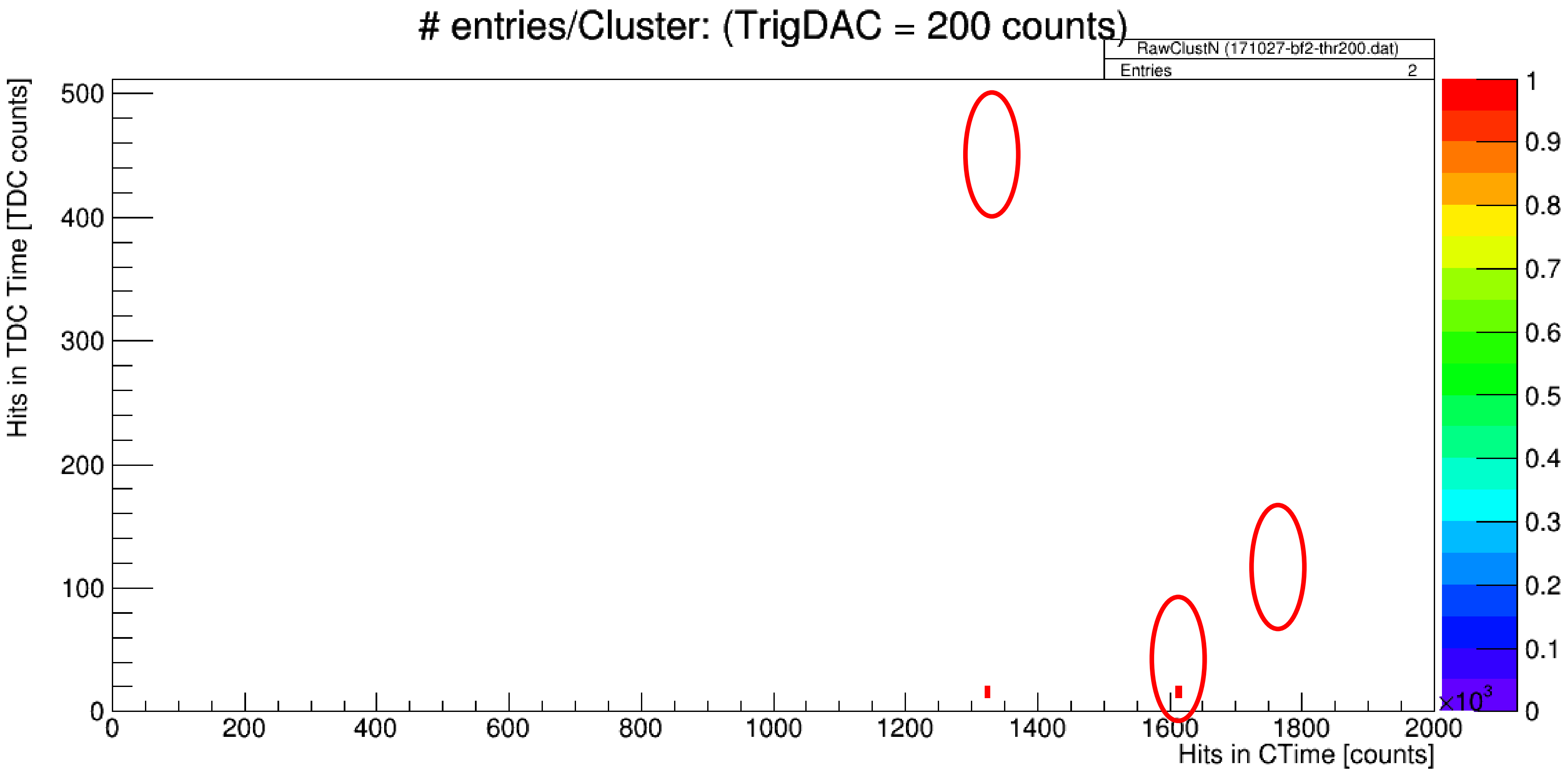
Stats now correct (~1.7% of run)



