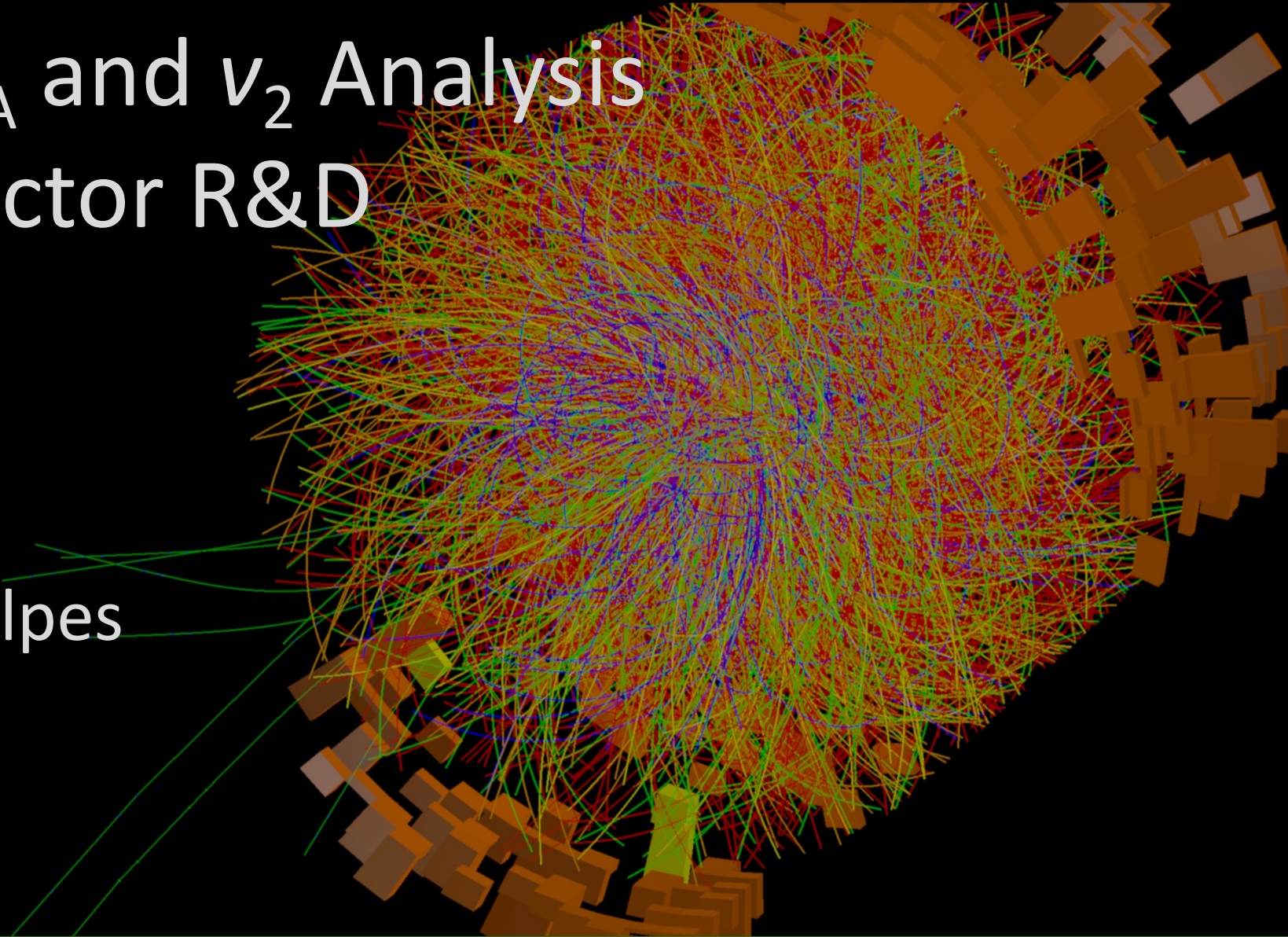


Inclusive Jet R_{AA} and v_2 Analysis and FoCal detector R&D



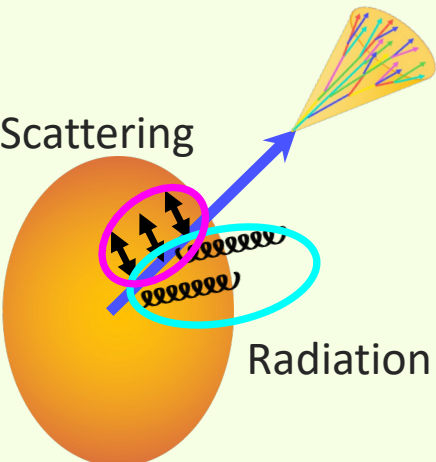
University Grenoble Alpes
University of Tsukuba
RIKEN (JRA)

