

Group TDC behavior on pi0 run

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Applied cuts

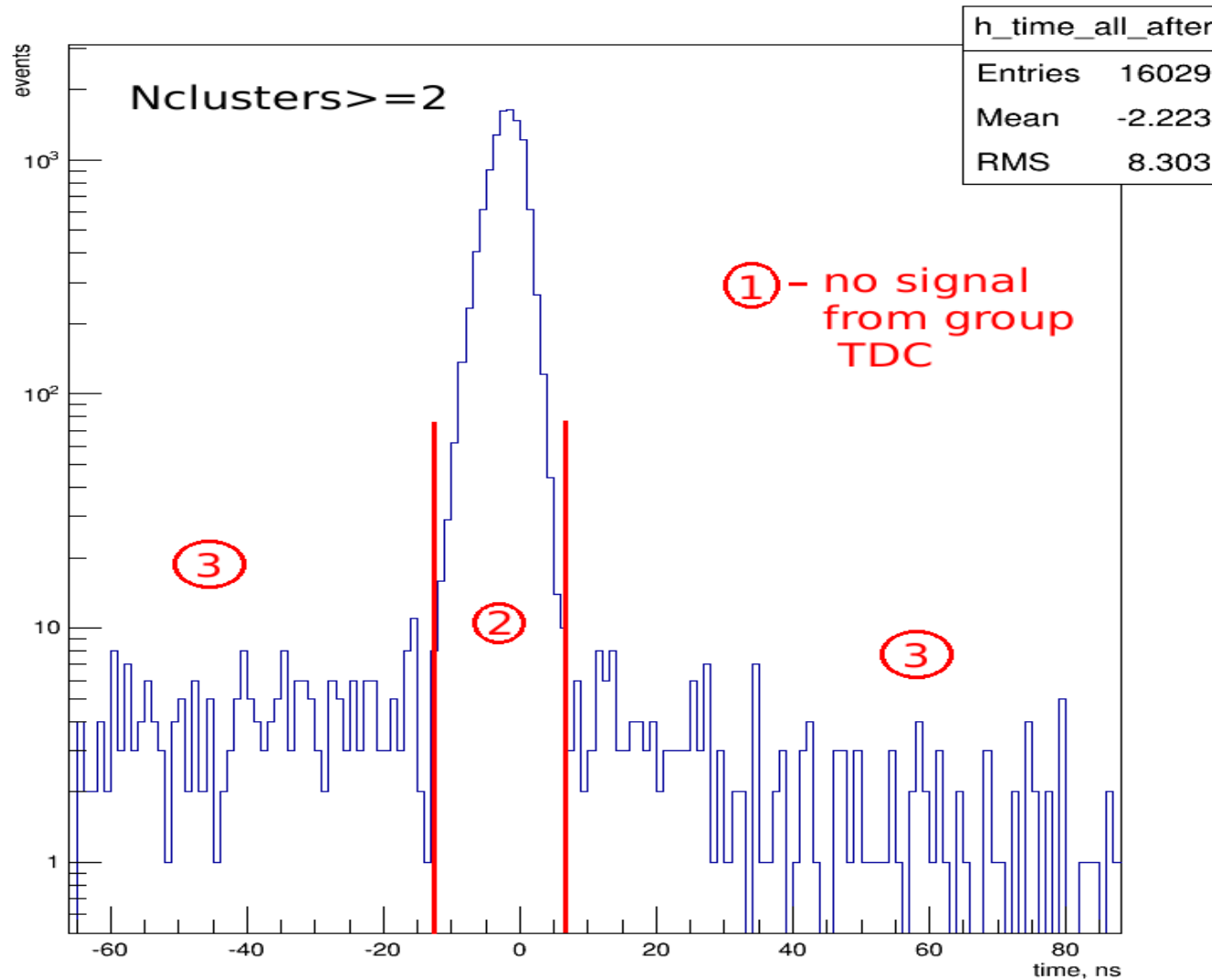
- 0) $3.5 \text{ GeV} < \text{Energy1} + \text{Energy2} < 6.0 \text{ GeV}$
- 1) N clusters ≥ 2 ;
- 1a) N clusters ≥ 3 ;
- 2) check central crystal part – Group numbers #15, #16, #21, #22

*Only Crystal groups were used in this analysis exclude groups #3, #30, #31, #32, #34.

*analysis based on Pi0 skim data (one carbon RUN file)