Additional Cluster candidates

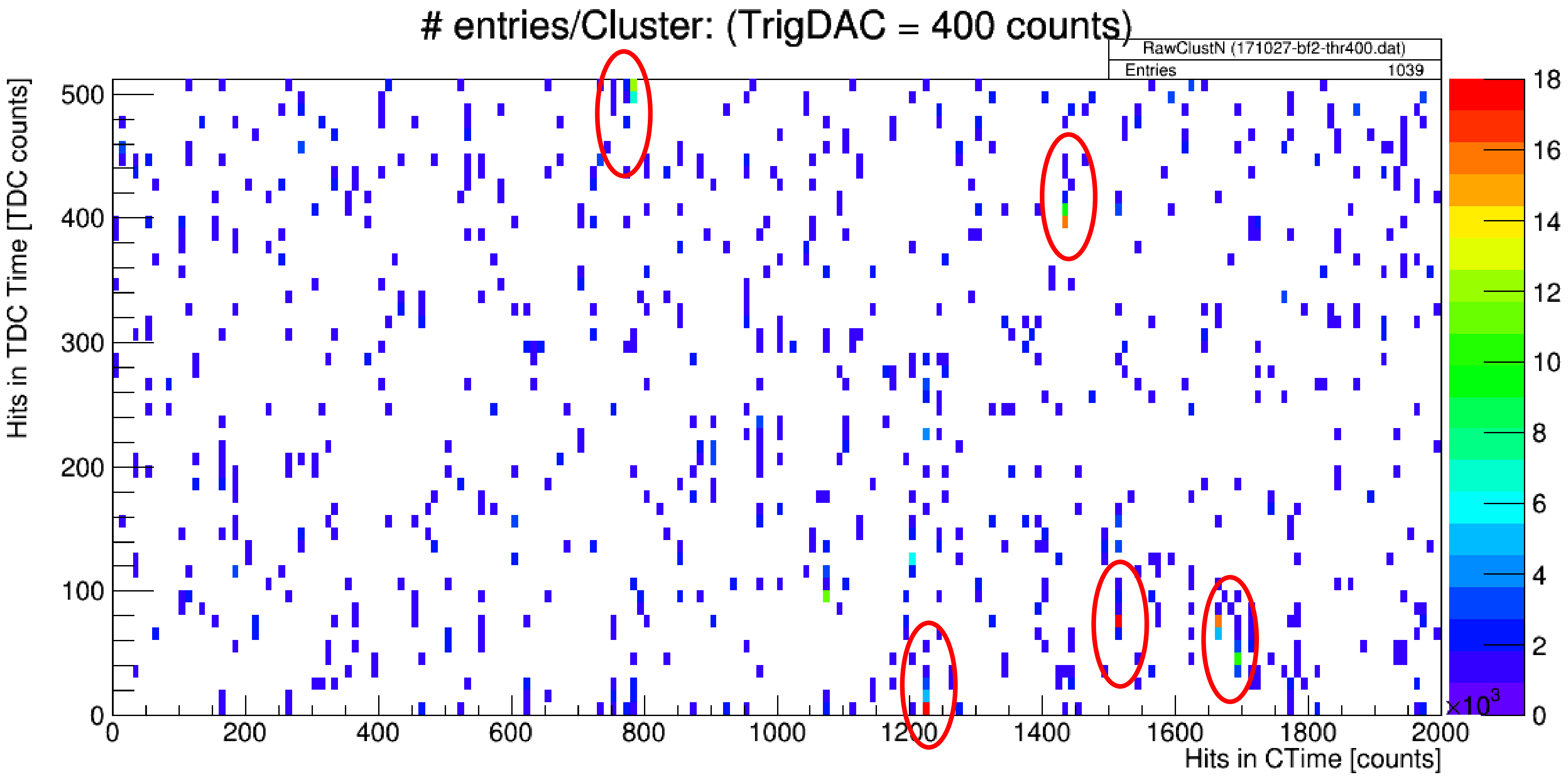
Scint only

Stats now correct (~1.7% of run)



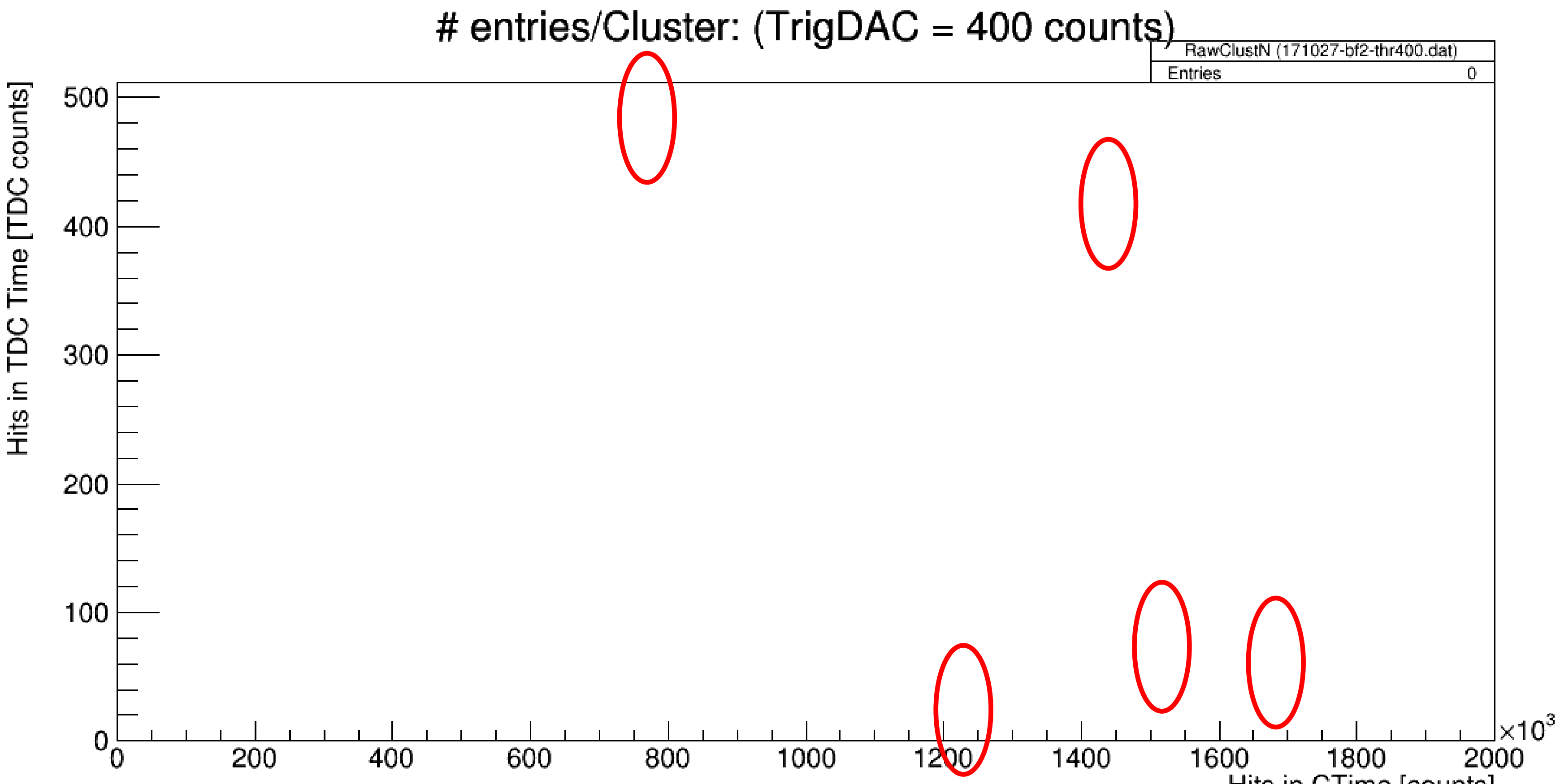
Additional Cluster candidates

All layers (highest threshold)