Takuya Kumaoka



Jet v2 measurement

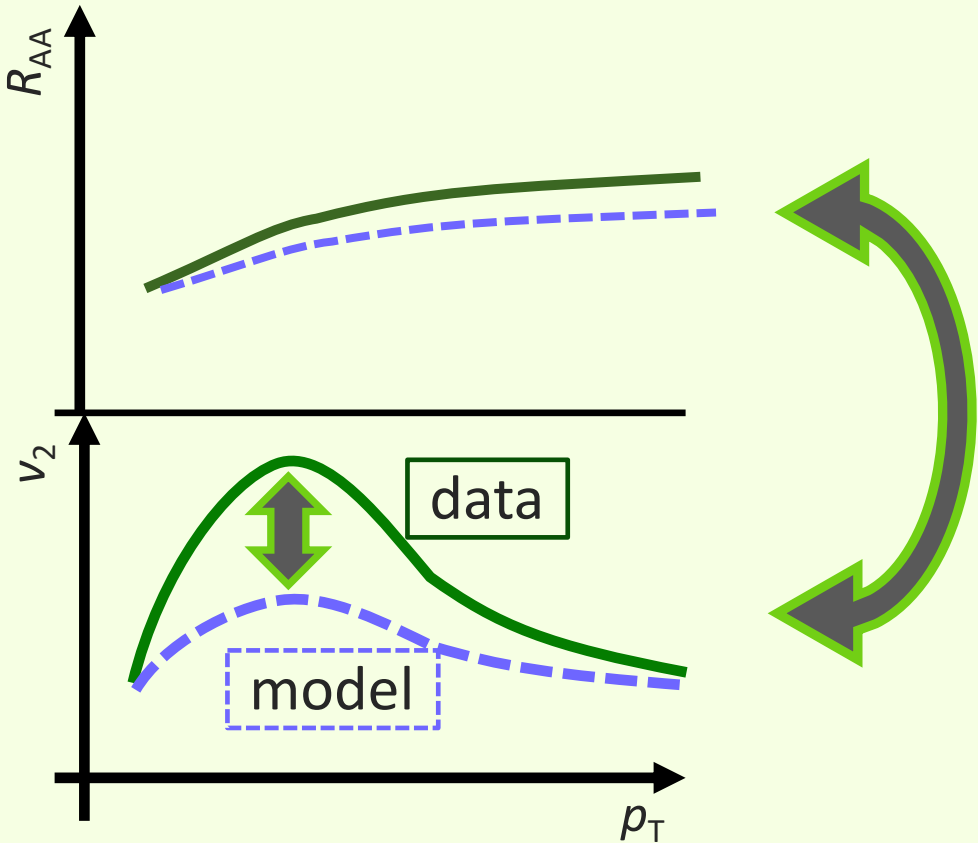
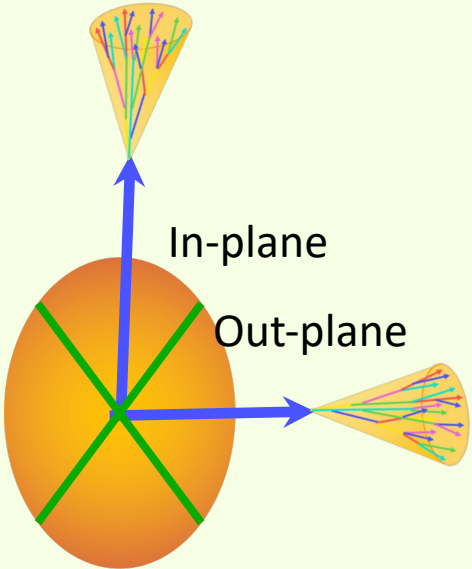
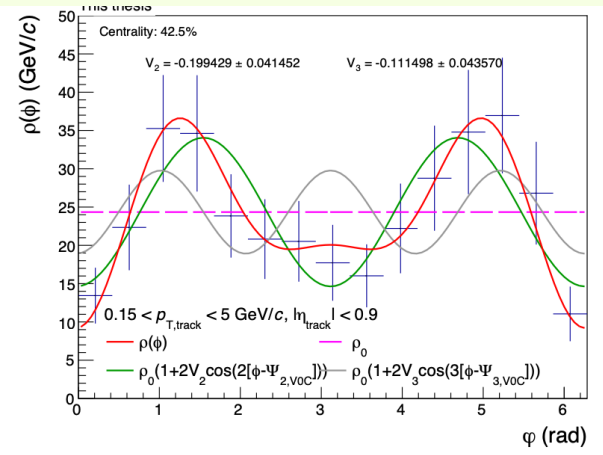
Jet v2 measurement enable to measure the jet suppression effect according into QGP matter shape



$$v_2^{\text{jet}} = \frac{1}{\text{Res} \{ \psi_2^{\text{meas}} \}} \frac{\pi}{4} \frac{N_{in} - N_{out}}{N_{in} + N_{out}}$$

N_{in}, N_{out} : Jet yield at in-plane and at out-of-plane
 $\text{Res} \{ \psi_2^{\text{meas}} \}$: Event plane resolution

Radiation / Scattering dominant?
 $\rightarrow L^2$ or L



It enables to two kinds of approach for measuring pass length dependency of jet suppression

Event Plane Calibration

I was making the code for event plane calibration.

→ I needed to do by my self because there is nothing to calibrate V0 merge and TPC based on previous study.

- V0 merge calibration

$$\mathbf{Q}_{n,V0} = \chi_{n,V0A}^2 \mathbf{Q}_{n,V0A} + \chi_{n,V0C}^2 \mathbf{Q}_{n,V0C}$$

χ_n (weights): approximately proportional to the event plane resolution in each detector

- Collision point dependency

However, other people using event plane use other way.

-> So eventually I follow the other people.

-> And I modified my code to apply the calibration way.

Raw Jet Spectram

I prepared own code to estimate event plane, background, raw jets pT

-> I confired it works well in local.

-> However, on the train, it does not work.

(Exit code: 137: 16 jobs, 15: 66,)

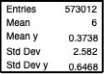
*** Break *** segmentation violation

```
#9 0x00002b4296310799 in AliAnalysisTaskRawJetWithEP::MeasureBkg() () from /cvmfs/alice.cern.ch/el7-x86_64/Packages/AliPhysics/vAN-20221206_02-1/lib/libPWGJEEMCALJetTasks.so
#10 0x00002b4296310ec4 in AliAnalysisTaskRawJetWithEP::Run() () from /cvmfs/alice.cern.ch/el7-x86_64/Packages/AliPhysics/vAN-20221206_02-1/lib/libPWGJEEMCALJetTasks.so
#11 0x00002b42872e0d54 in AliAnalysisTaskEmcal::UserExec(char const*) () from /cvmfs/alice.cern.ch/el7-x86_64/Packages/AliPhysics/vAN-20221206_02-1/lib/libPWGEMCALbase.so
```

