Rate of isMoreCandinRoI=true events !barrel event only!

rate

0.5

0.4

0.3

0.2

0.1

0

Off-$p_T \geq$4GeV
Off-RoI $|\eta|<$1.05
Off-Segment $|\eta|<$1.05
Off-$|z_0| \lesssim$50(mm)
$N_{OffsegMid} \geq$1
$N_{OffsegOut} \geq$1

0   0.02 0.04 0.06 0.08   0.1   0.12 0.14 0.16 0.18
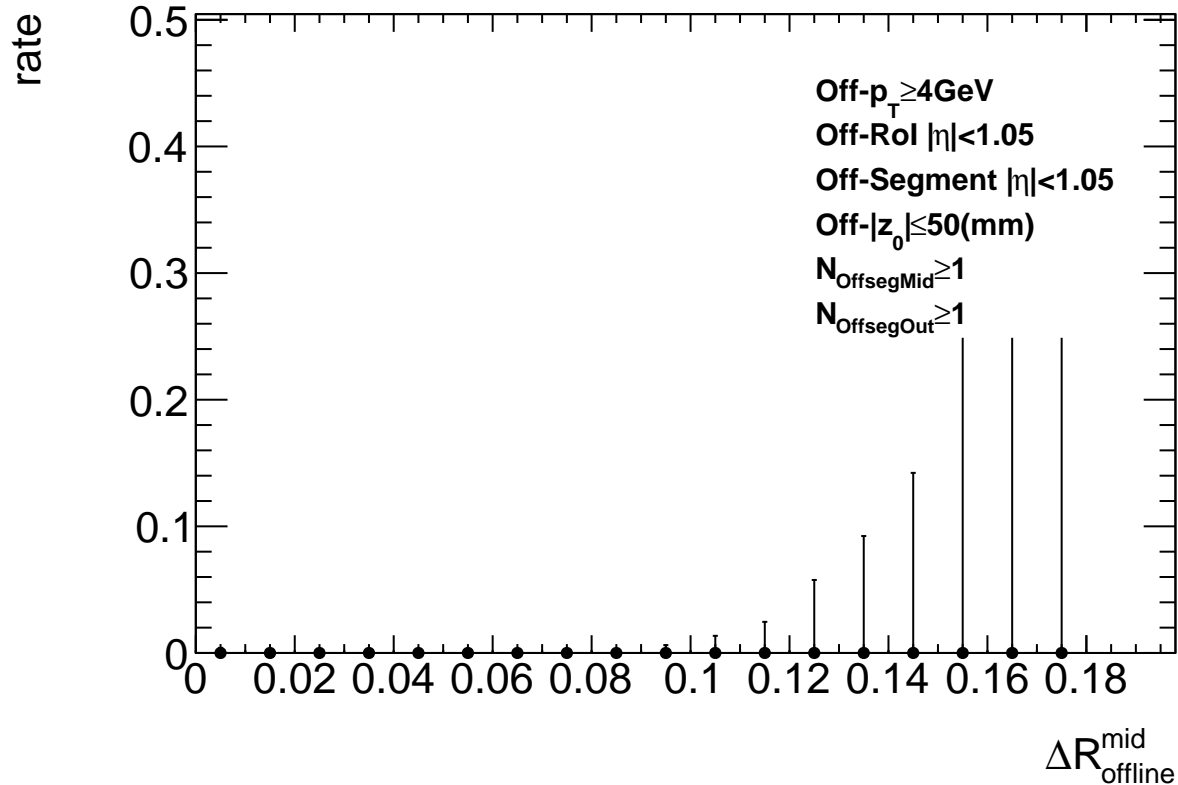
$\Delta R^{mid}_{offline}$