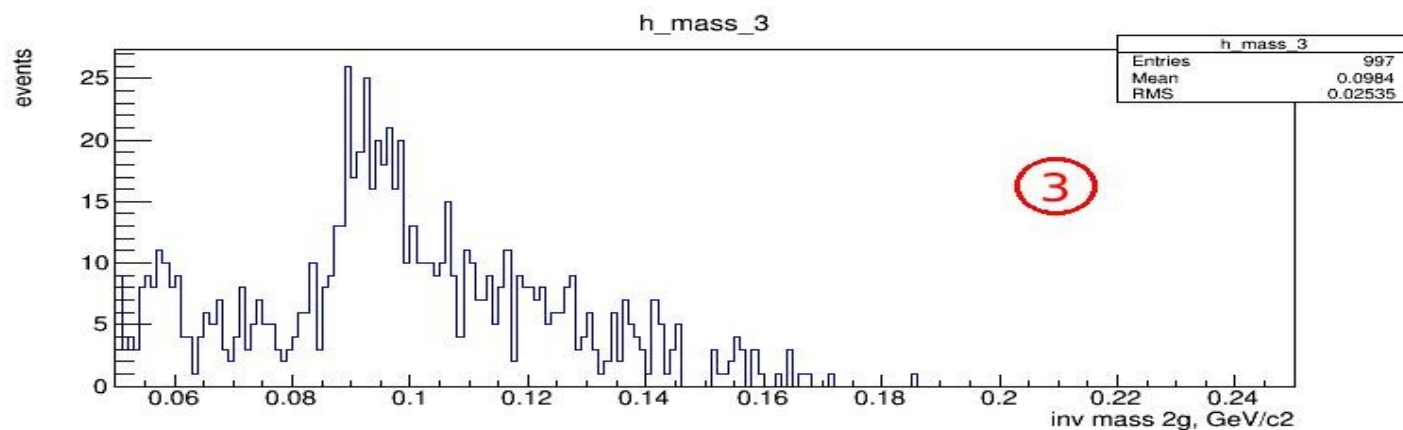
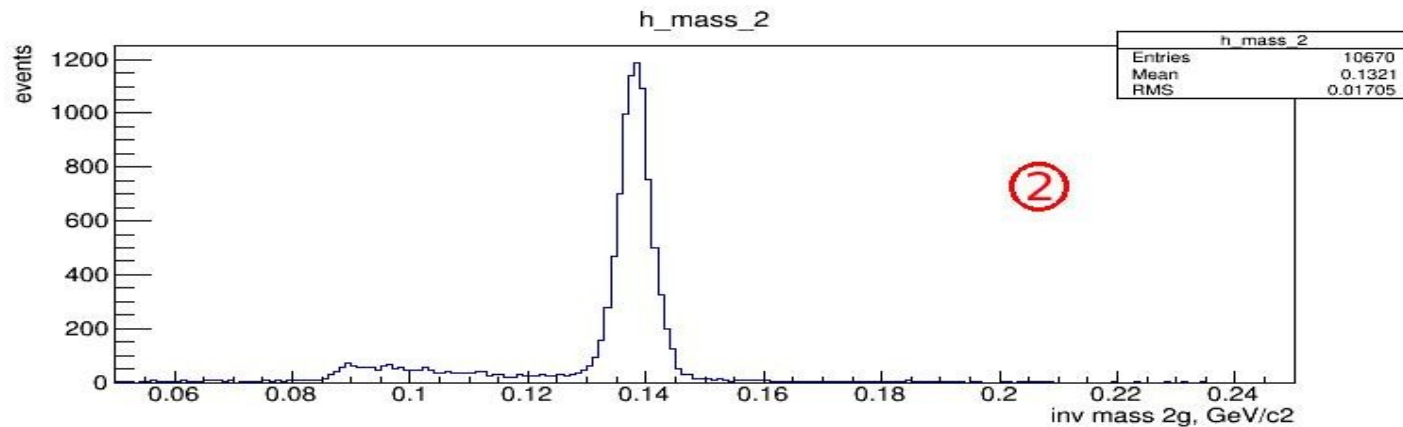
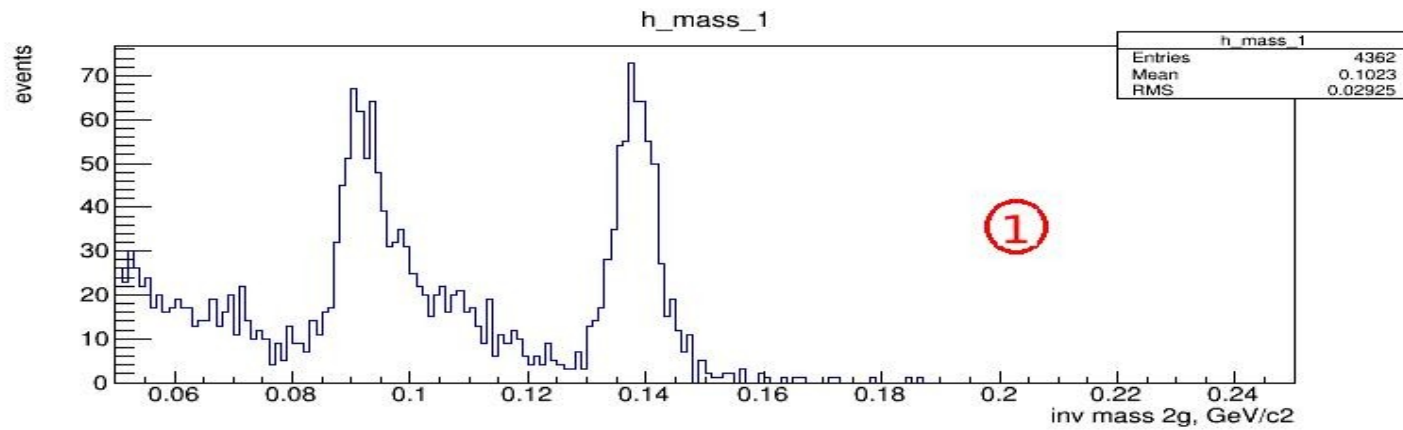
Dividing “time” into 3 cases