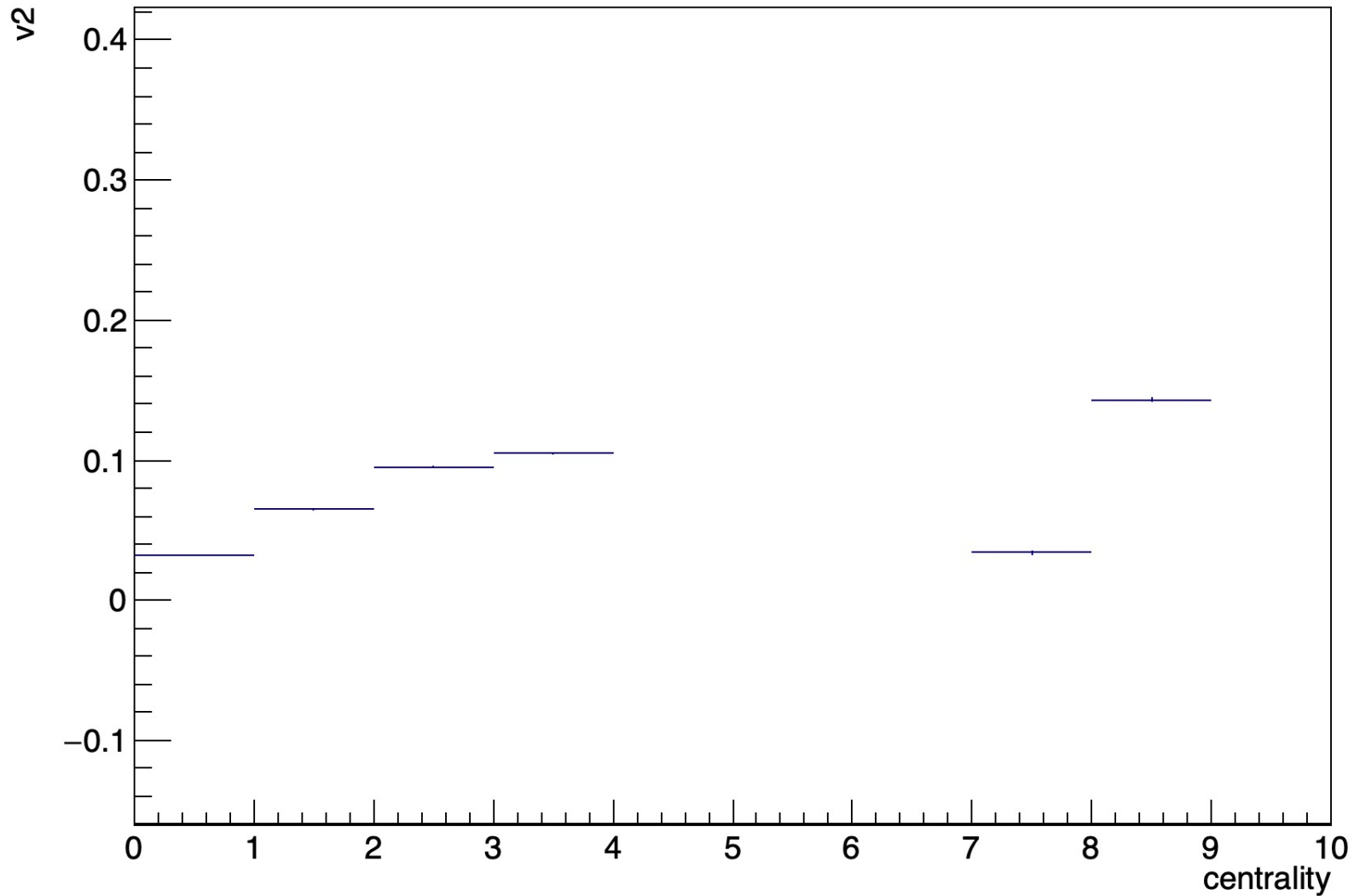
And many jobs killed by TTL

So I am checking to reduce the number of files includeing on job

350,000 Events
(a part of one run of LHC18q)