$N_{superpoint}$ condition when much lower p_T was calculated
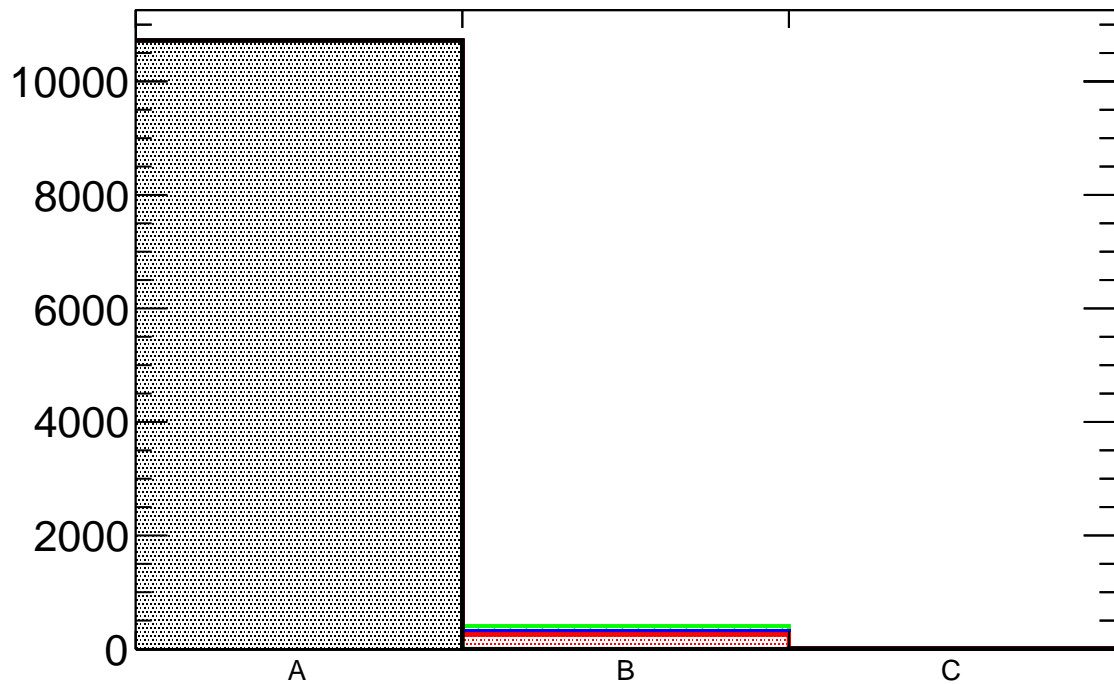
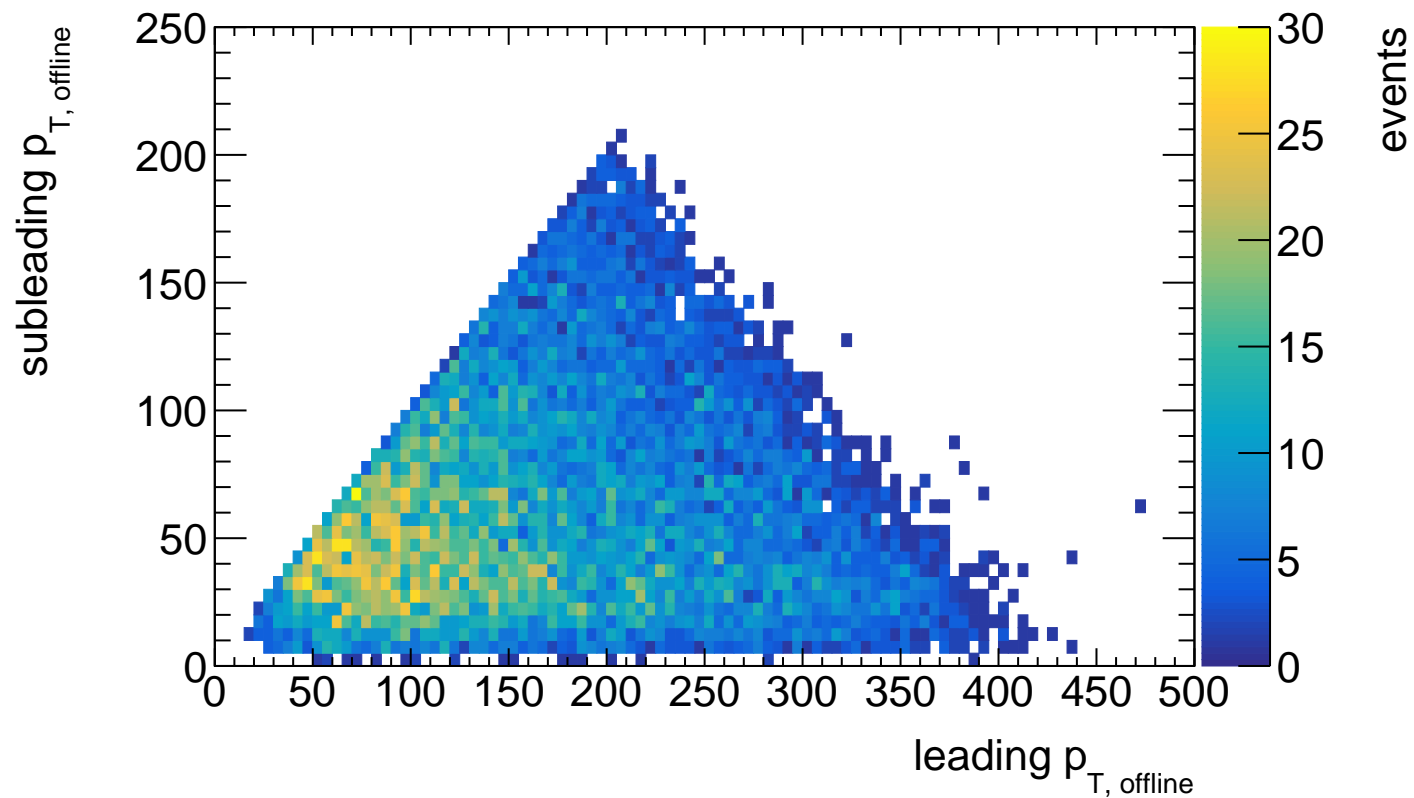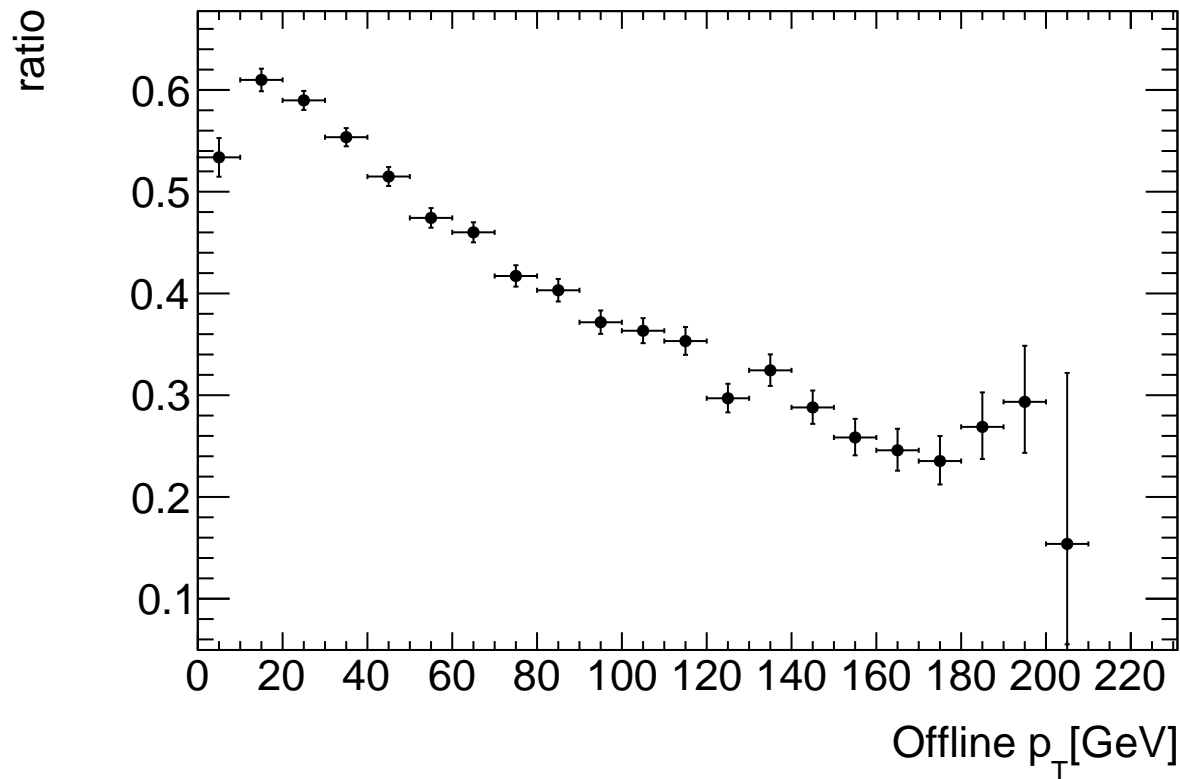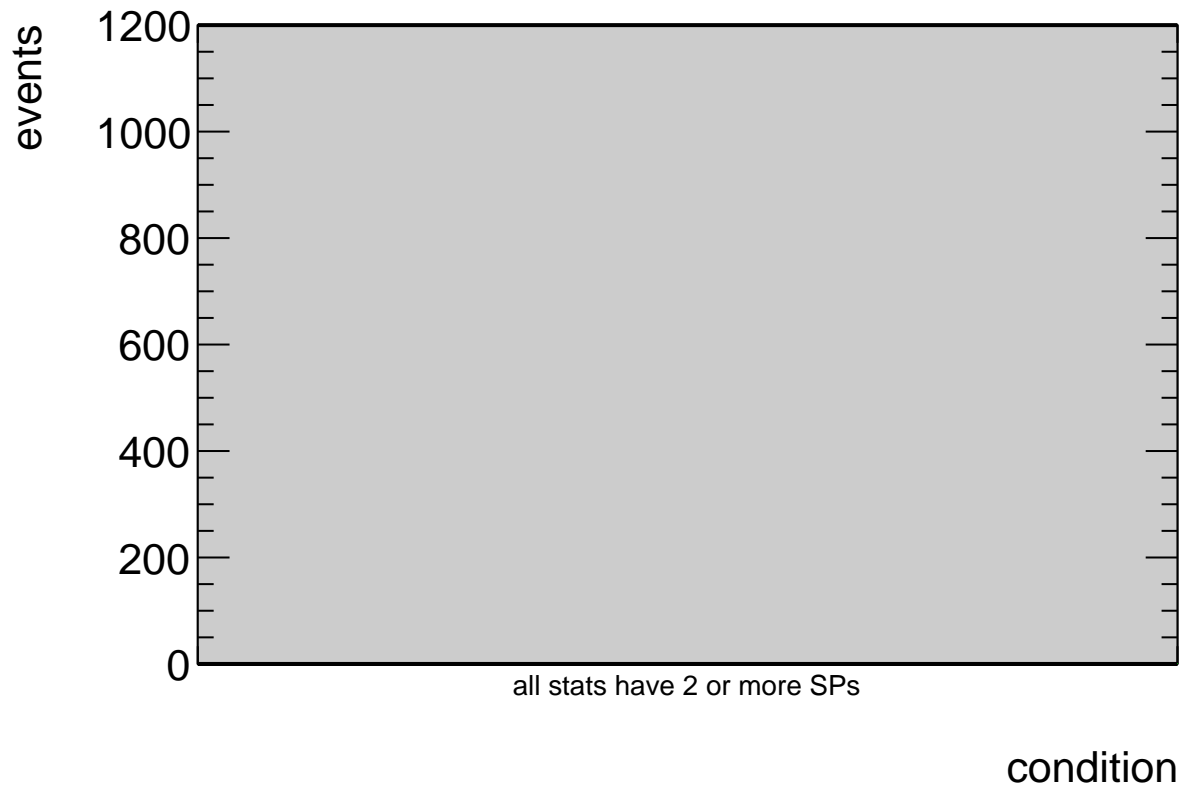**Offline pT : 2mu-in-1RoI**
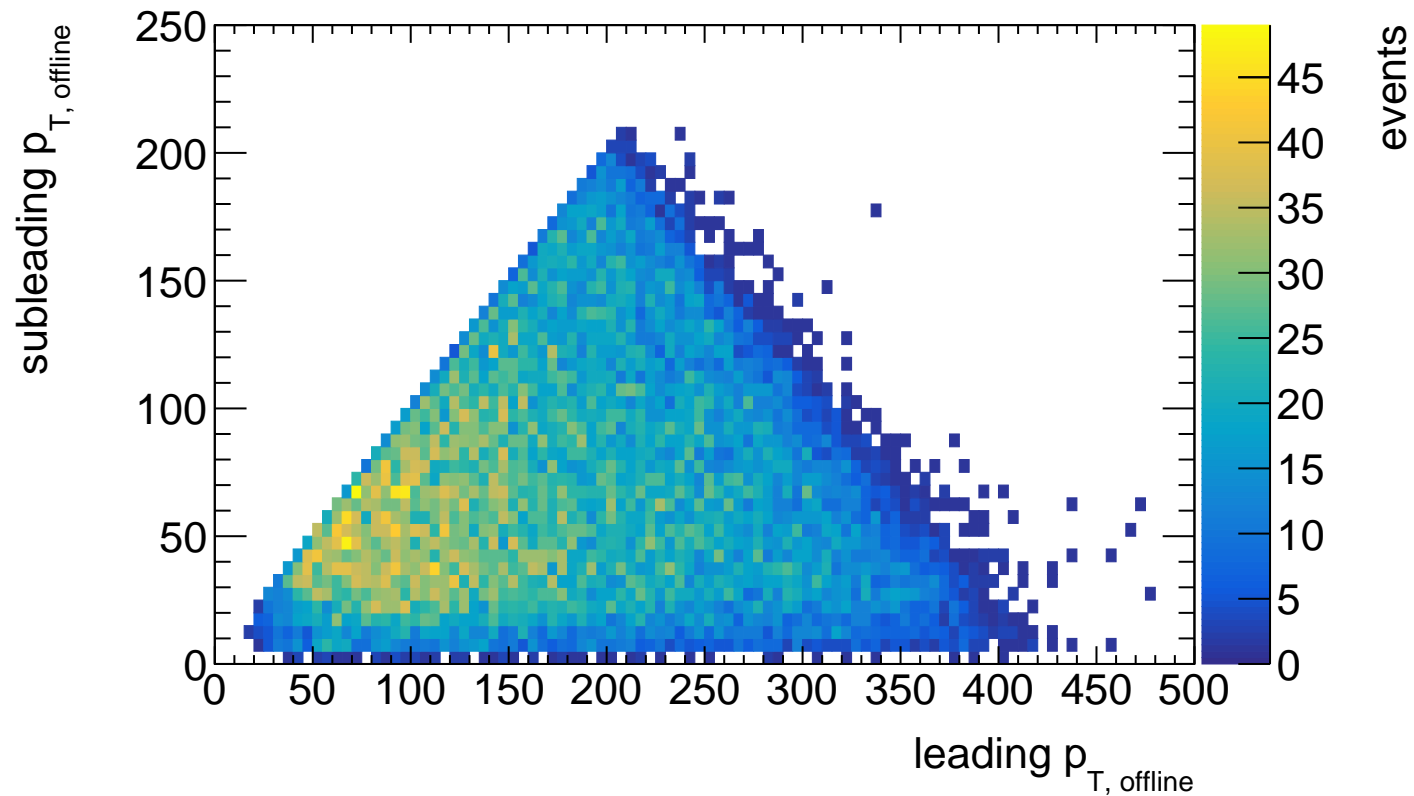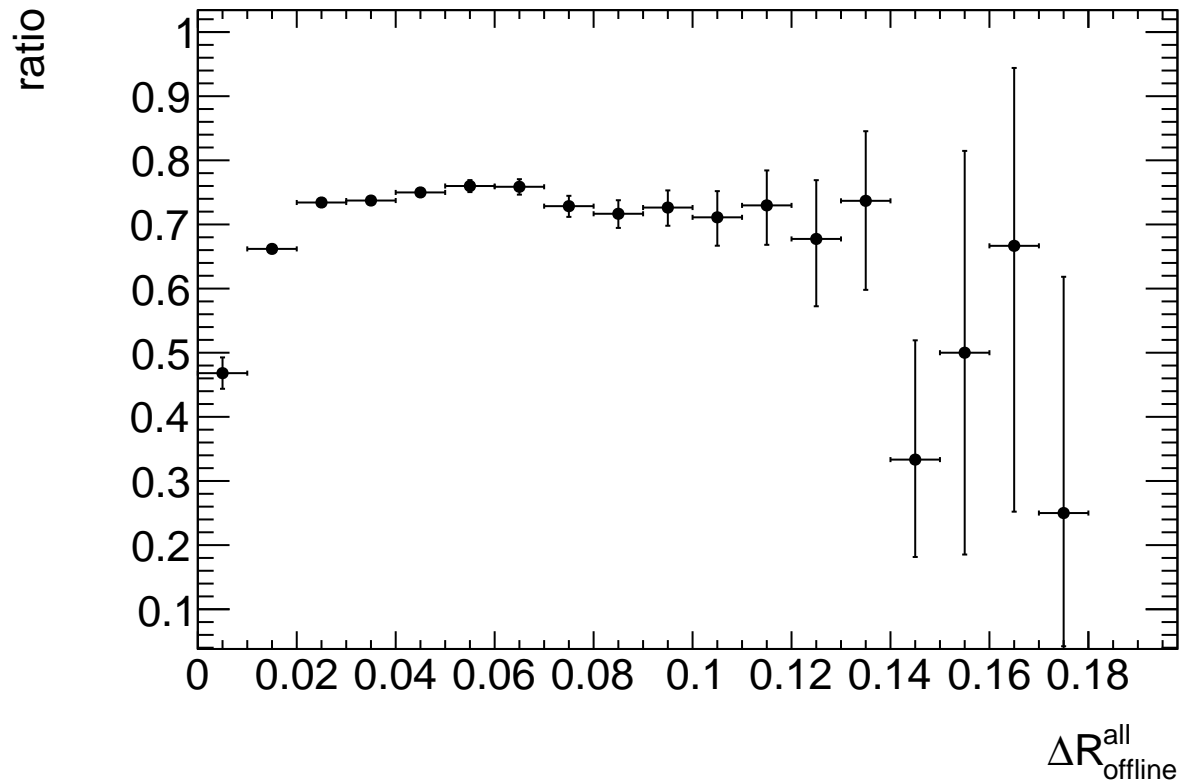
Offline pT : 2mu-in-1RoI&oppcharge pT calculated