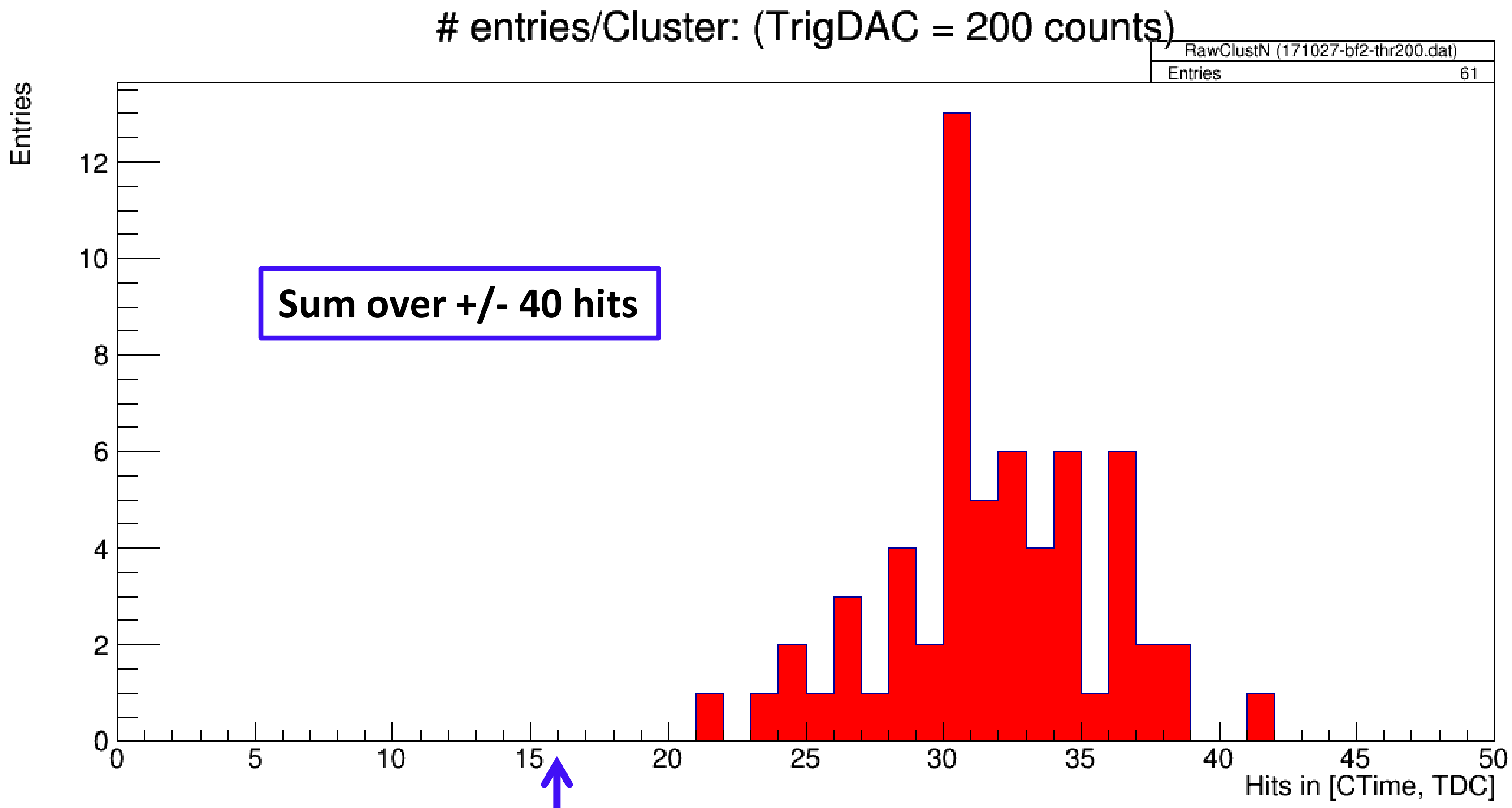
Cluster candidates?

Scint only (highest threshold)



No Events!!!