time = t1 - t2
t1 = T_1Sq - T_hyc - align1
t2 = T_2Sq - T_hyc - align2



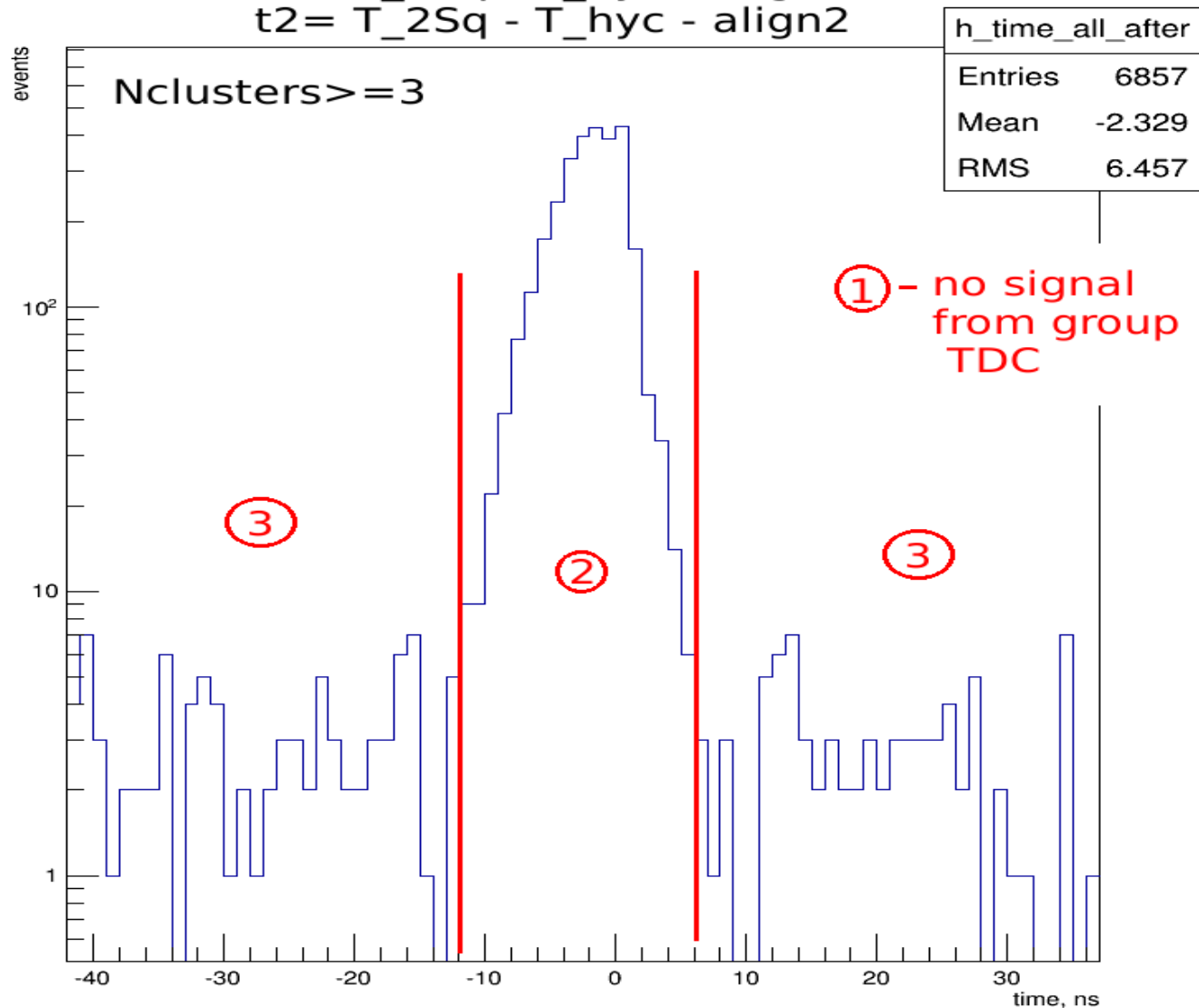
Invariant mass for 2 gammas for this 3 cases