Ratio of N_{pT}=2 && opposite charge events

N$_{superpoint}$ condition when much lower p$_T$ was calculated

events

1200

1000

800

600

400

200

0

all stats have 2 or more SPs

condition

Ratio of $N_{spall}=2$ events

ratio

$\Delta R^{all}_{offline}$

Ratio of $N_{spinn}=2$ events

ratio

$\Delta R^{inn}_{offline}$

Ratio of N_spmid=2 events

ratio

$\Delta R^{mid}_{offline}$
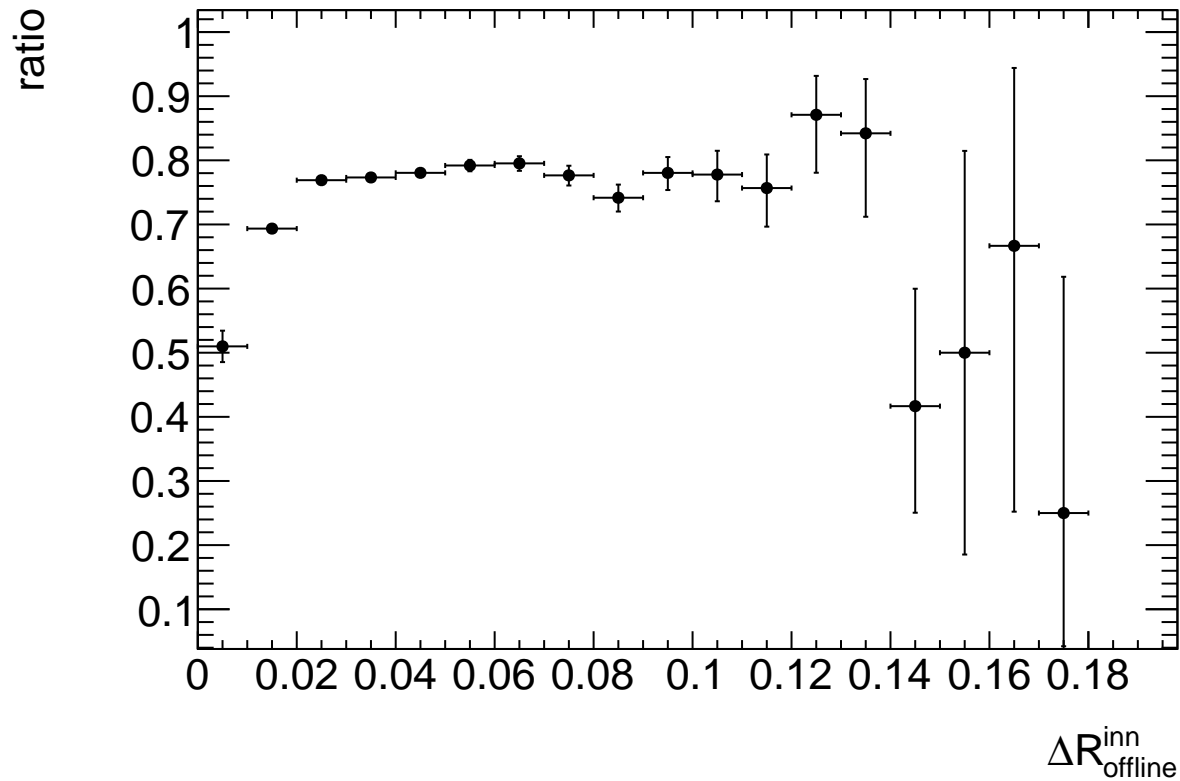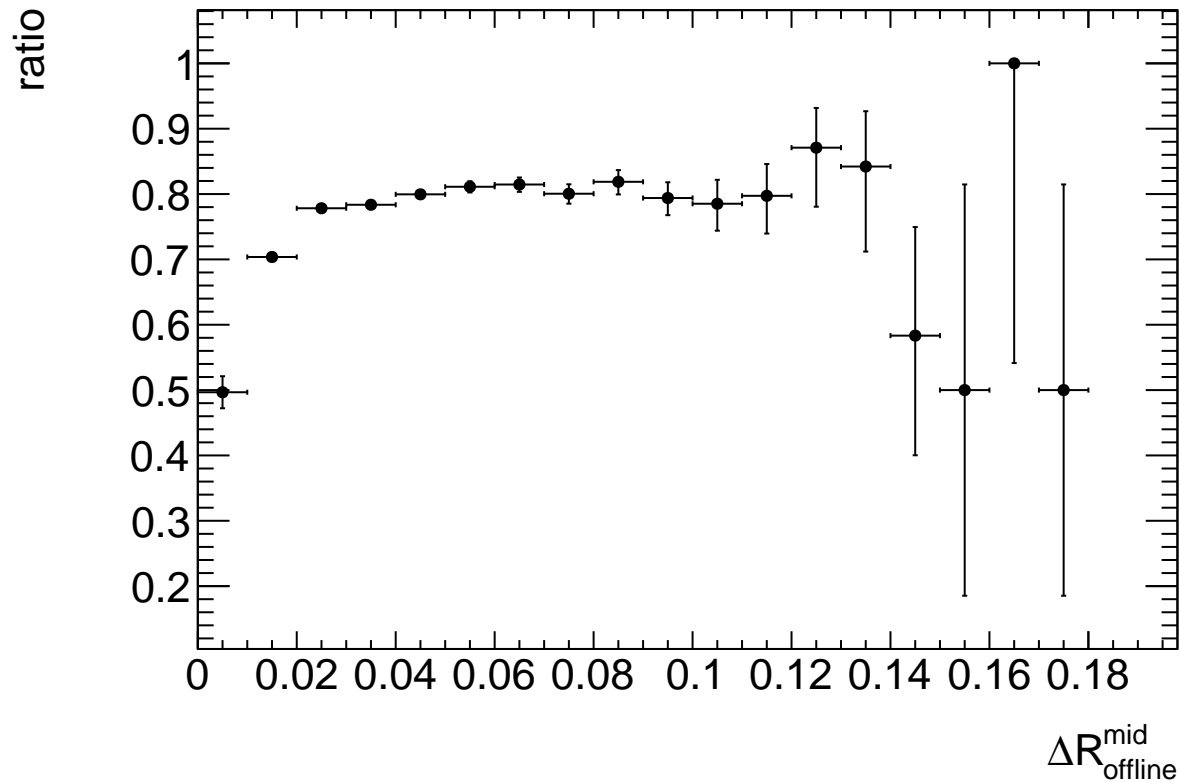
Ratio of $N_{spout}=2$ events
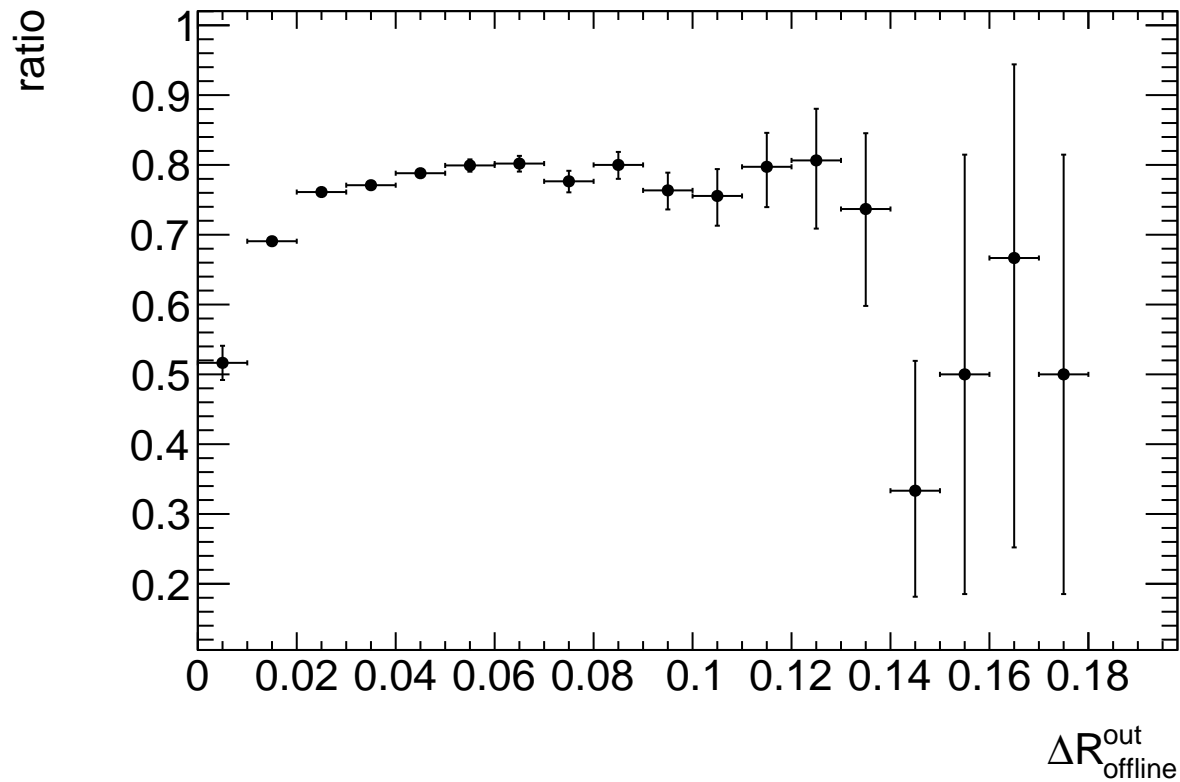
ratio