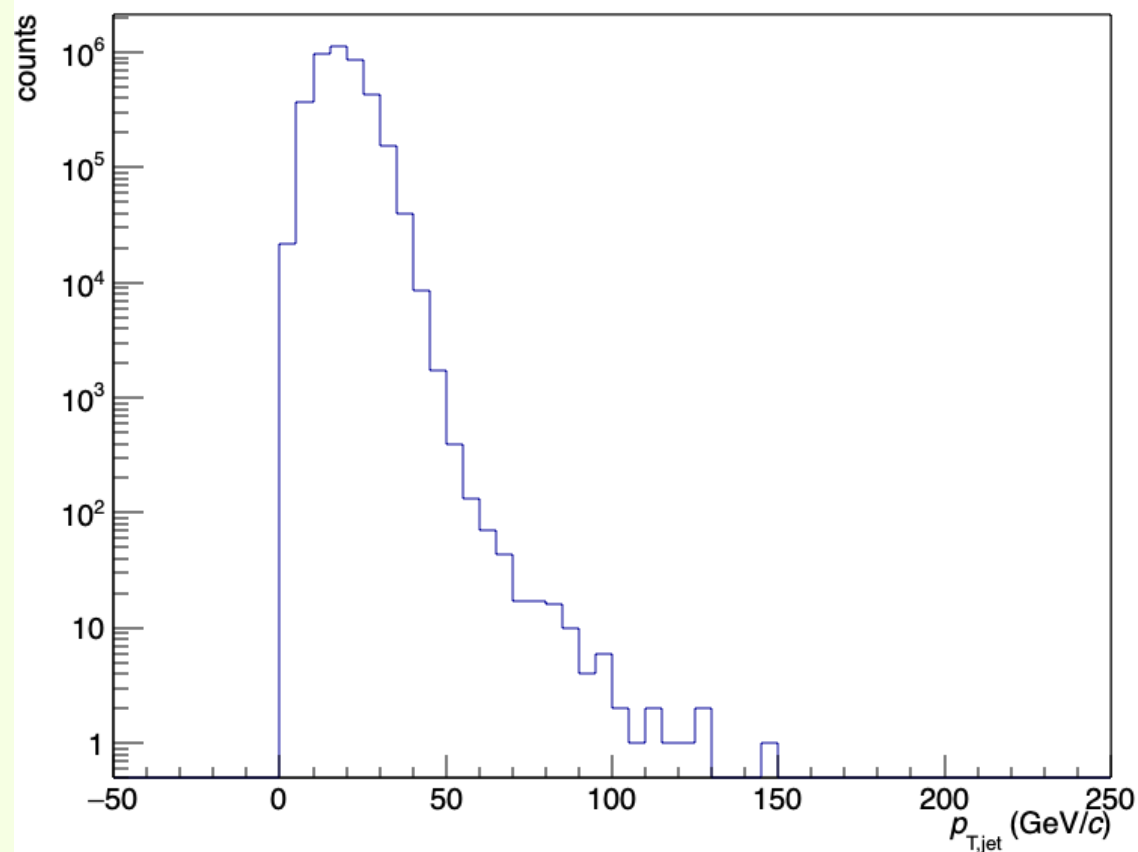


V2 for centrality

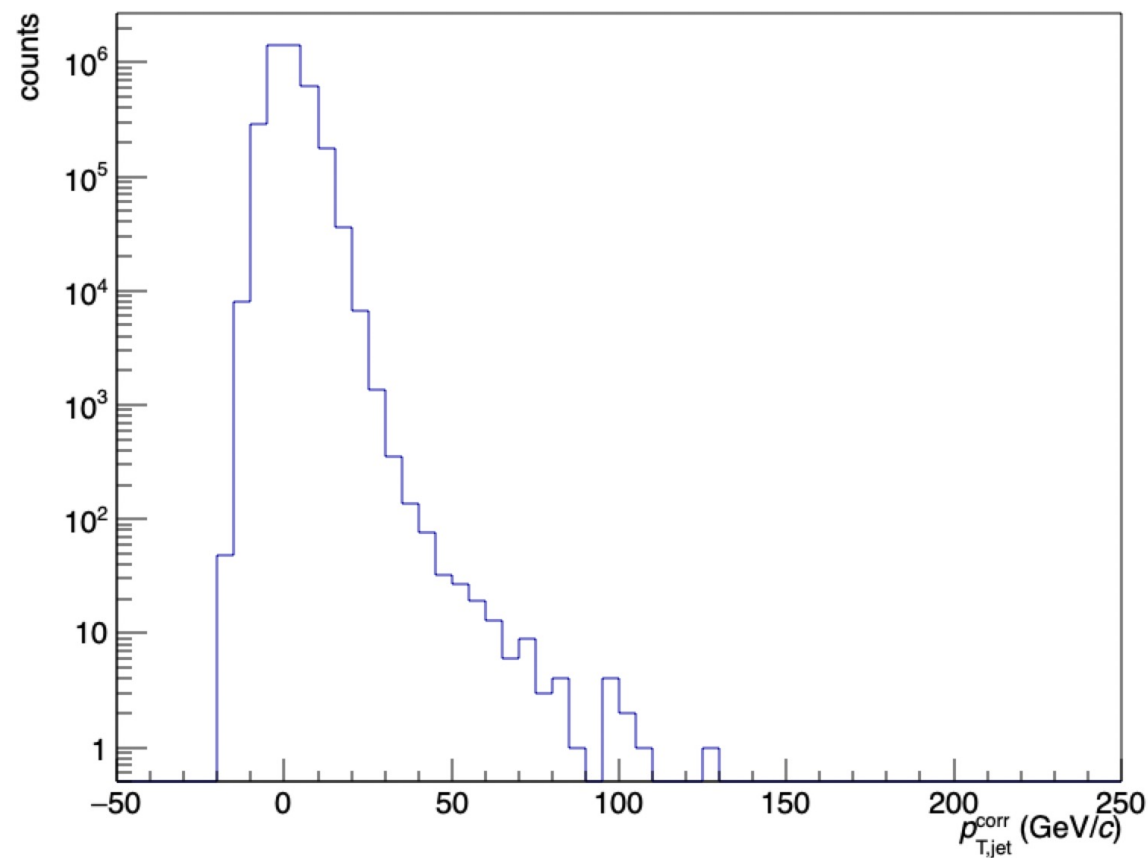


Inclusive jet pt

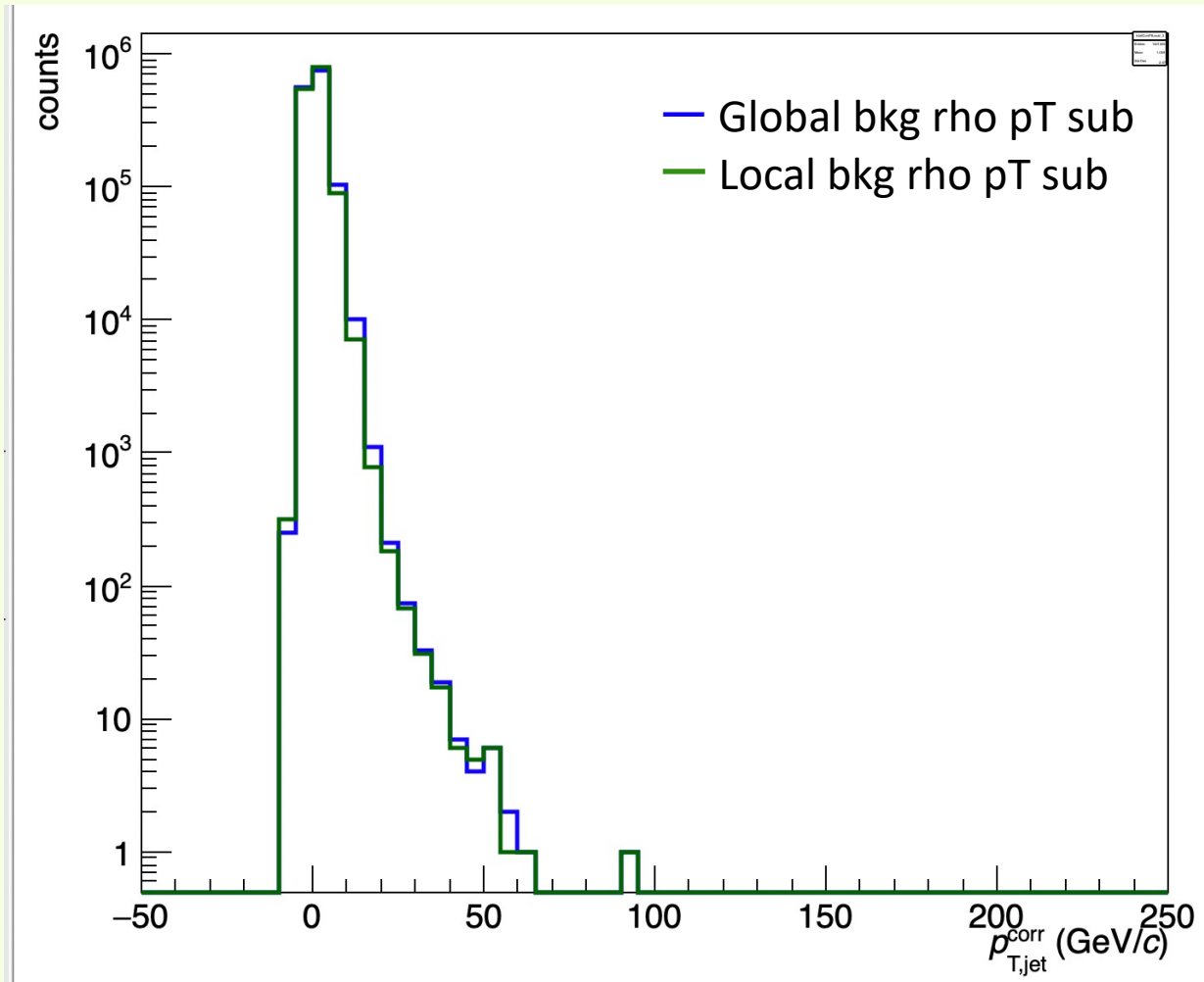
Raw jets