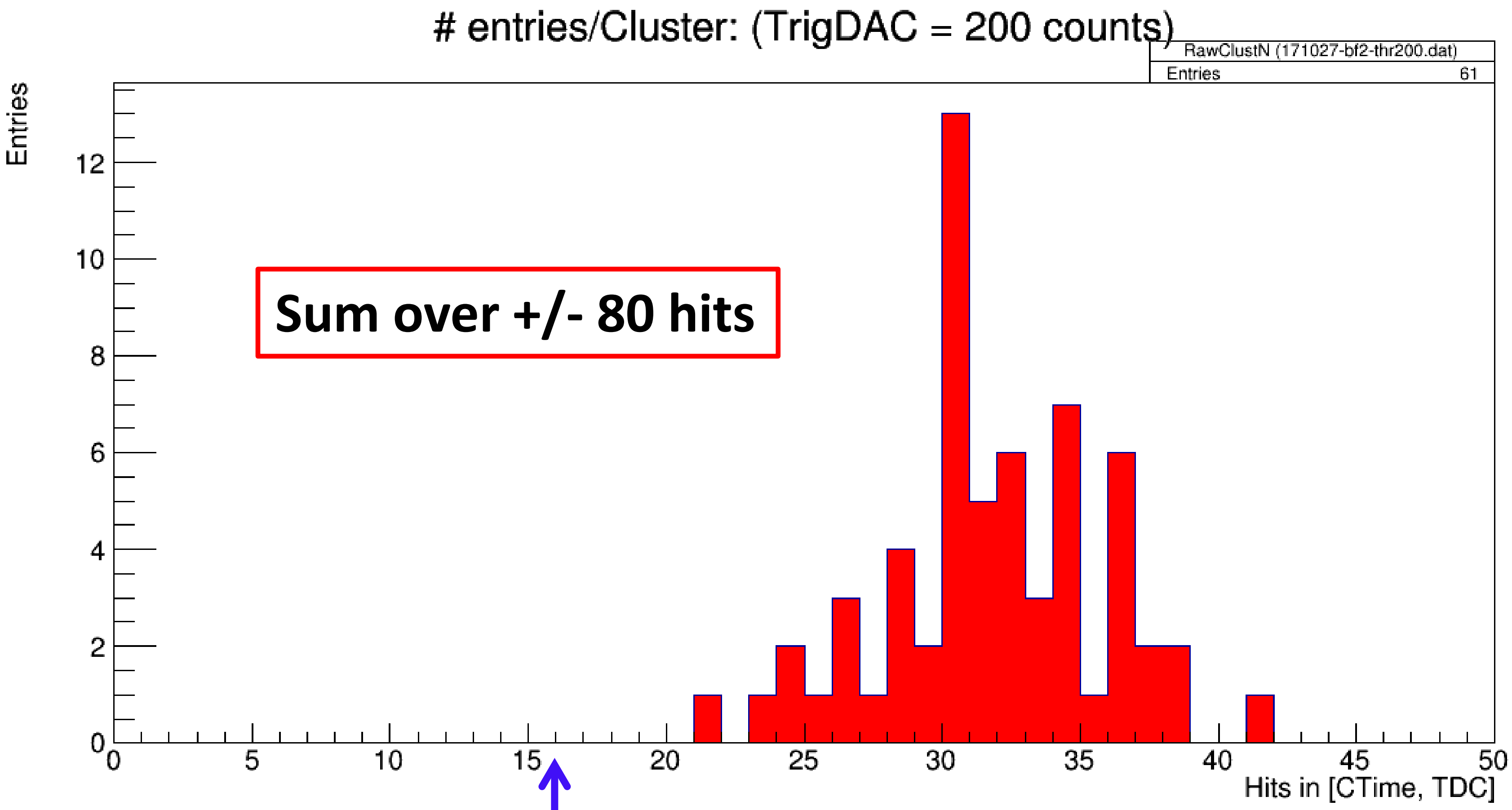
New Cluster Algorithm
|TDC<20| & |Ctime<2000|



Sum over +/- 40 hits

Cluster identification cut

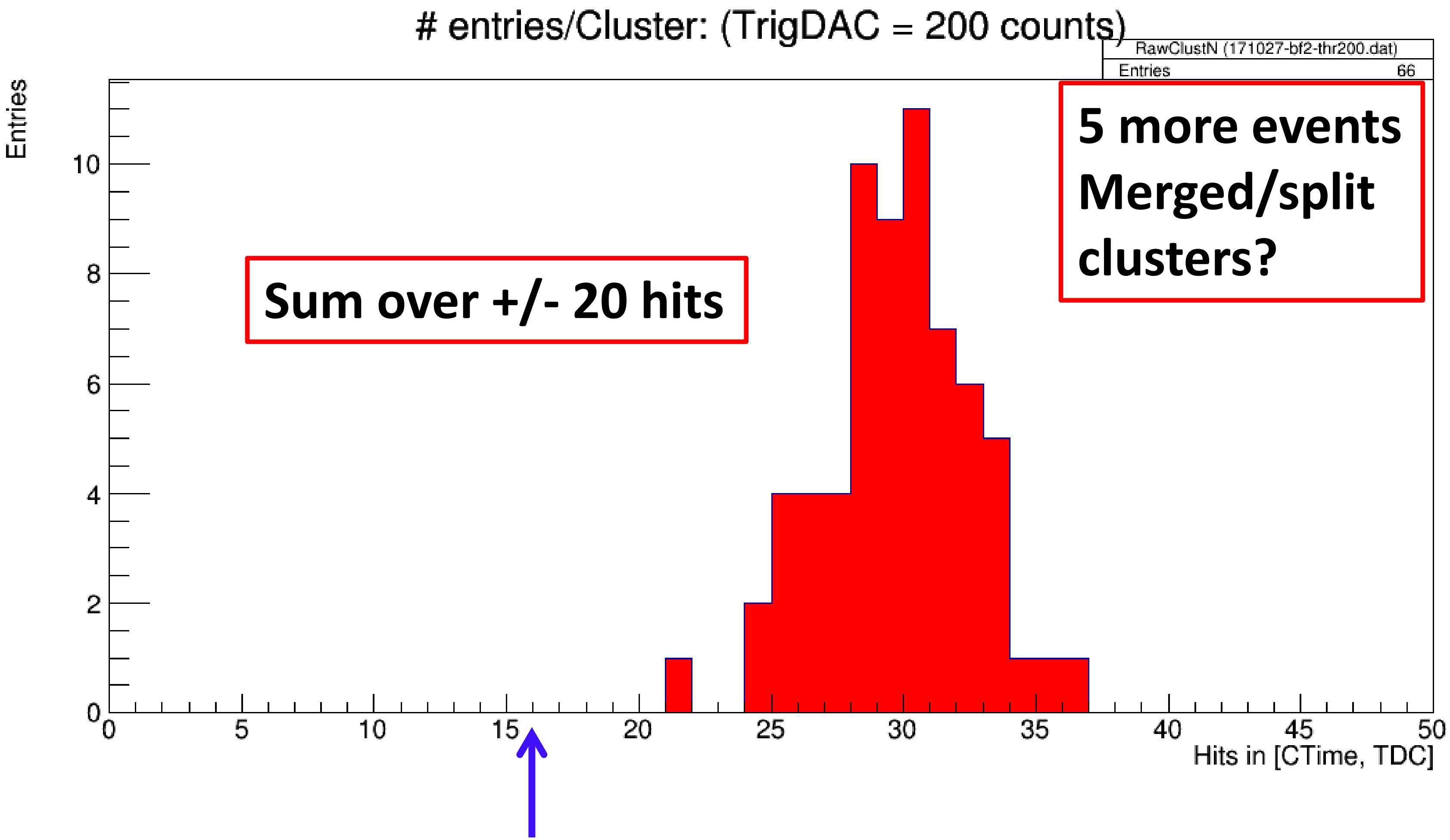
New Cluster Algorithm
|TDC<20| & |Ctime<2000|