$\Delta R^{out}_{offline}$

Ratio of $N_{pT}=2$ events

ratio

$N_{pT}=2$

$N_{pT}=2$&&opposite charge

$\Delta R_{offline}^{mid}$
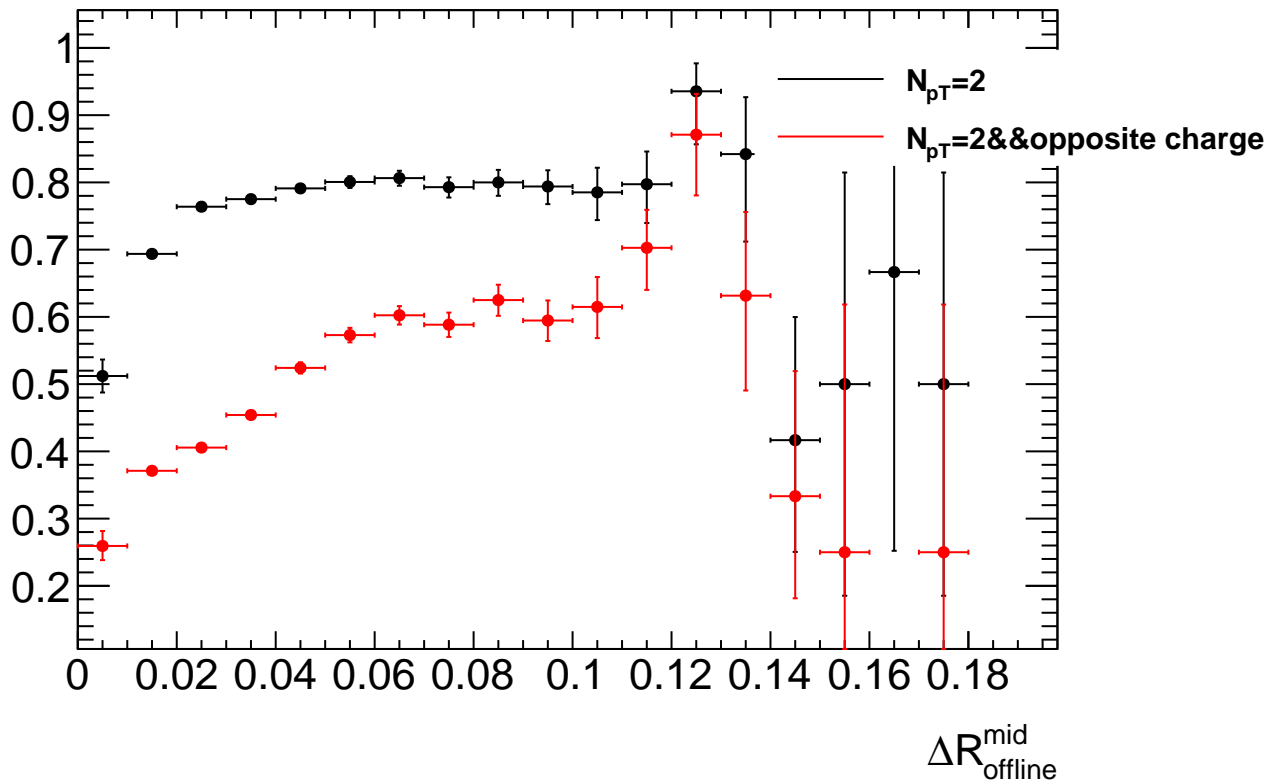
p_T residual = $1 - p_T^{SAcluster}/p_T^{offline}$ leading&subleading

events

p_T residual

total
leading
subleading
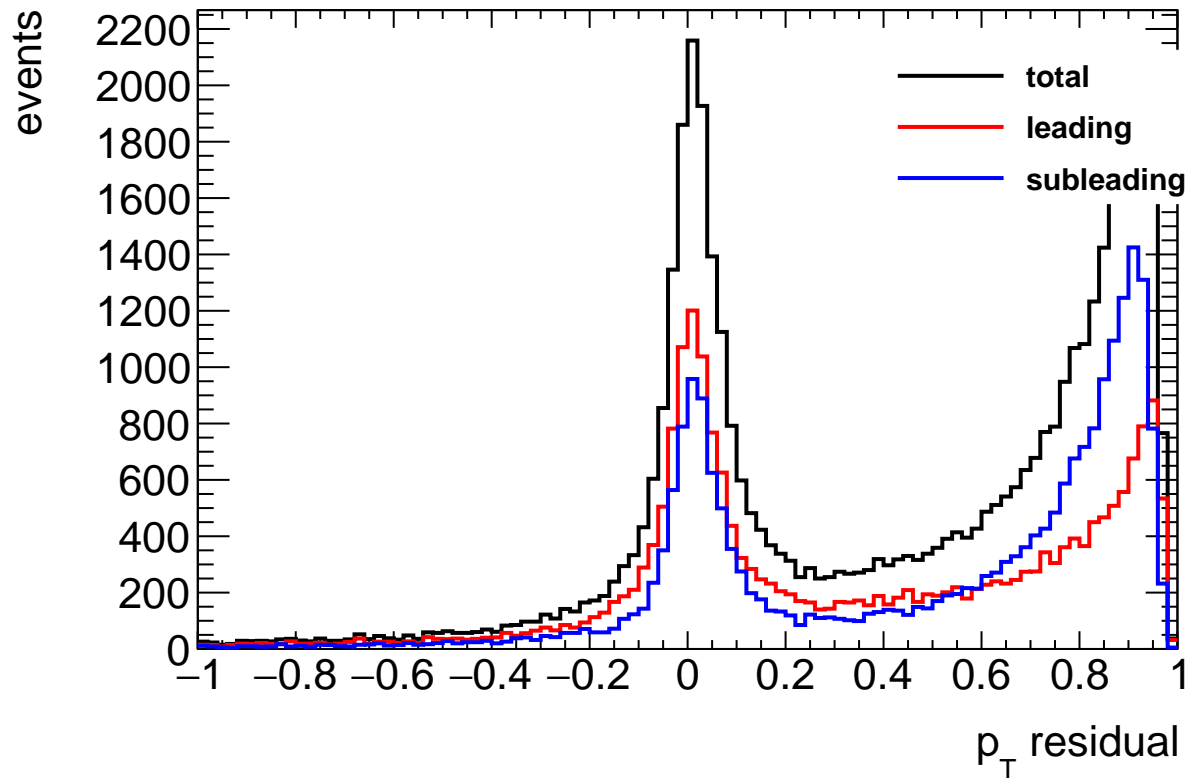
Ratio of $N_{clusRoad}$=2 events

ratio

$\Delta R^{mid}_{offline}$

Off-$p_T \geq$ 4GeV

Off-Segment $|\eta|$<1.05

Off-$|z_0| \leq$ 50(mm)