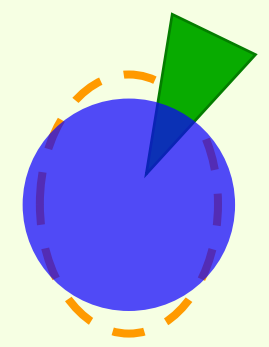
Raw jets – global rho



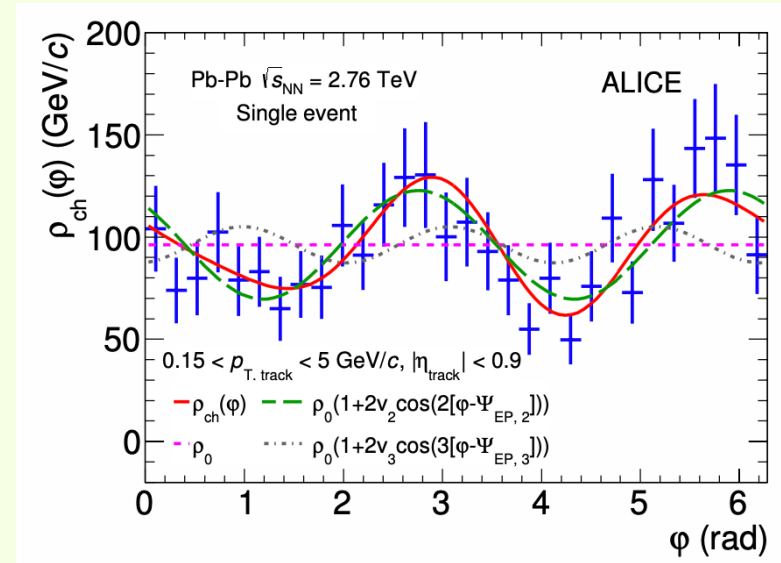
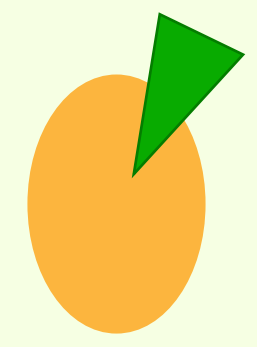
350,000 Events
(a part of one run of LHC18q)