Sum over +/- 80 hits

Cluster identification cut

New Cluster Algorithm
|TDC<20| & |Ctime<2000|

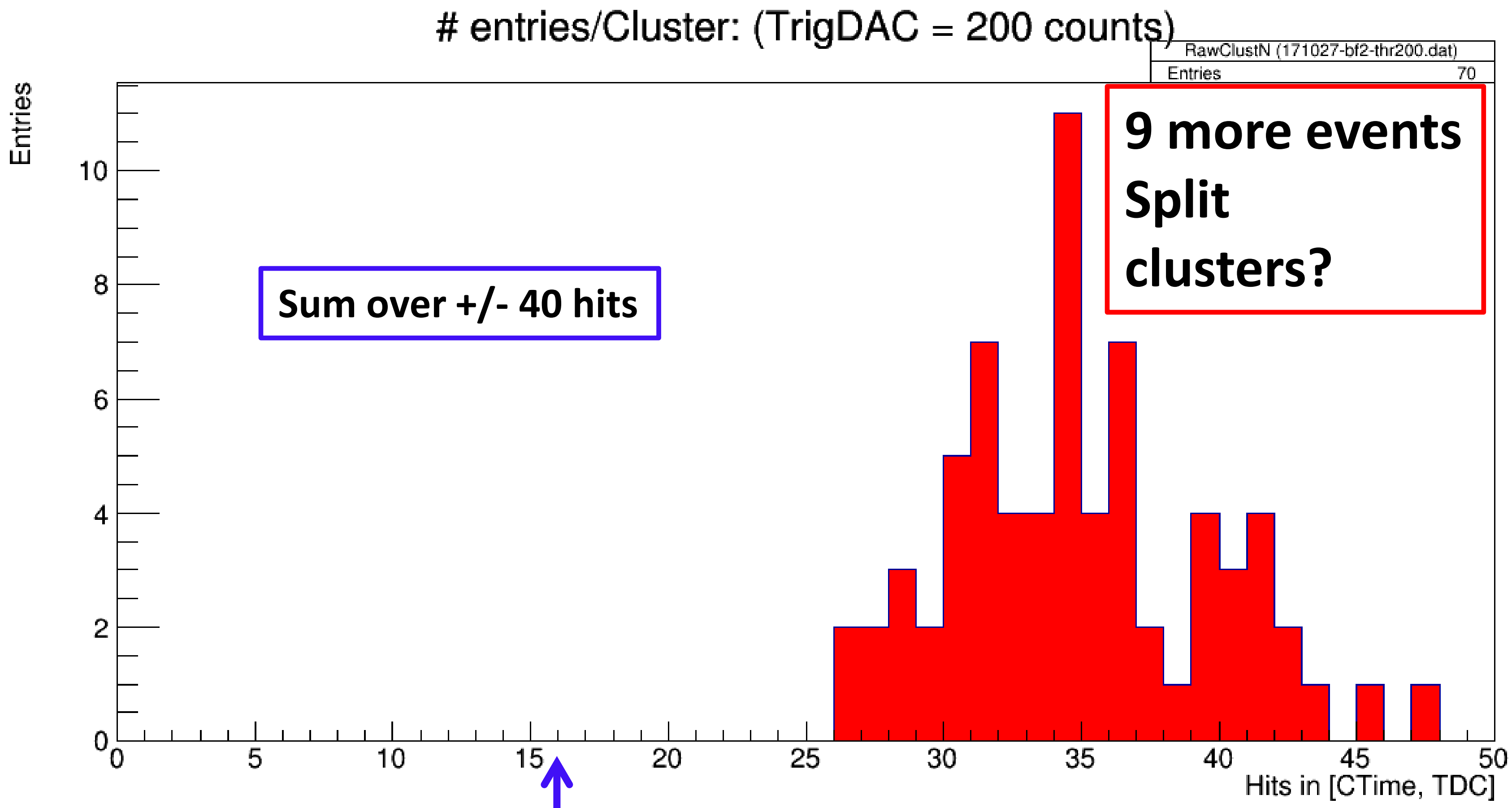


Sum over +/- 20 hits

5 more events Merged/split clusters?