$N_{OffsegMid} \geq$ 1

$N_{OffsegOut} \geq$ 1

$_{oad}$ = 2

$_{clusRoad}$ = 1

$N_{clusRoad}$ > 2

Ratio of N$_{spmid}$=2 events

ratio

$\Delta R^{mid}_{offline}$
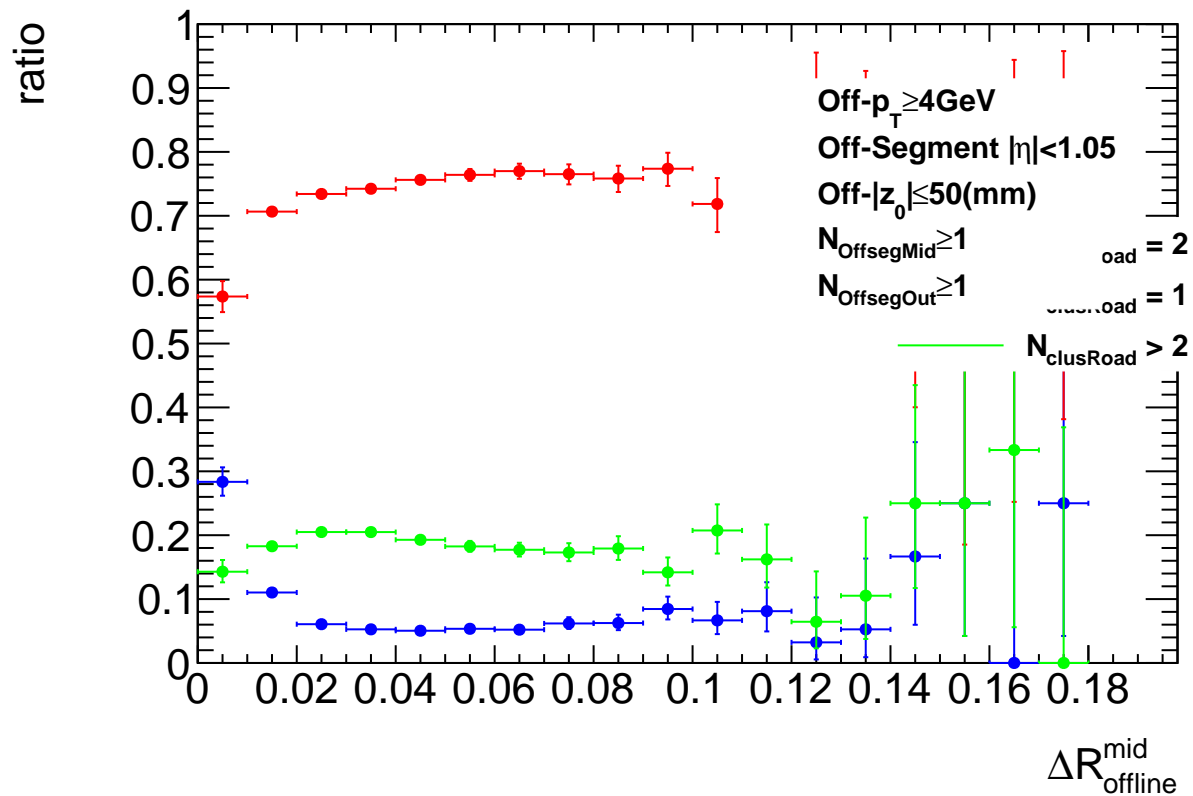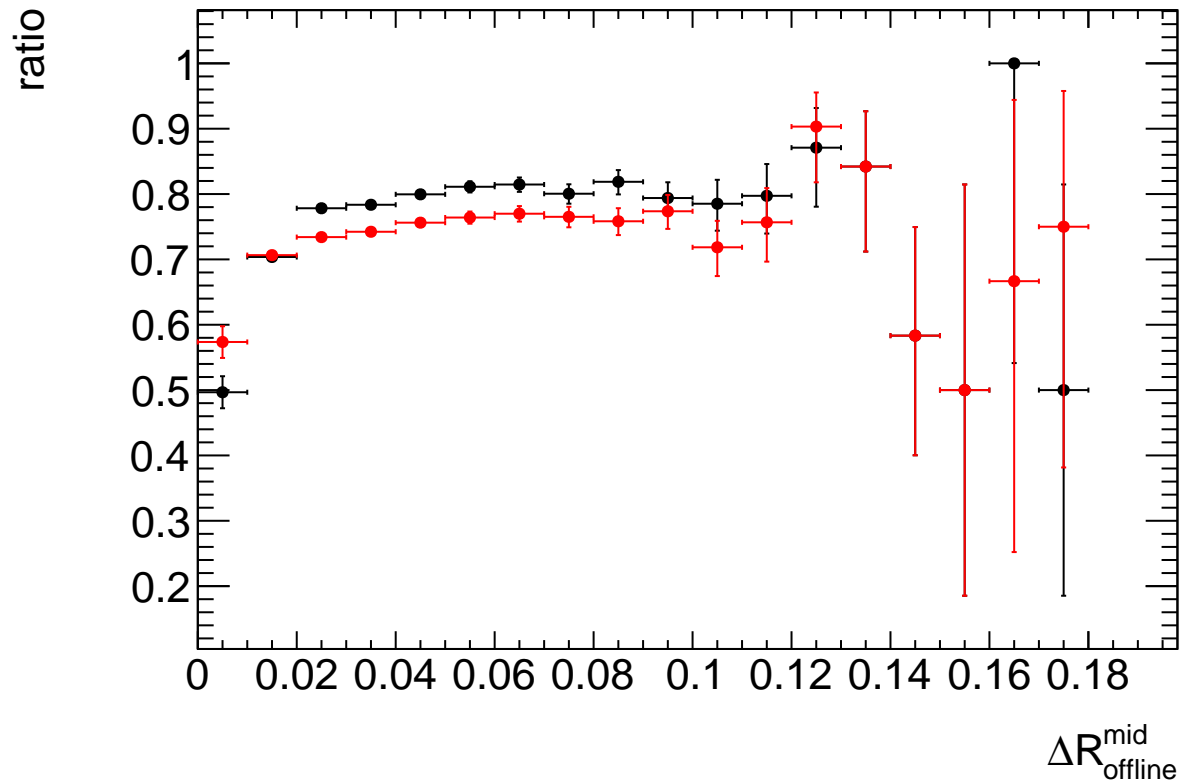
Ratio of $N_{spout}=2$ events
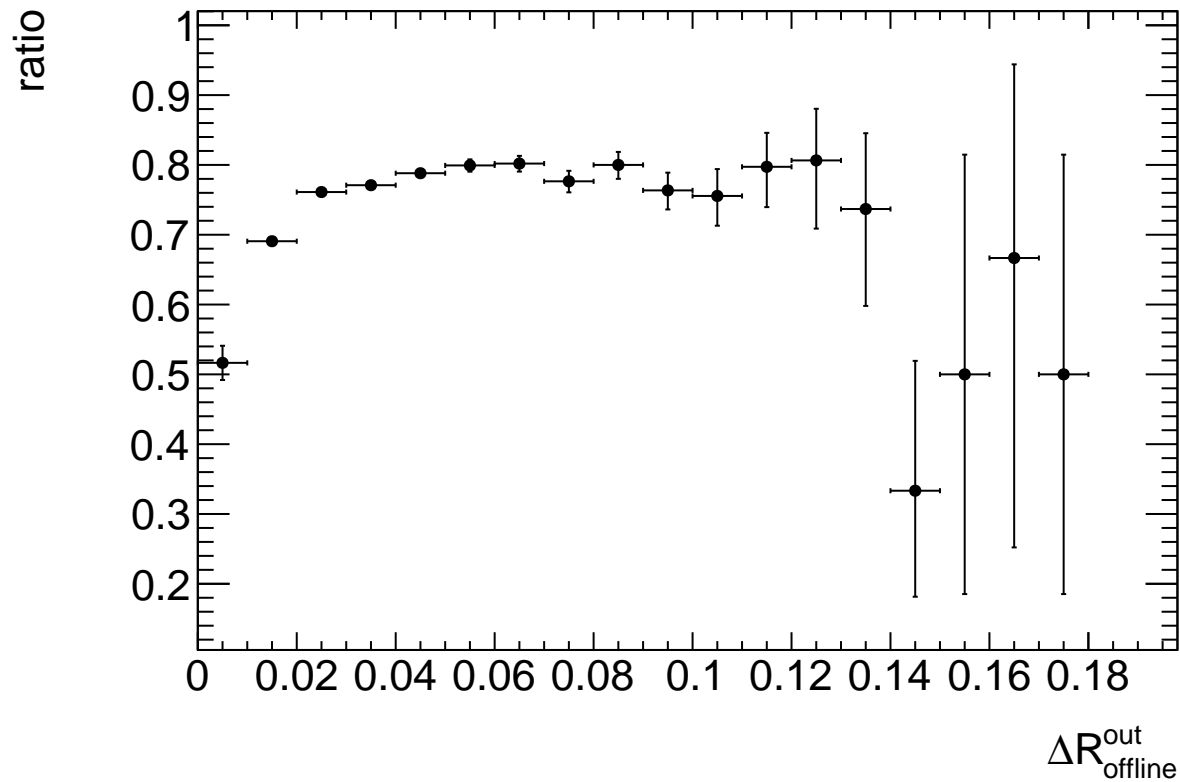
Ratio $N_{canthelp!}/N_{clusRoad}=1$