Nclusters ≥ 2



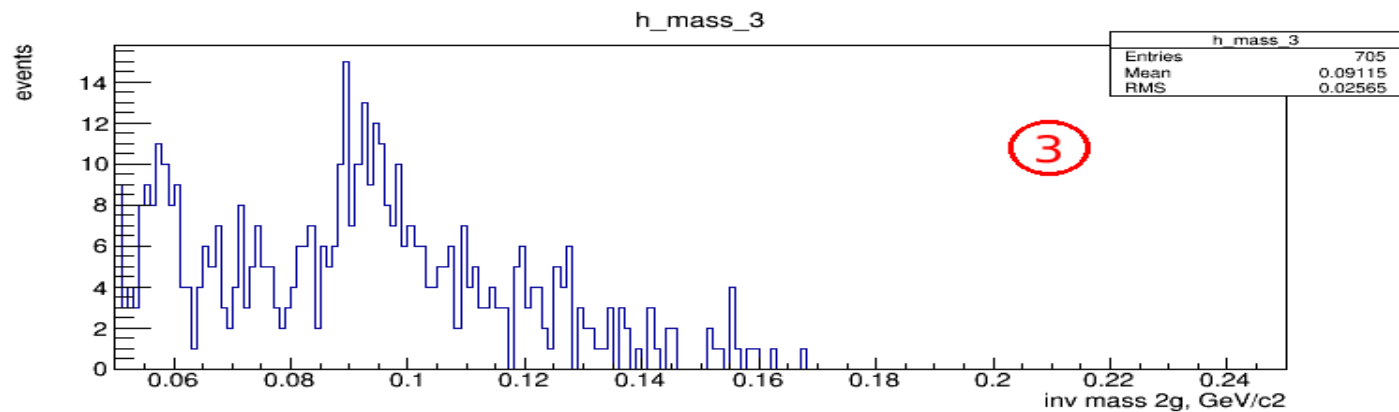
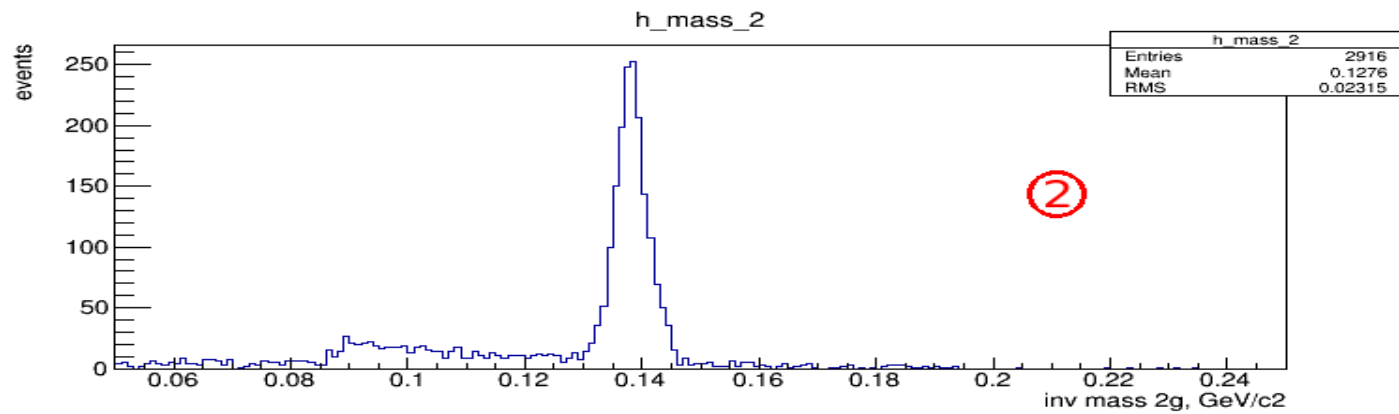
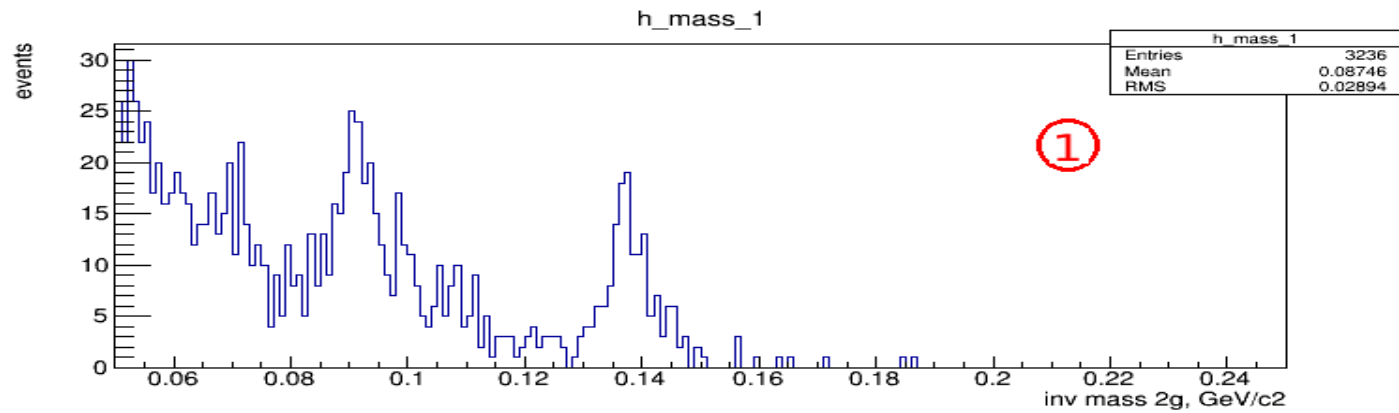
“time” for events (for cut $N_{cl} \geq 3$)