Global bkg rho pT sub
Median of Bkg

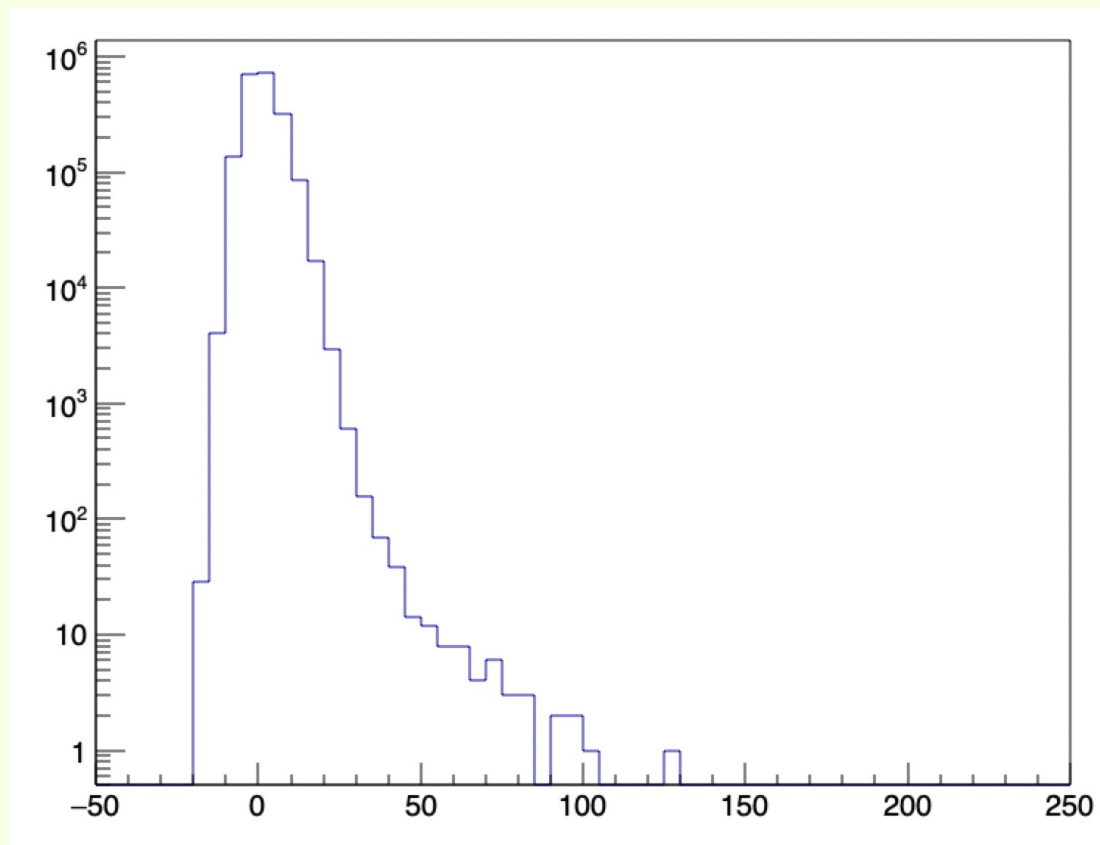


Local bkg rho pT sub
Scale global rho based of event shape

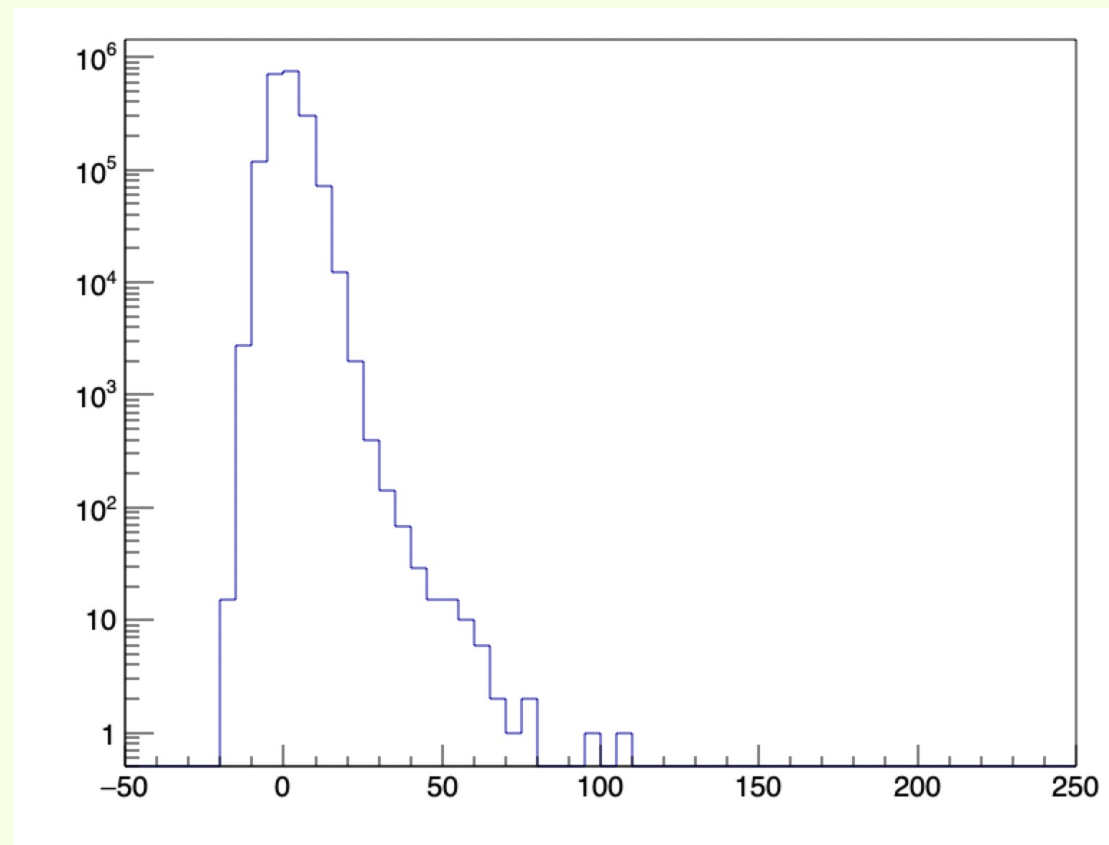