Cluster identification cut

New Cluster Algorithm
|TDC<40| & |Ctime<10000|

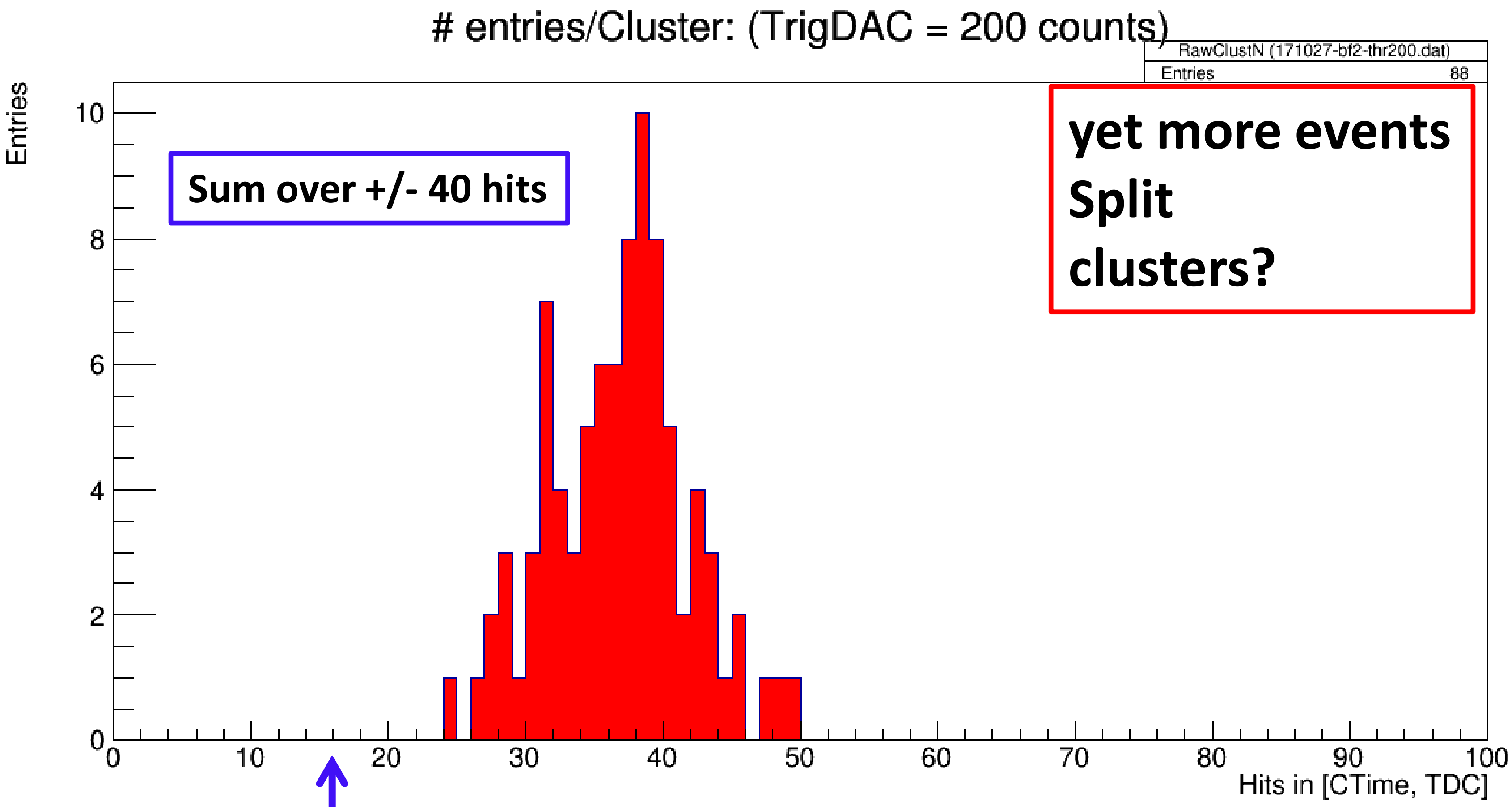


Sum over +/- 40 hits

9 more events Split clusters?