time = t1 - t2
t1 = T_1Sq - T_hyc - align1
t2 = T_2Sq - T_hyc - align2

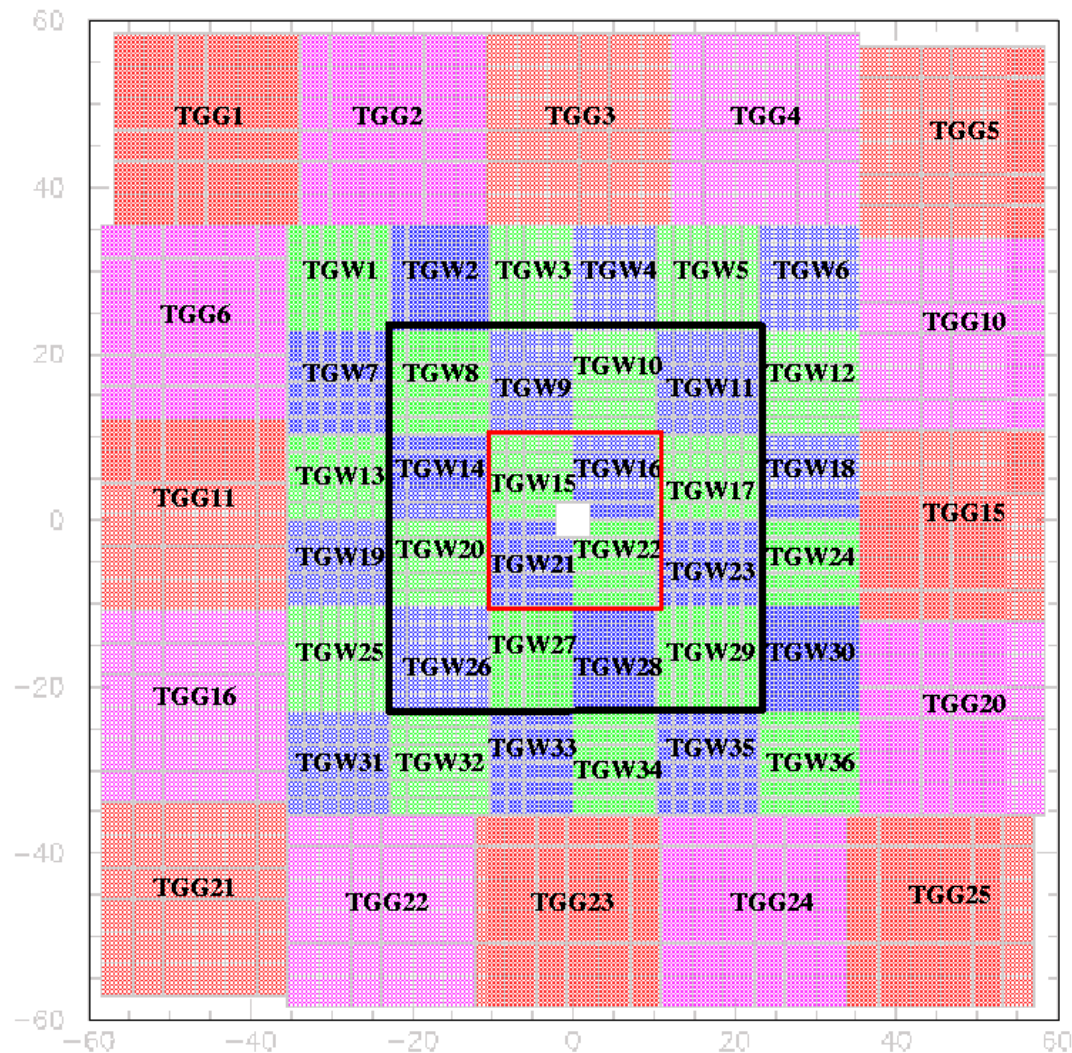


Inv mass of two gammas

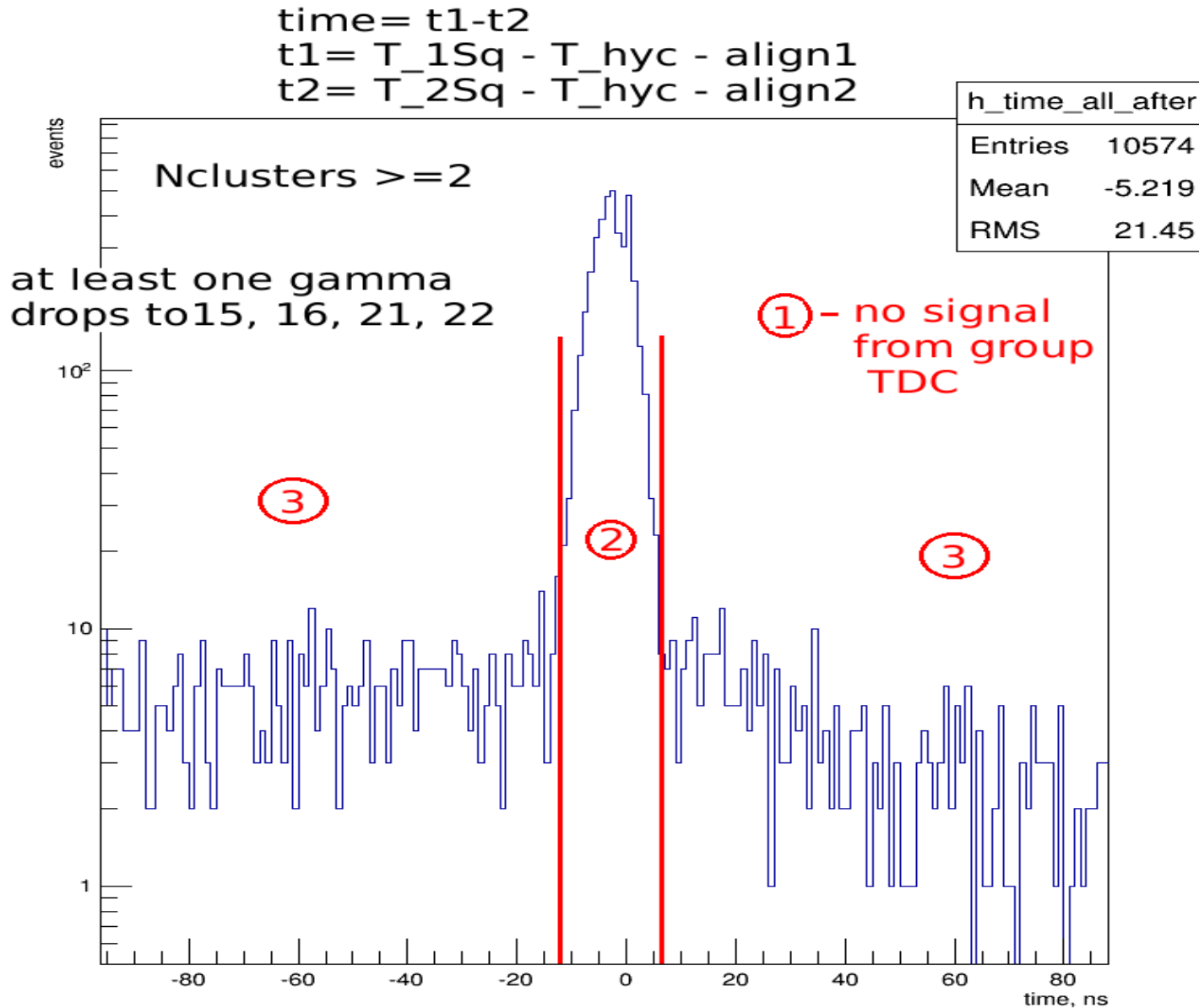
Nclusters ≥ 3



- check central crystal part – Group numbers 15, 15, 21, 22;
