Cluster Phi Size Issue

2024/12/27 INTT MT

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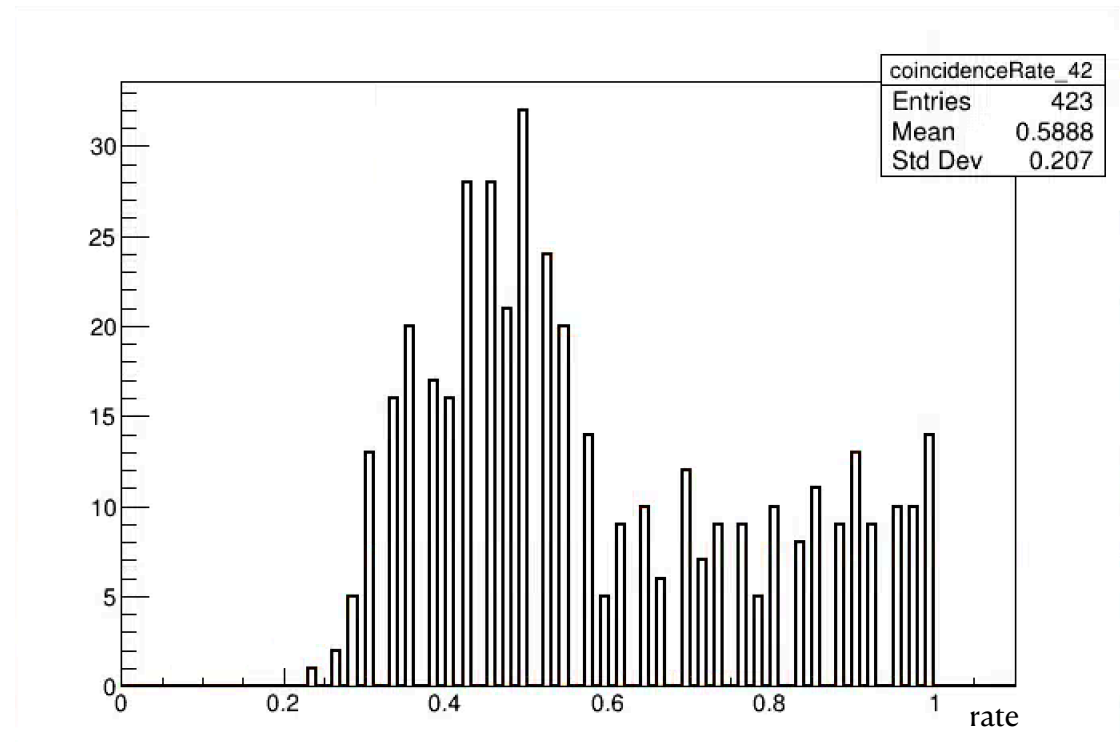
Run and cut condition