Cluster identification cut

New Cluster Algorithm
|TDC<40| & |Ctime<20000|



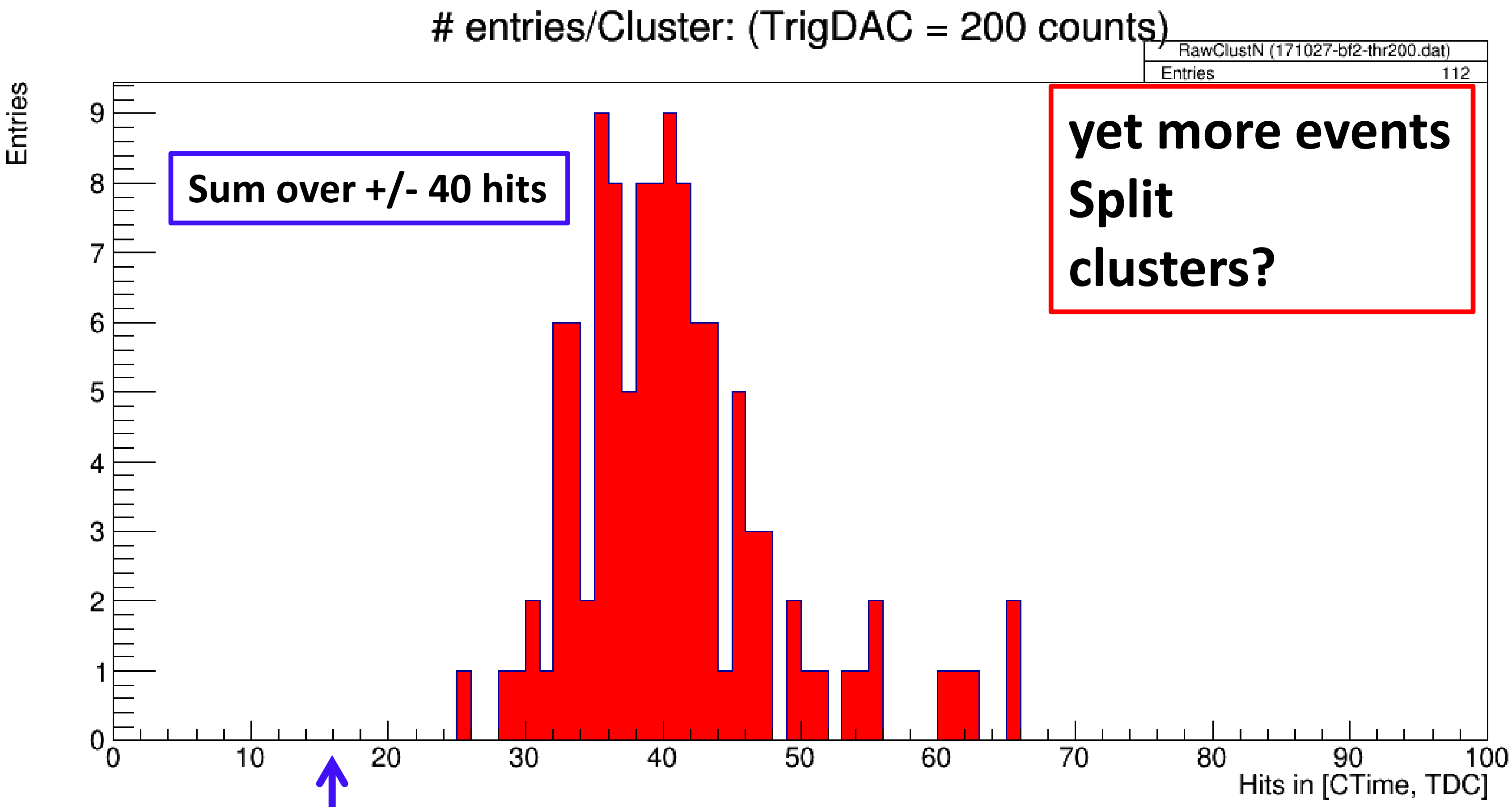
Sum over +/- 40 hits

yet more events Split clusters?