Compare with event plane

Raw jets in inplane



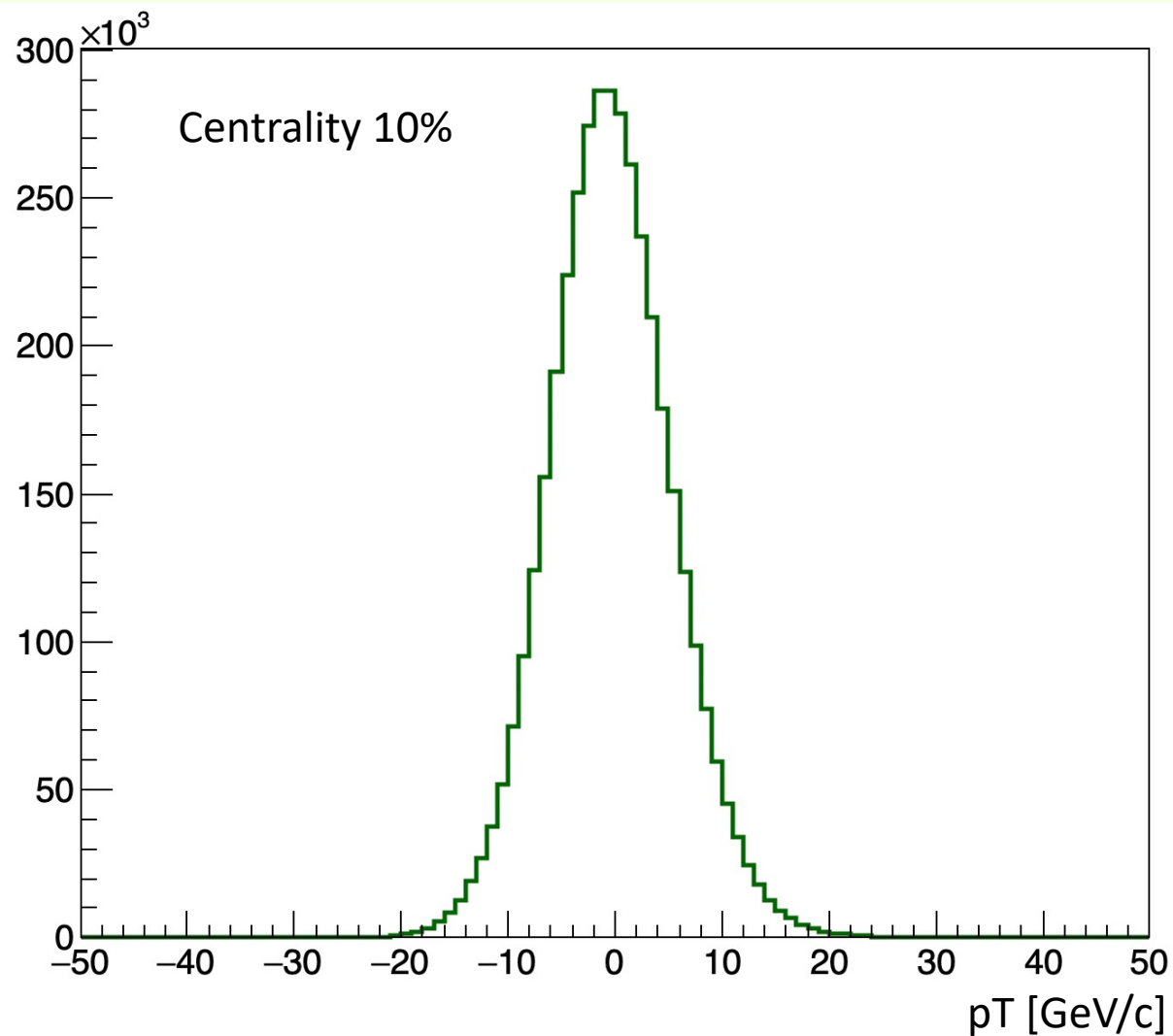
Raw jets in out of plane



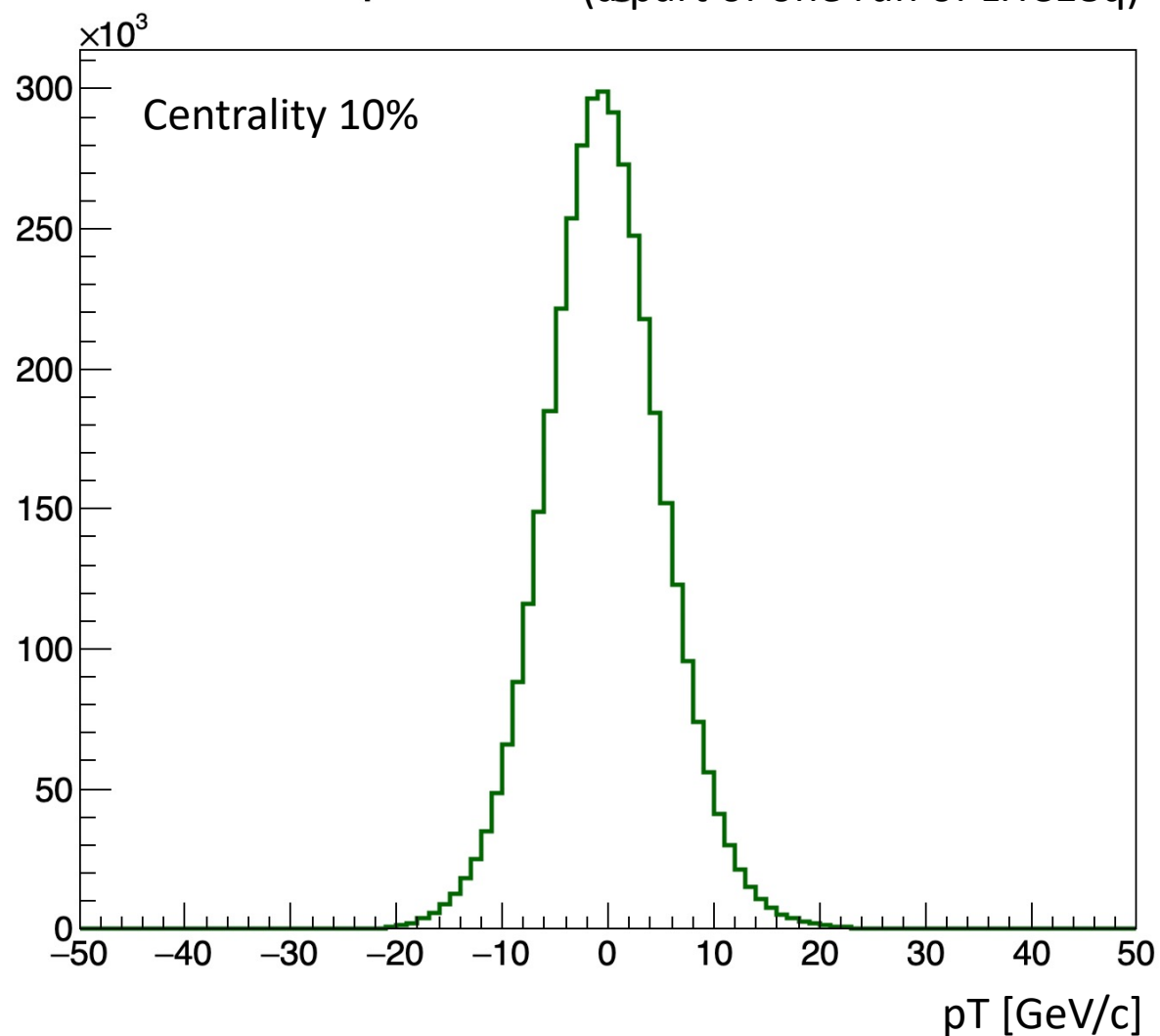
350,000 Events
(a part of one run of LHC18q)