- apply when we have at least one gamma drops inside red square



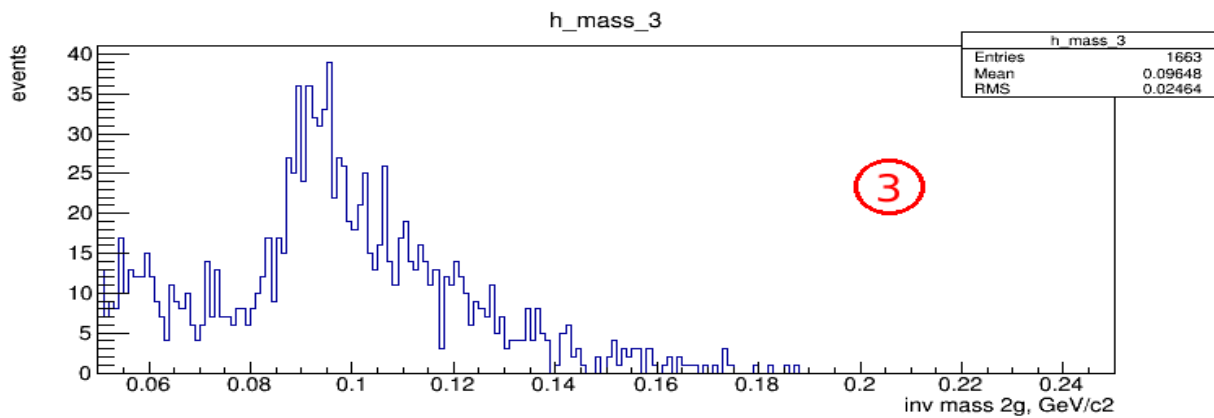
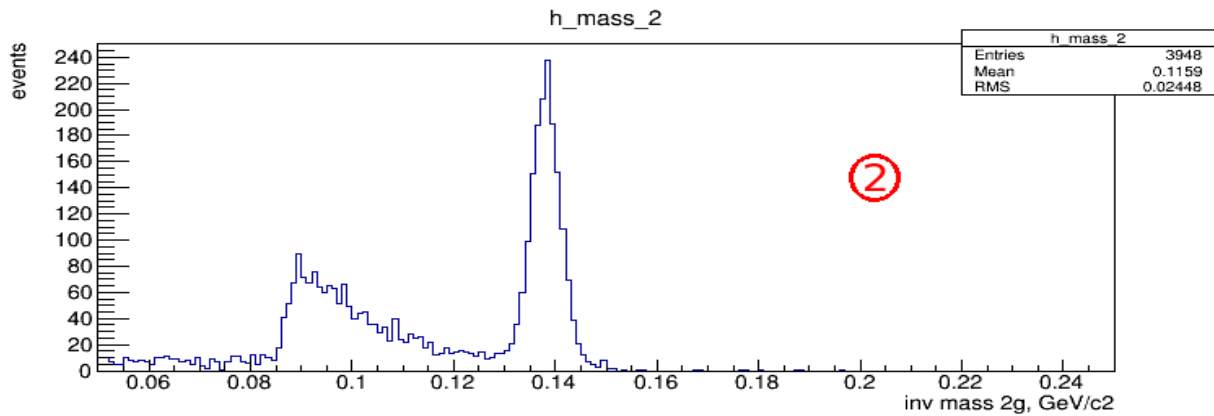
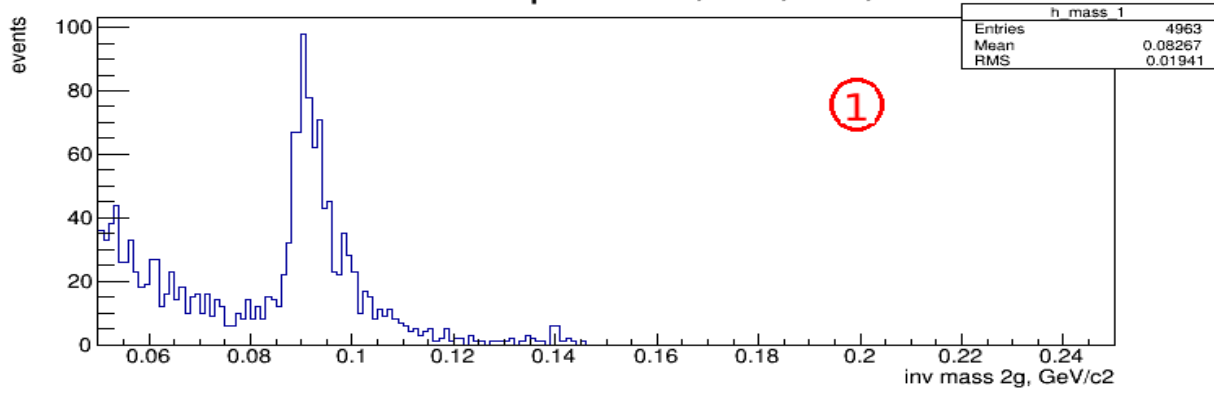
“Time” when at least one gamma drops to central area - TGW 15, 16, 21, 22