only 1 clus by 1mu
by finding same clus in lay1
others
total

ratio

$\Delta R^{mid}_{offline}$
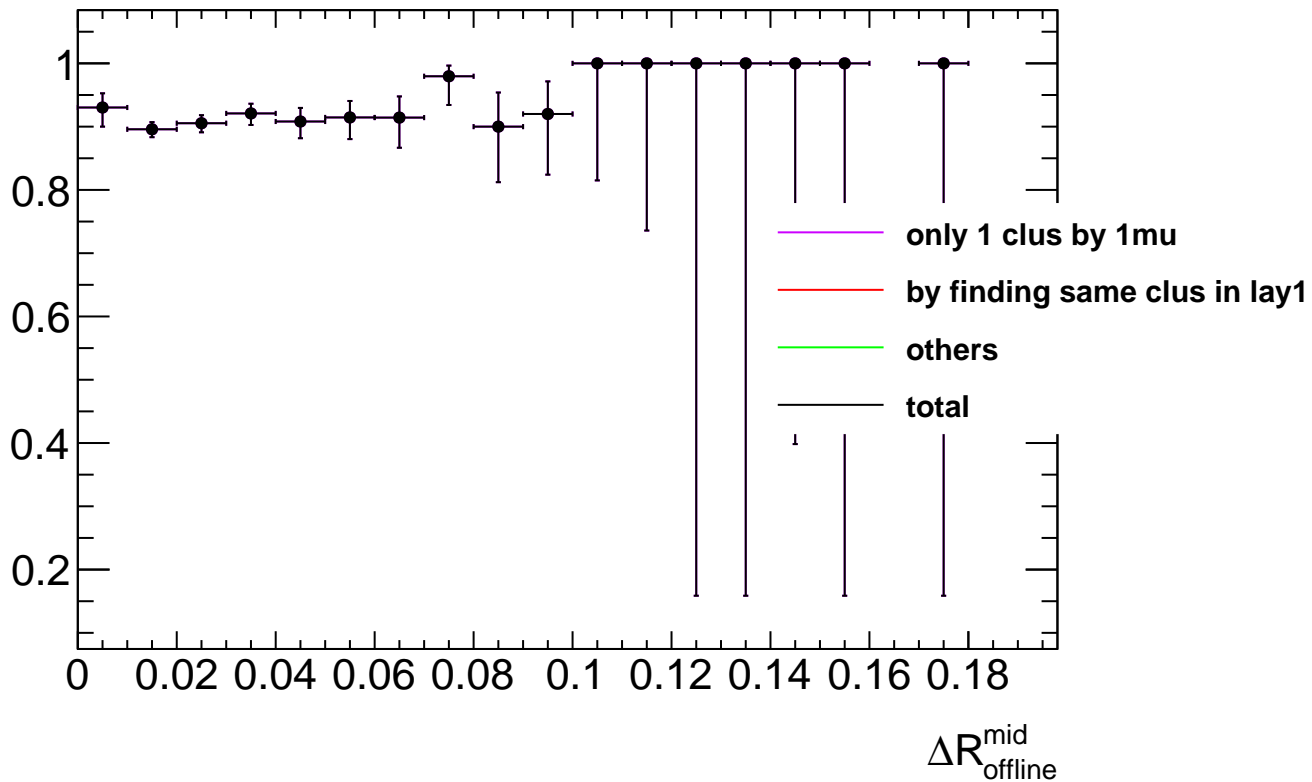
Ratio $N_{1clus!}/N_{clusRoad}=1$

Legend:
- 1clus per 1lay
- 1 middle phi
- others
- total

Y-axis: ratio

X-axis: $\Delta R_{offline}^{mid}$
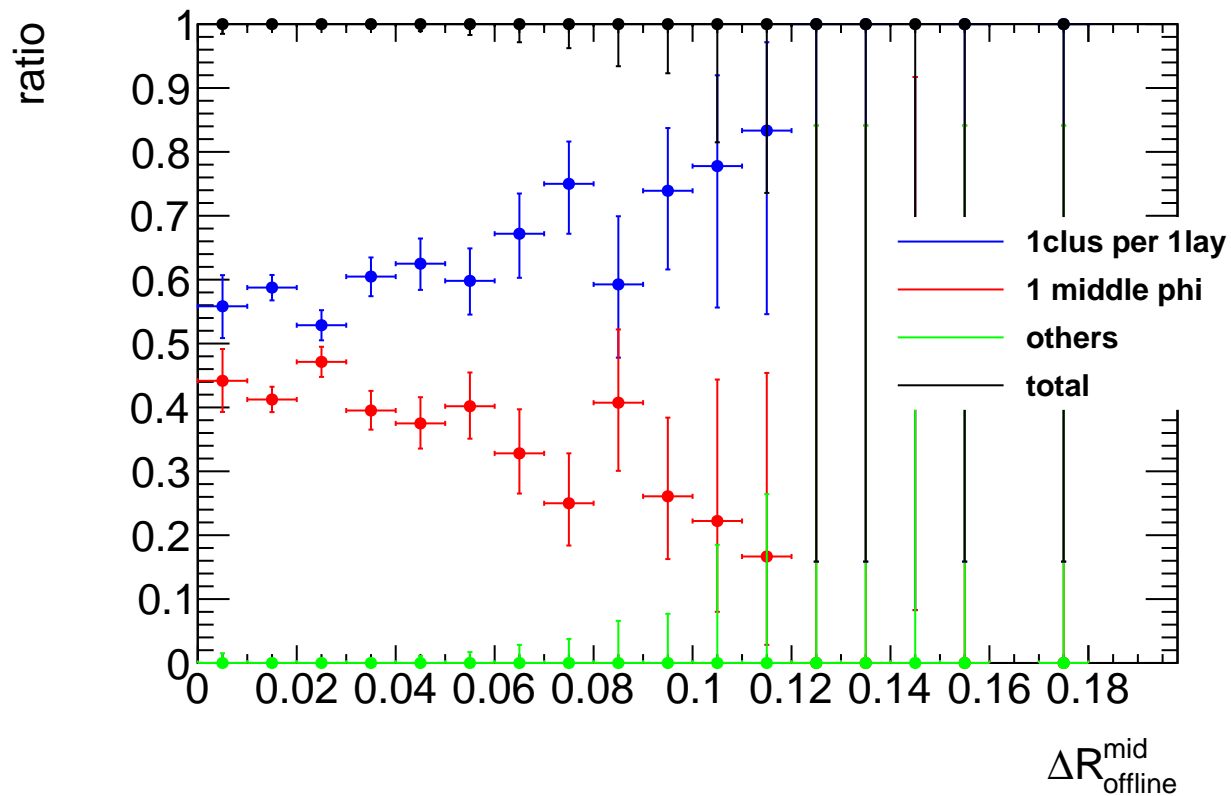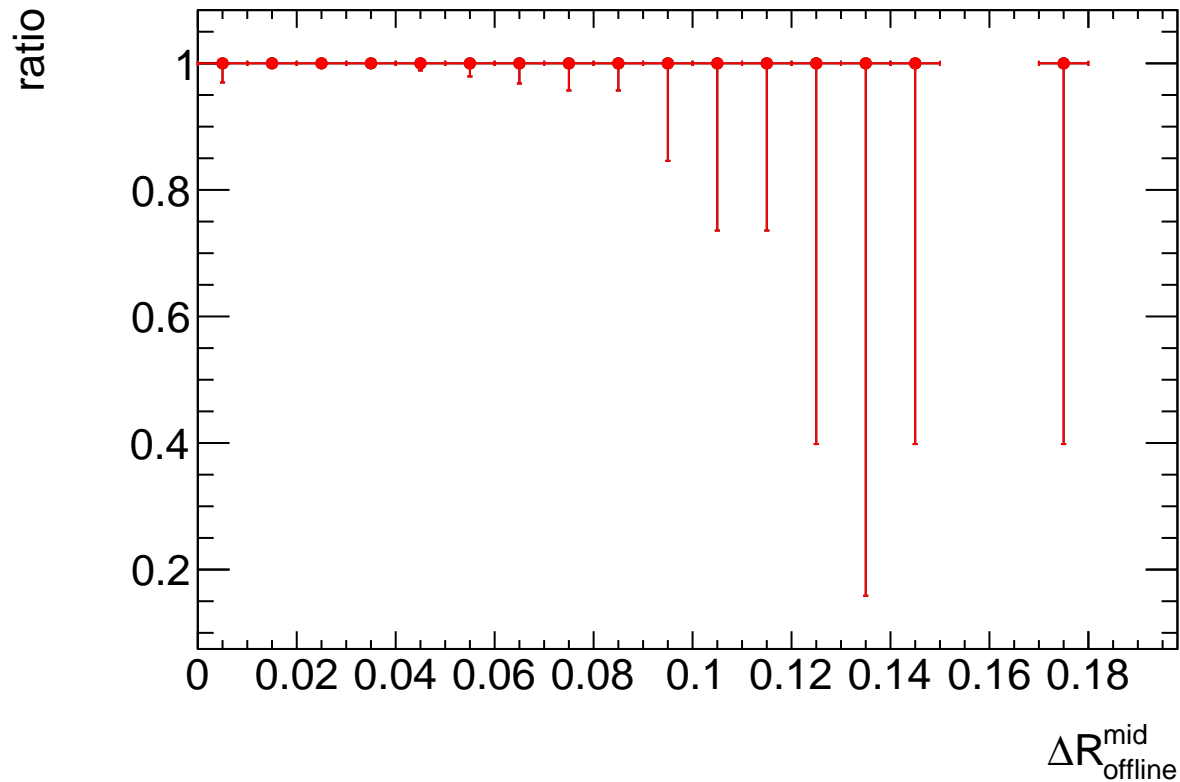
η_{RoI} vs ϕ_{RoI} (1clusterRoad)
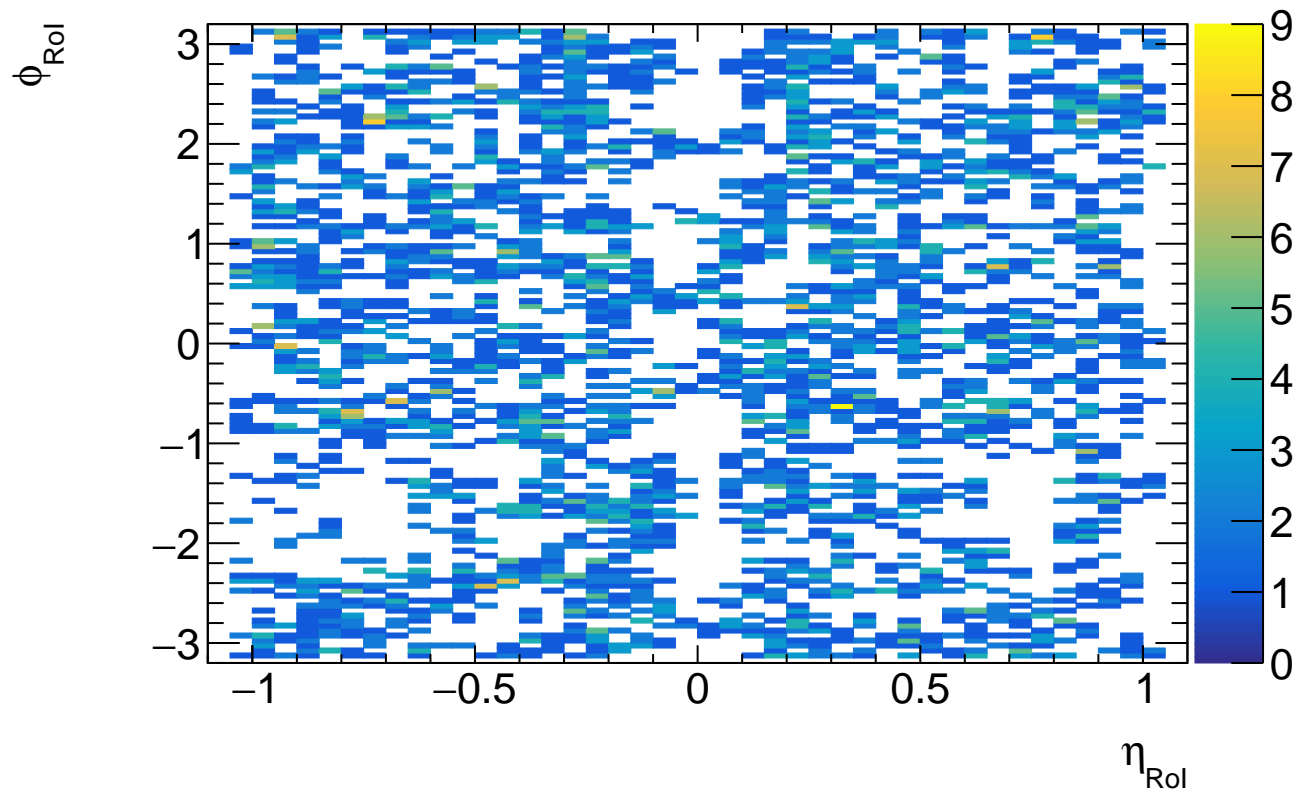
Ratio $N_{\text{3clus in 2layers}}/N_{\text{clusRoad}} > 2$