Cluster identification cut

New Cluster Algorithm

|TDC<80| & |Ctime<20000|



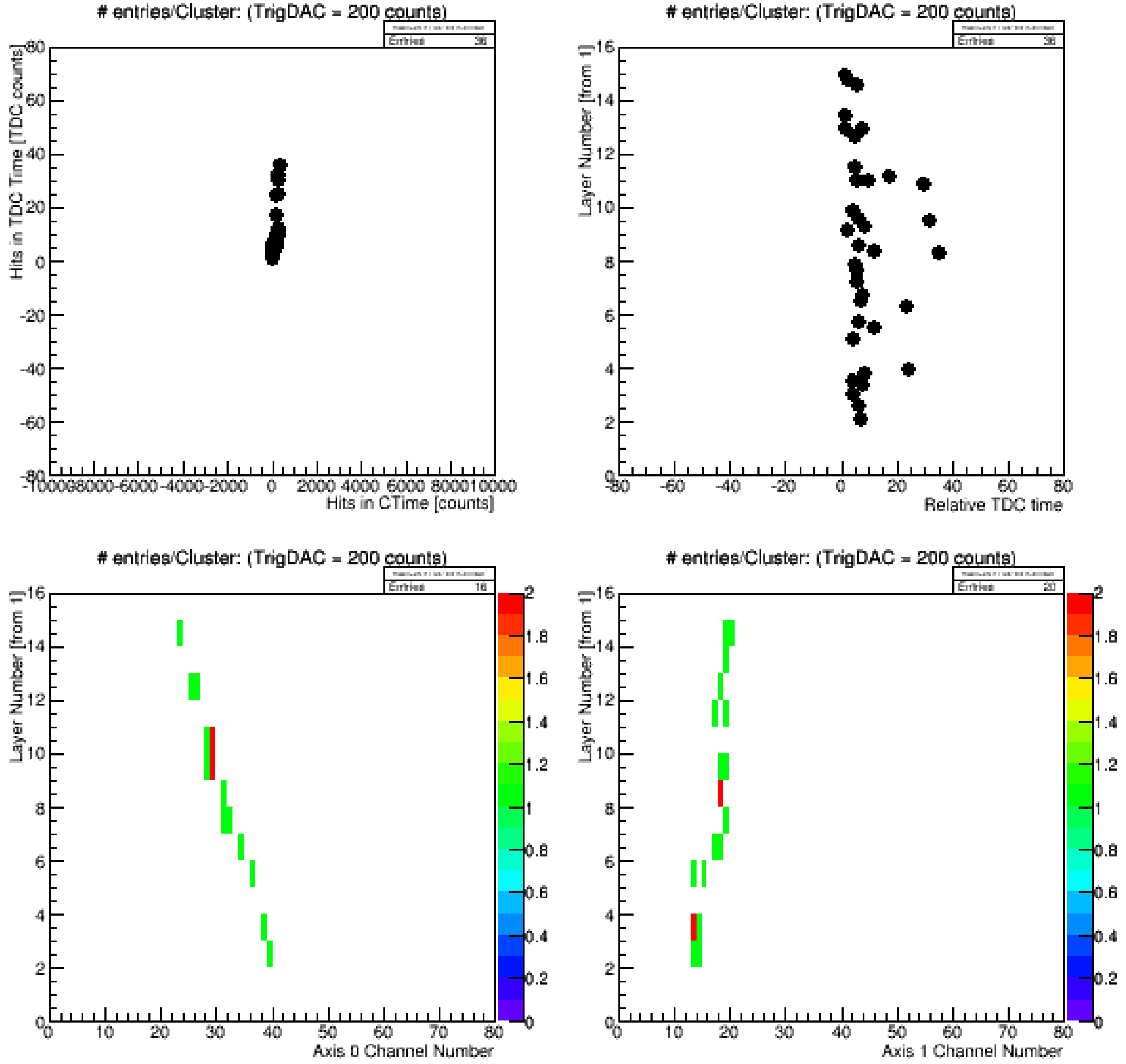
Sum over +/- 40 hits

yet more events
Split
clusters?

Cluster identification cut

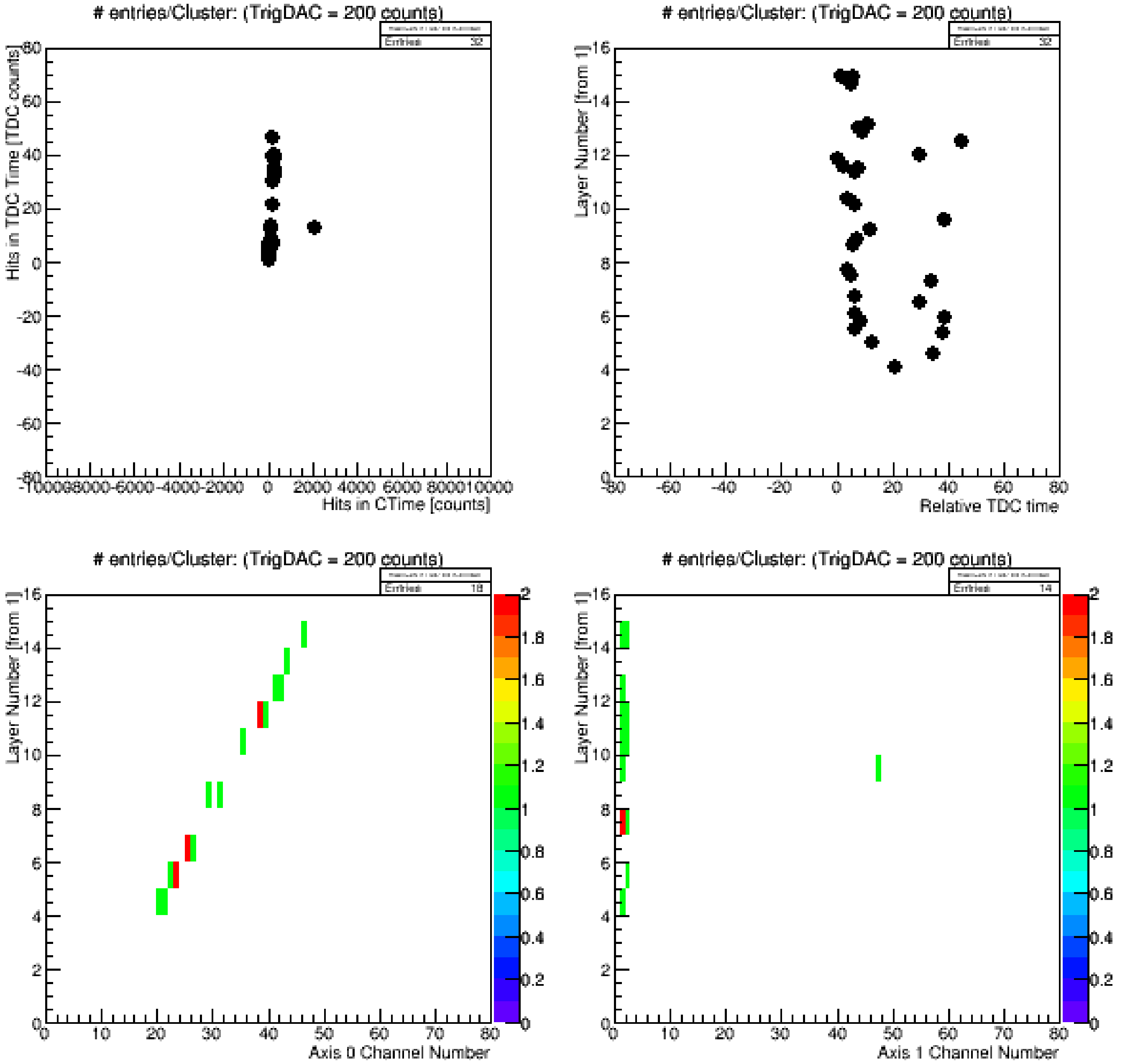
Need metric of actually checking the hits

Initial Event displays…



Can play animated gif to see all cluster events (note that now understand a bit better evolution of number of clusters with these cuts

Initial Event displays…



And will eventually want to implement a projection cut, to ensure efficiency calculation is correct.

However…

Scint Trigger Efficiency ~ zero

- Without bias as to timing (all hits in run reported), ~1 second livetime, 70-100 muons

Layer	DAC = 400	DAC = 300	DAC = 200	DAC = 100
0	9	18	37	67
1	1	11	24	53
2	2952	Same within	errors	3086
3	4534			4606
4	3090			3266
5	5588			5362
6	4512			4555
7	3941			3847
8	1859			1705
9	4465			4501
10	4978			5116
11	6642			6503
12	5818			5862
13	8511			8538
14	8028			7933

- **Thresholds still too high?**
- **All hits being reported?**