Inv mass for two gammas

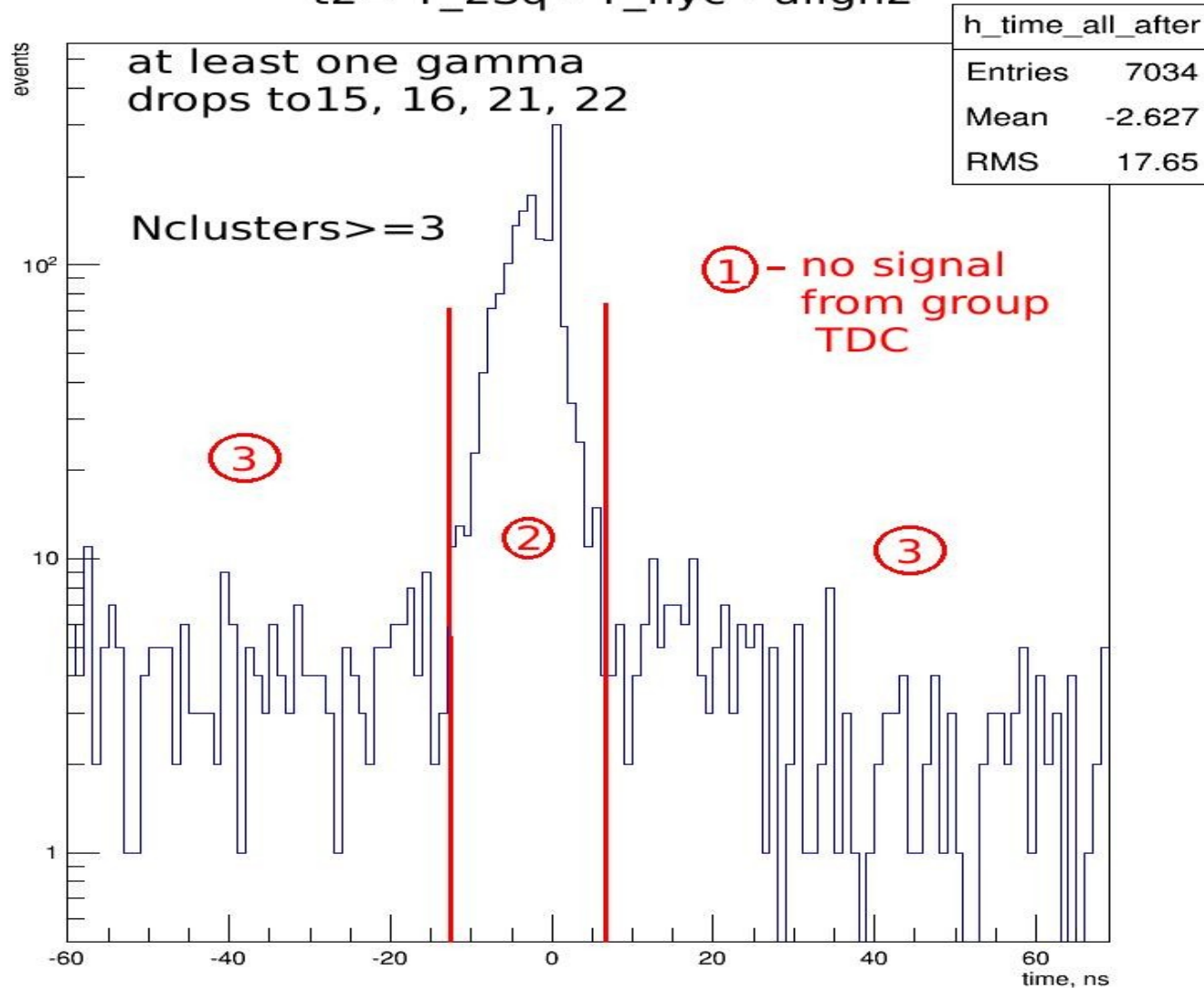
Nclusters ≥ 2

at least one gamma
drops to 15, 16, 21, 22



“Time”