ratio

$\Delta R^{\text{mid}}_{\text{offline}}$
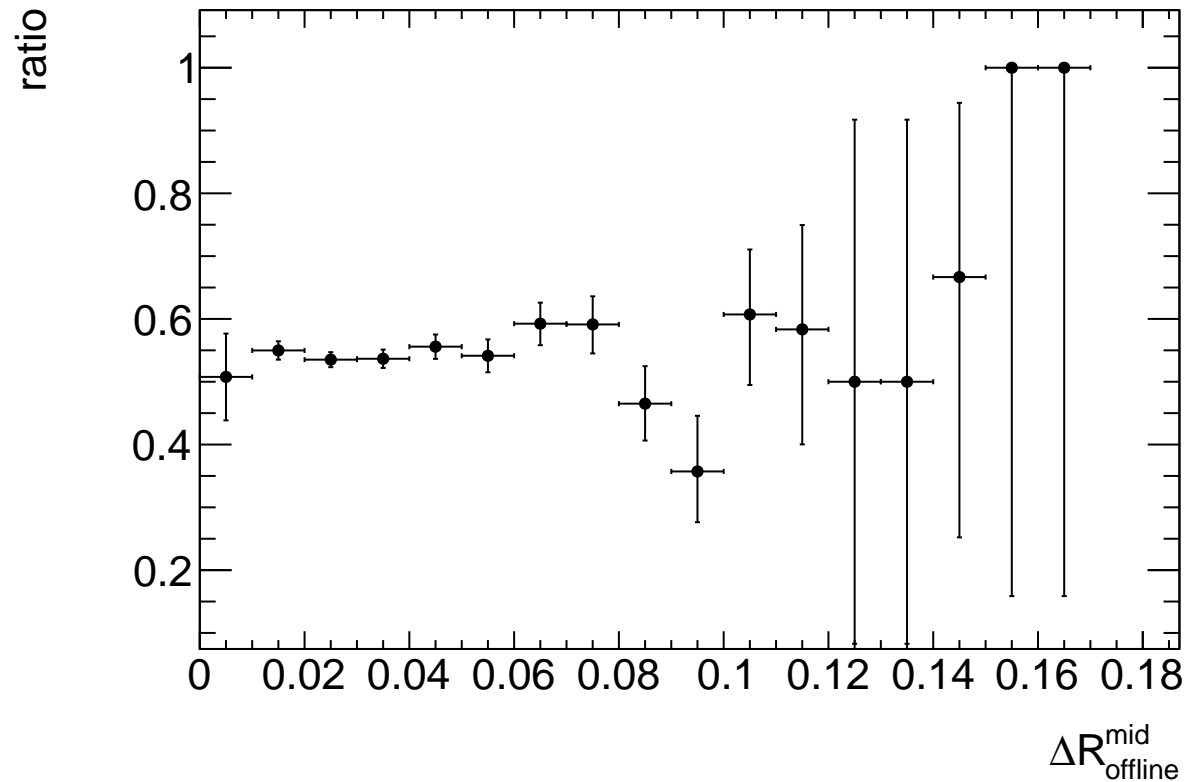
Ratio $N_{< 3\ mdts}/N_{clusRoad}=2$ && $N_{sp}<2$

ratio

$\Delta R^{mid}_{offline}$

Ratio of 2muon in 1RoI tower events

ratio

$\Delta R_{offline}^{mid}$
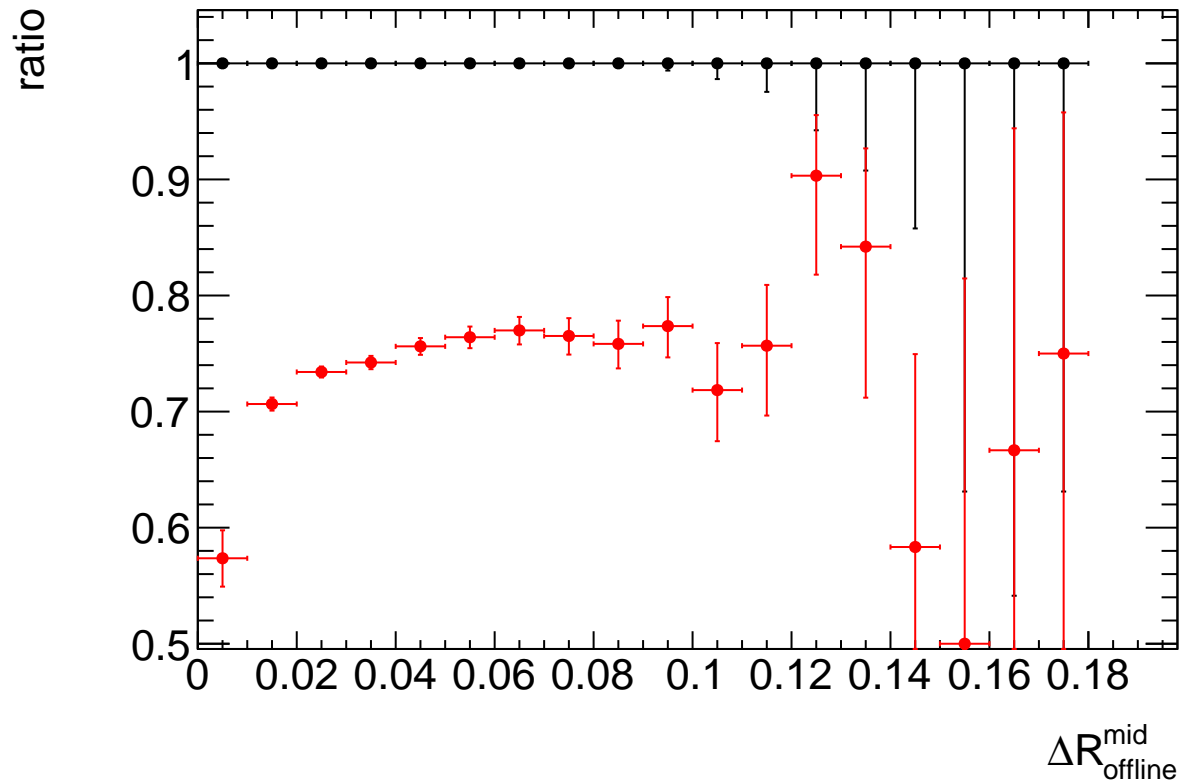
the number of superpoint (N_{pT} != 2)