- Run 54280

    - Au+Au

    - Zero field

    - Check first 10k events

- Cut condition

    - Bco and hotdead are not apply
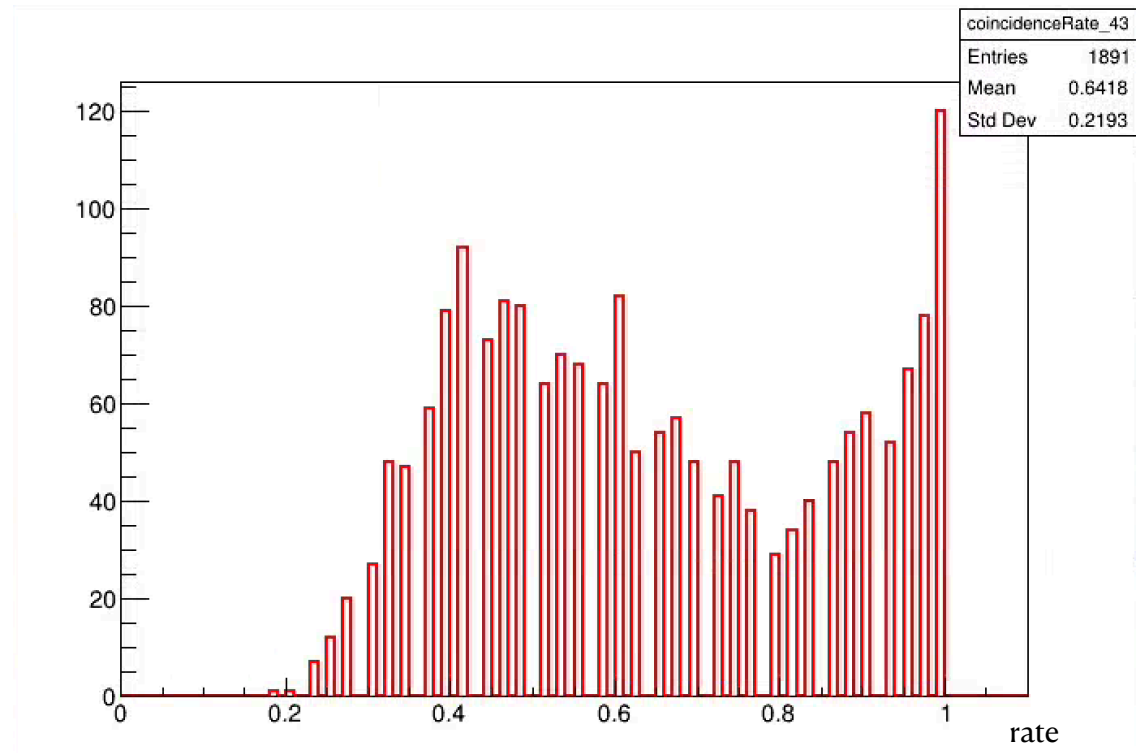
Coincident rate

Phisize = 42

- Check hits adc and number of hit which has same adc value

- Calculate the rate, maximum number of hit have same adc / phisize

- If all hits have same adc, the rate =1

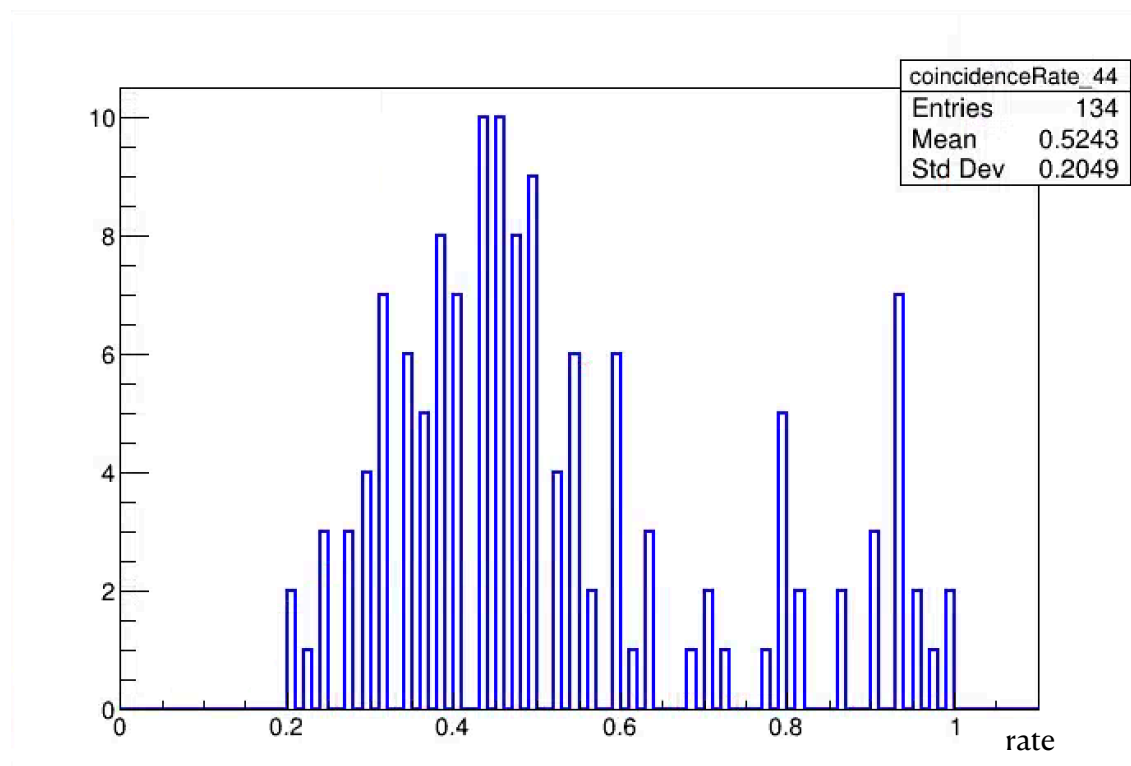- Check clusters which has clusterphisize = 42 ~ 46