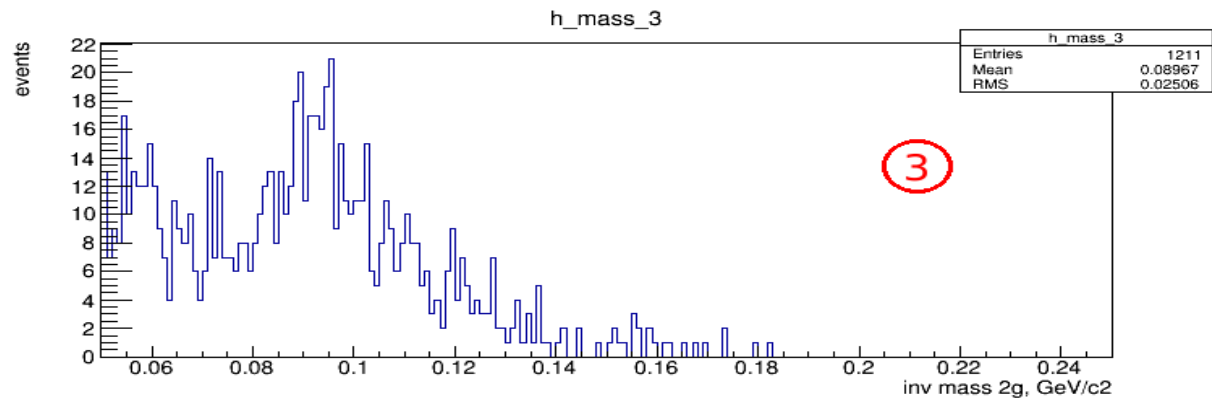
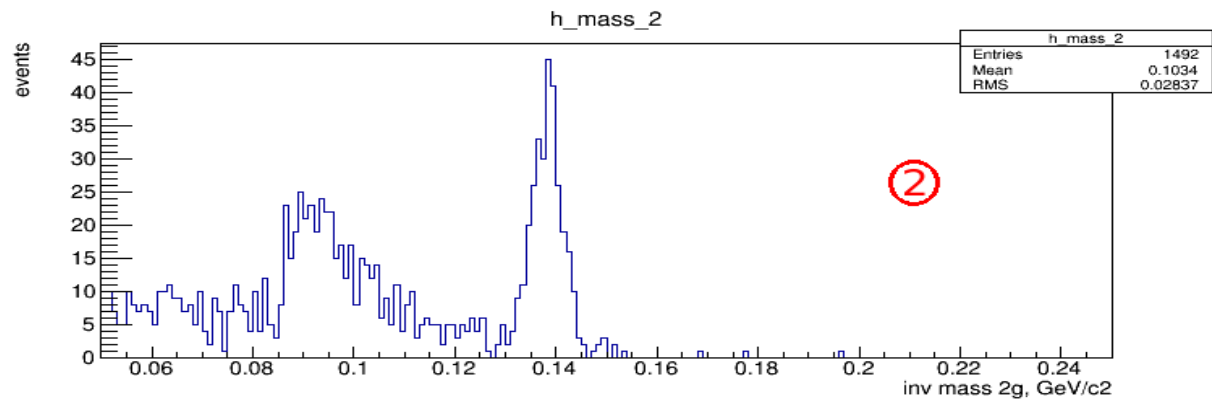
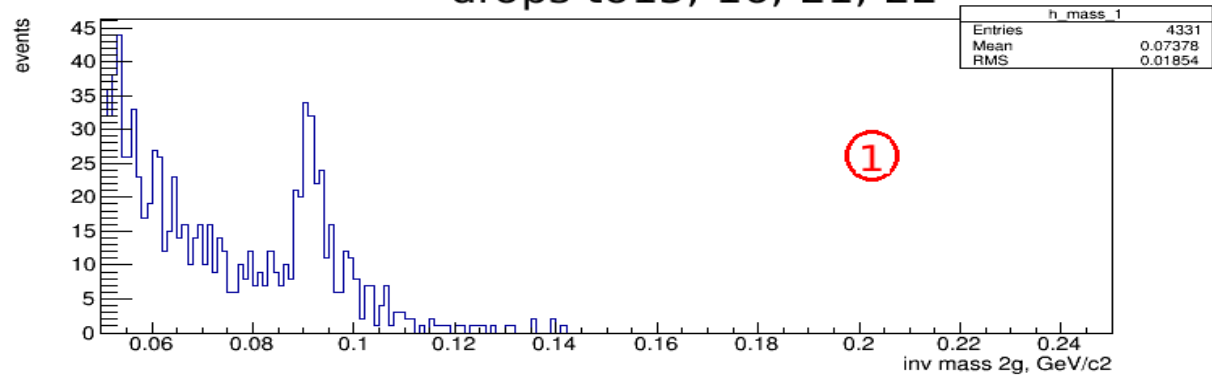
time = t1 - t2
t1 = T_1Sq - T_hyc - align1
t2 = T_2Sq - T_hyc - align2



Inv mass of two gammas, GeV/c²

Nclusters >= 3

at least one gamma
drops to 15, 16, 21, 22



Conclusion

- Information from group TDC can reduce background $\sim 1/4$