N_{pT} < 2 sector

events

2200

2000

1800

1600

1400

1200

normal sec

special sec

condition
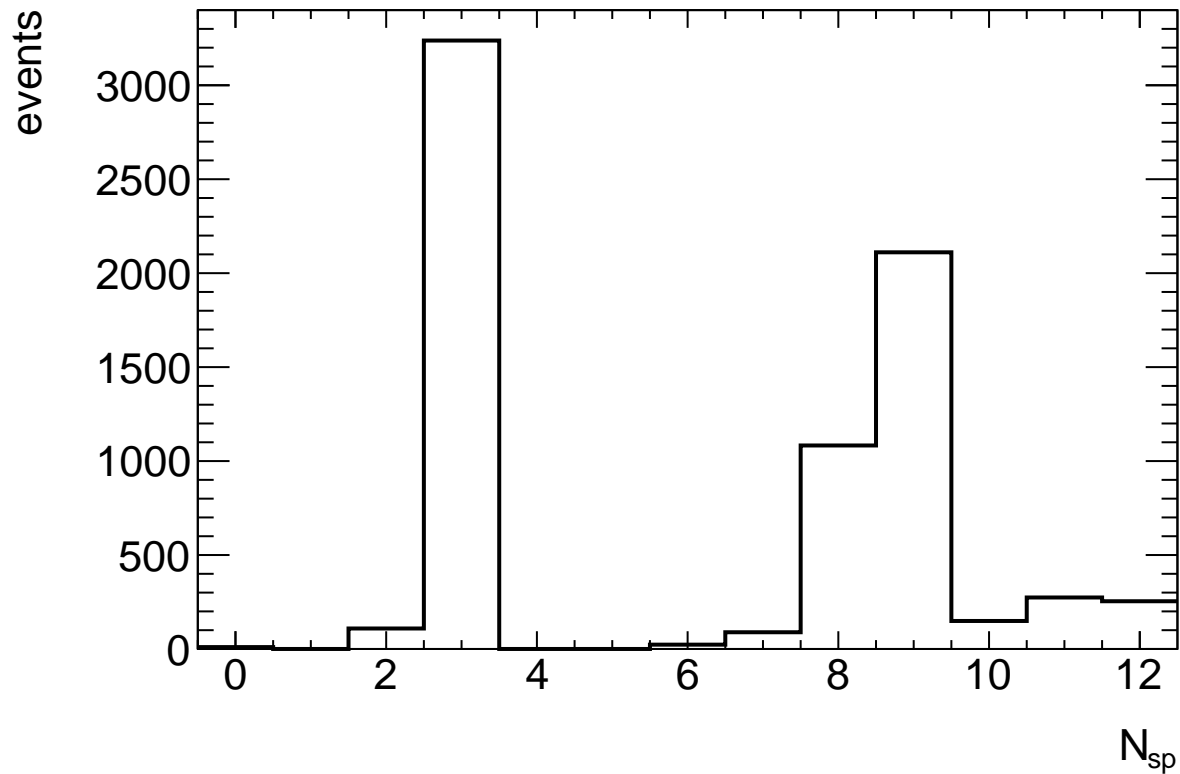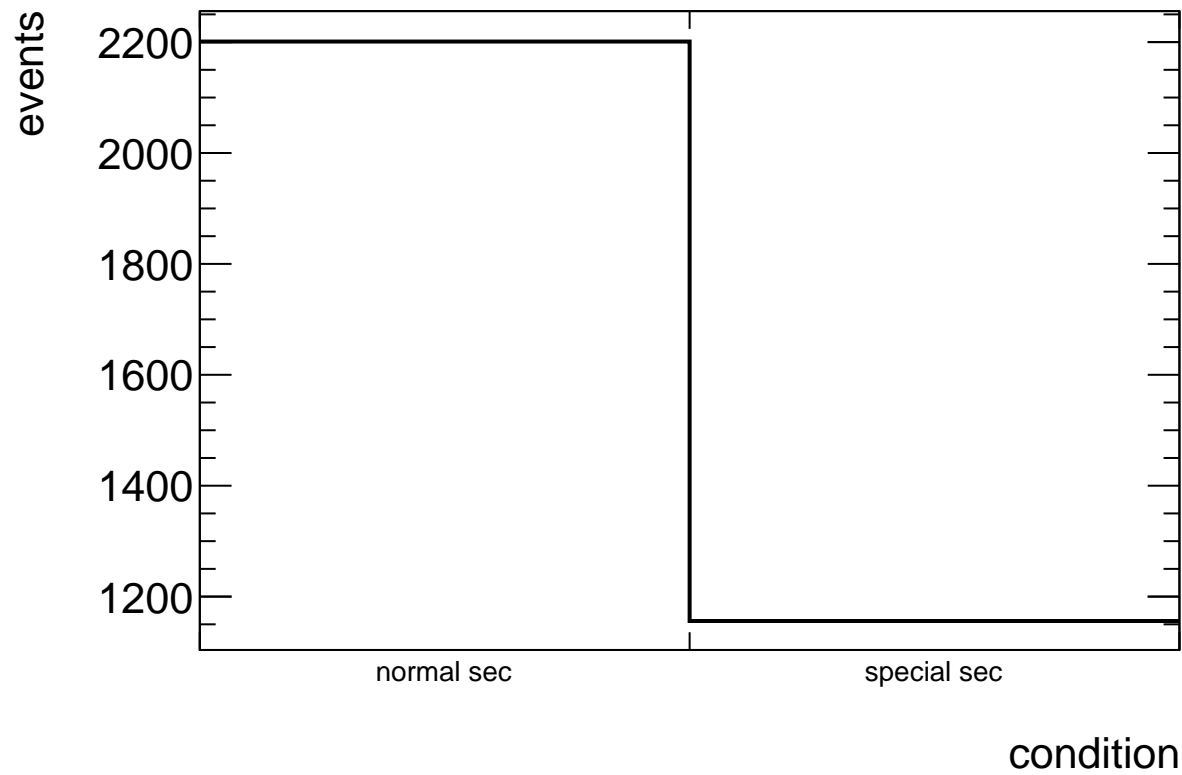
the number of middle clusterRoad (N_{pT} < 2 & normal sector)

events

$N_{clusRoadMid}$
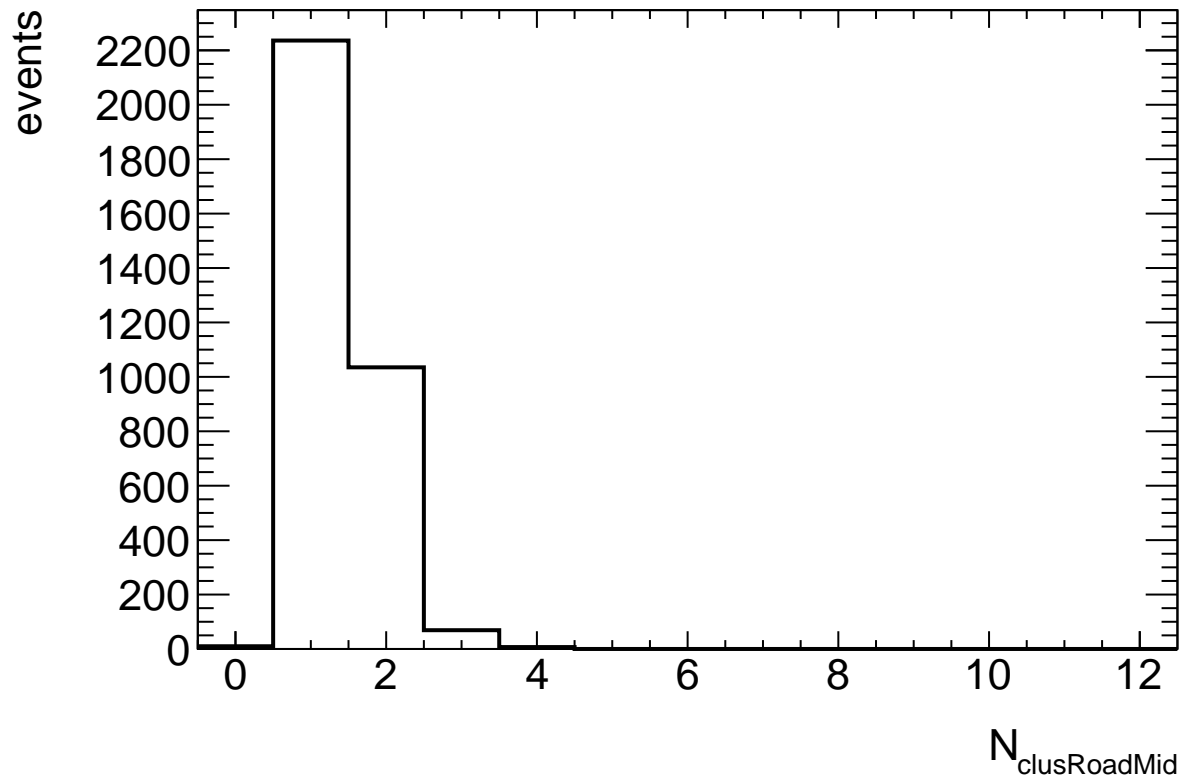
the number of pT from clusterRoad

N_{pT}