Coincident rate

Phisize = 43

- This plot has the peak in the rate =1

- 6% of the clusters are made by hits which have same adc value

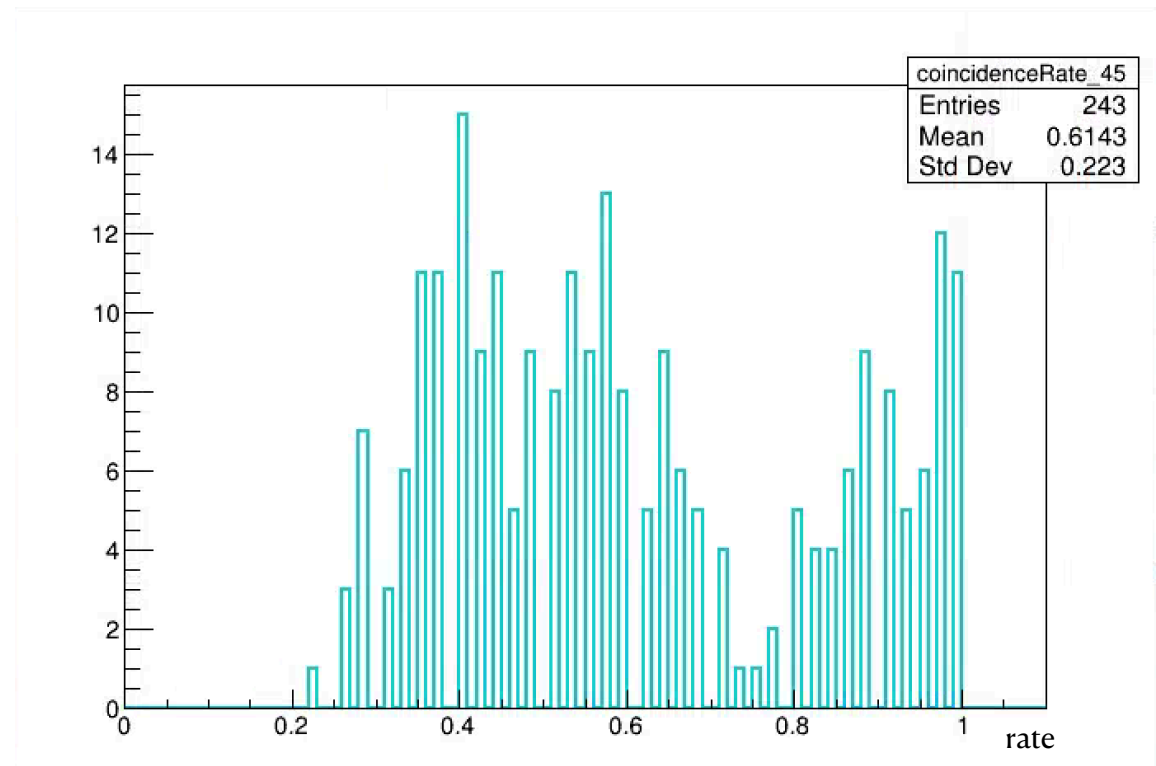- It is not enough to remove the spike

coincidenceRate_43	
Entries	1891
Mean	0.6418
Std Dev	0.2193

rate

Coincident rate

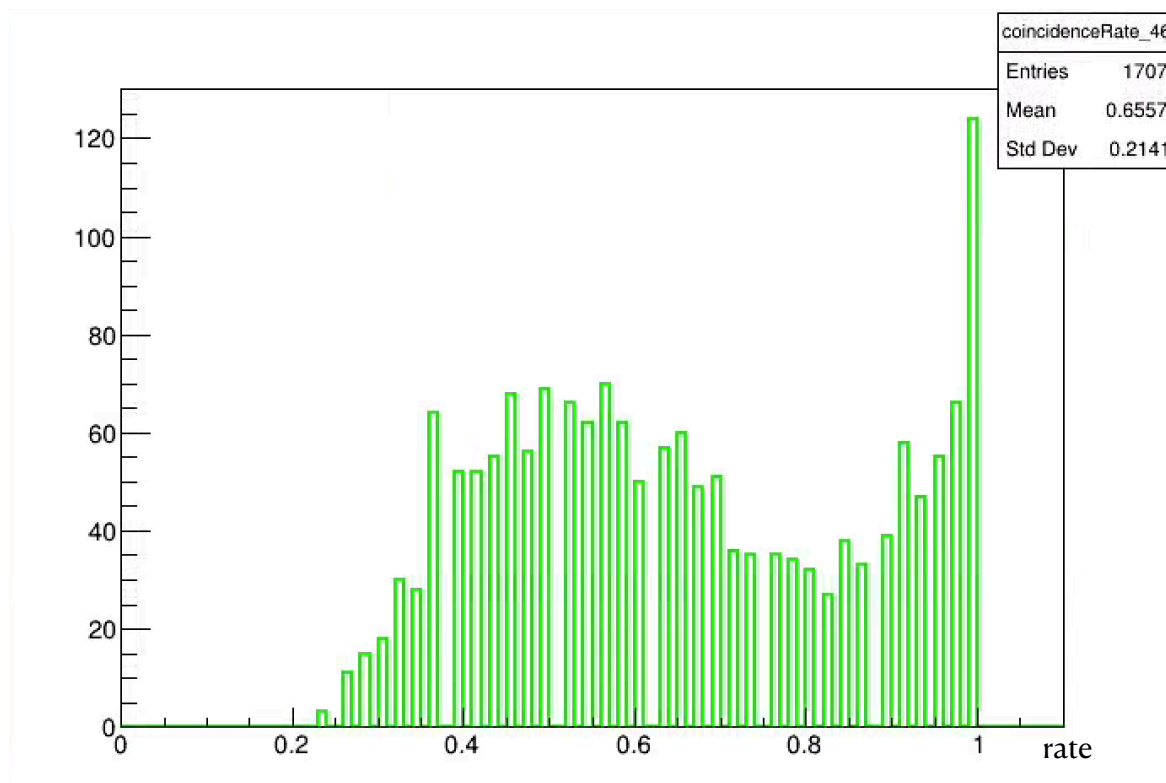Phisize = 44

Coincident rate

Phisize = 45

- This plot looks more like phisize=43 plot than phisize=44

- My guess is phisize=43 cluster + 2hits making a peak at 0.95