Delta pT estimated by random cone

Global

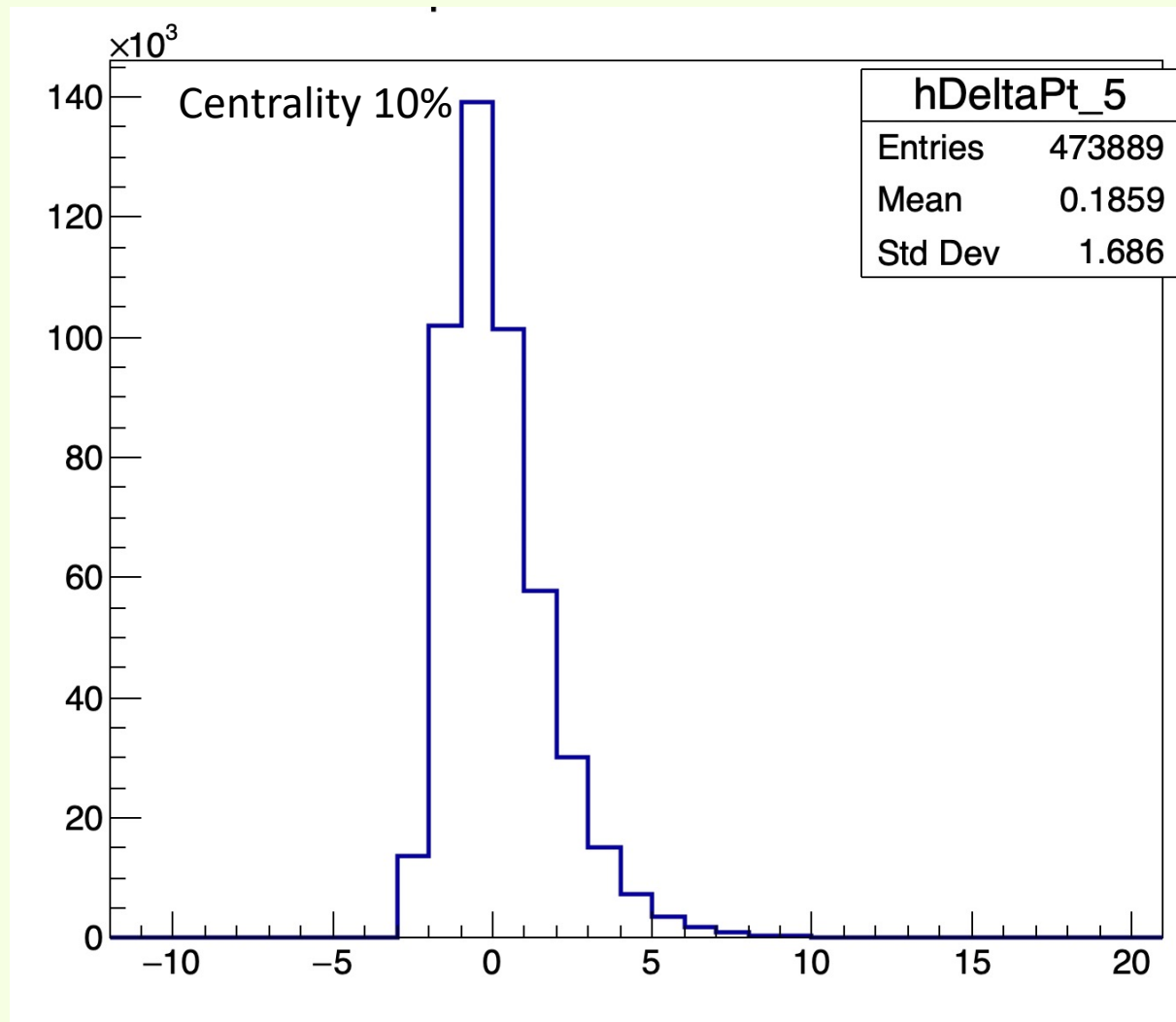


local

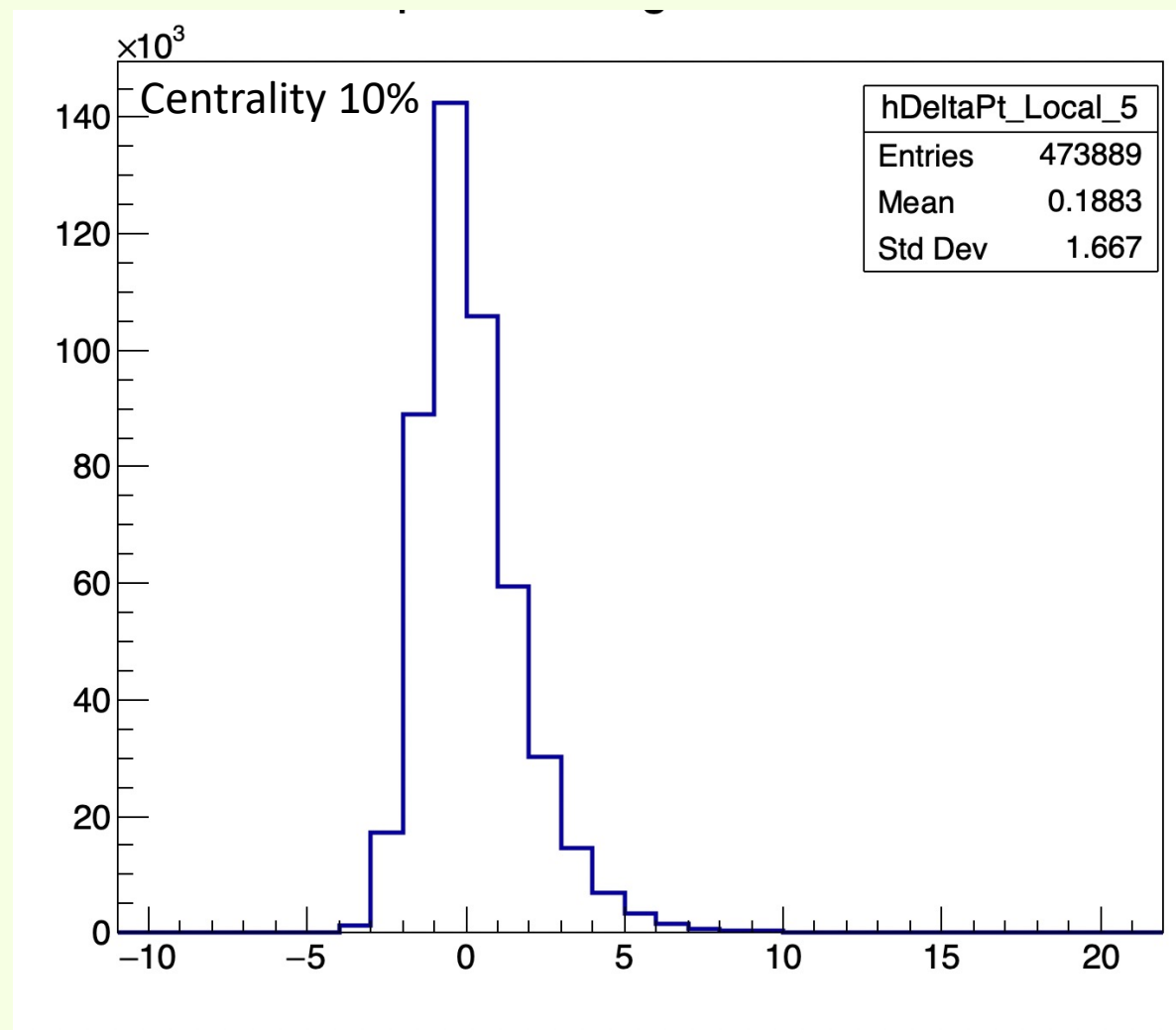


Delta pT estimated by random cone

Global



local



350,000 Events
(a part of one run of LHC18q)

Backup Slides

Background pT for angle