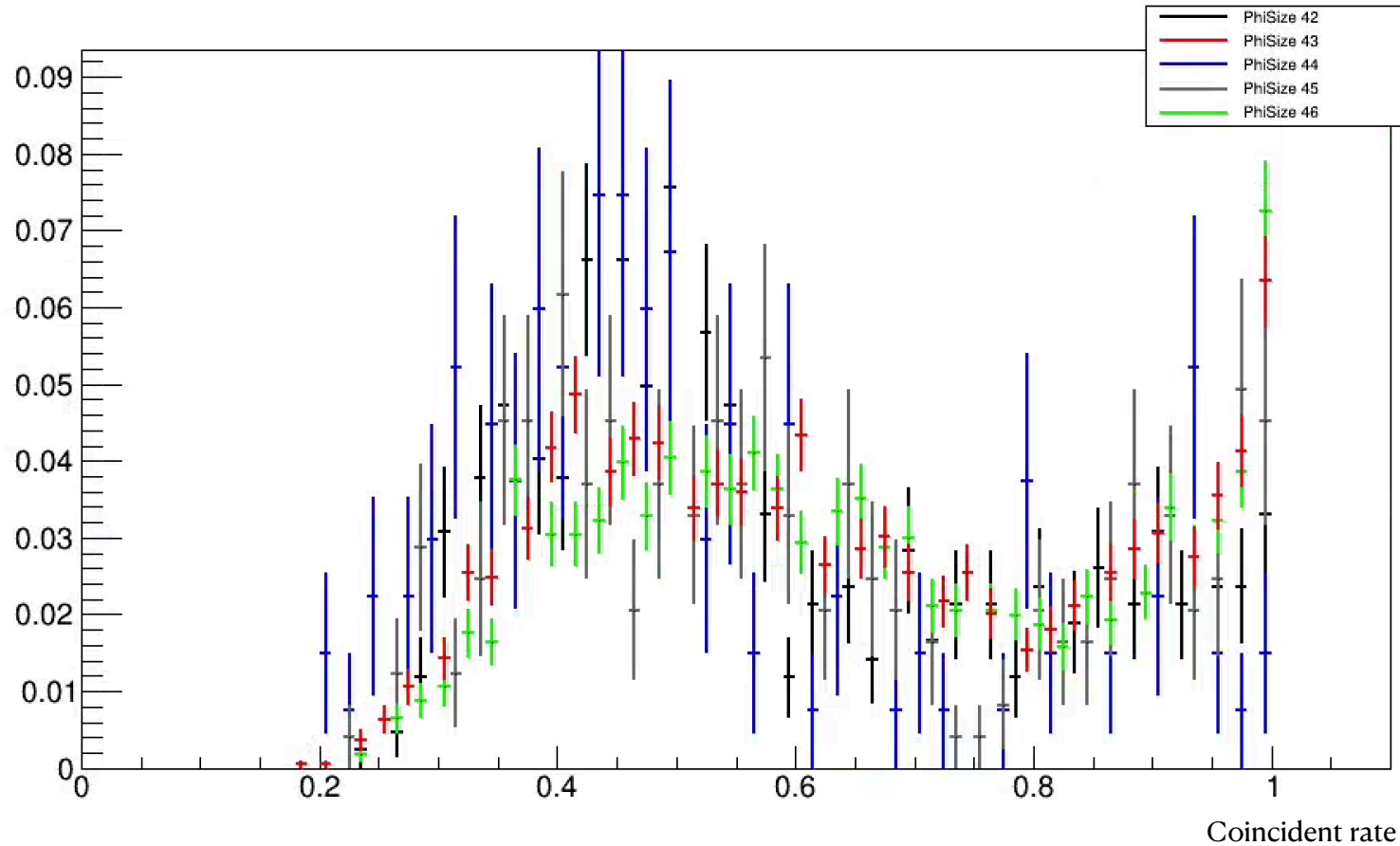
Coincident rate

Phisize = 46

- 7% of the clusters are made by hits which have same adc value

Normalize coincident rate

- Coincident rate normalize by the number of cluster

Summery

- Clusters which phisize = 43 or 46 are made by hits which has same adc value

- Plot of phisize =45 shows a similar trend to phisize = 43 and 46

- The proportion of such clusters is not enough to remove the spikes

- There are other causes make spike in phisize distribution

Back Up

DAC Setting

```
daq=> select * from intt_setting where runnumber = 54280;
 runnumber | n_collisions | open_time | readout_mode | dac0 | dac1 | dac2 | dac3 | dac4 | dac5 | dac6 | dac7
-----------+--------------+-----------+--------------+------+------+------+------+------+------+------+------
     54280 |          100 |        60 | triggered    |   35 |   45 |   60 |   90 |  120 |  150 |  180 |  210
(1 row)
```