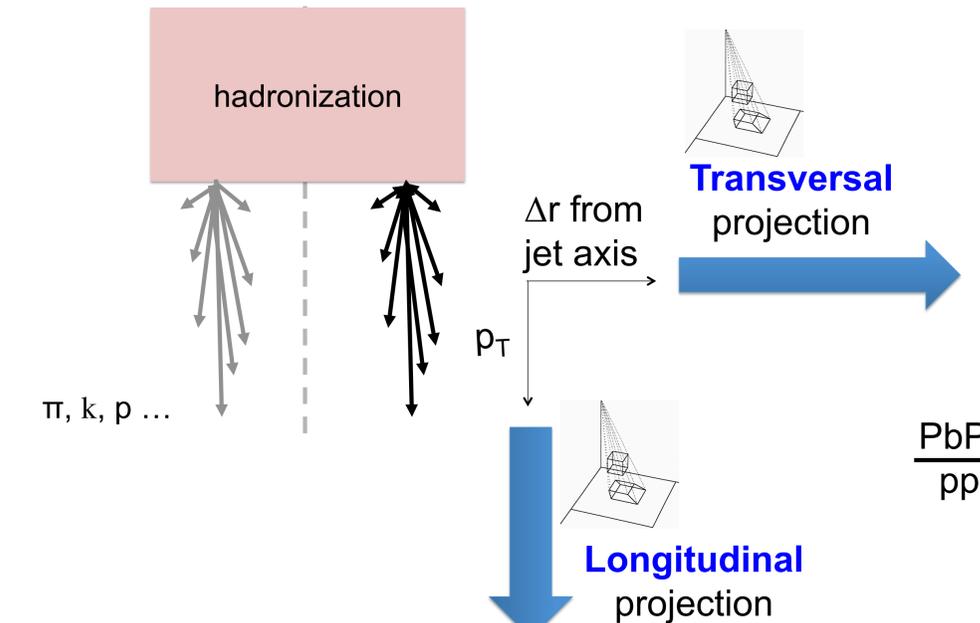
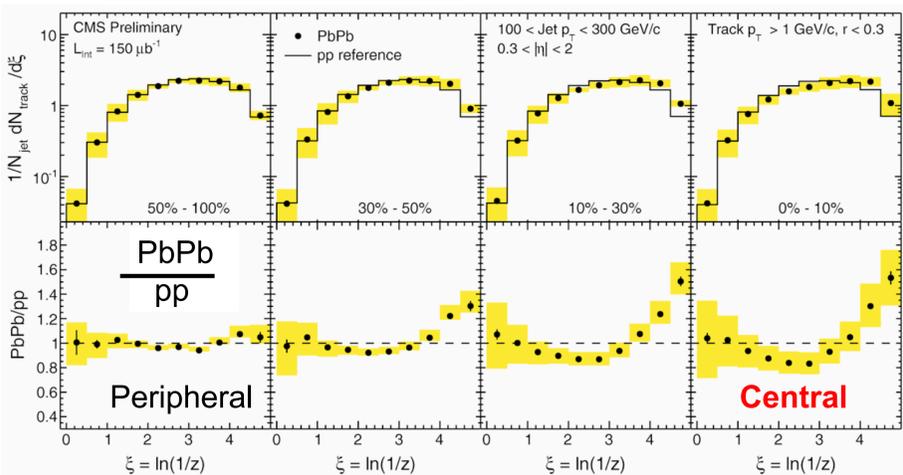


- Given the same parton momenta, would jets from pp and PbPb have identical energy distribution of hadrons?
- Compared fragmentation pattern
- Momentum distribution of jets in pp are reweighted in order to be consistent with PbPb



Fragmentation Function PAS-HIN-12-013

$$\xi = \ln(1/z) = \ln(p_{\text{jet}}/p_{\parallel}^{\text{track}})$$



Motivation

The **Energy loss of partons** in a hot and dense medium has been observed in measurements of high p_T hadrons and jets [1-2]

Question: Can the internal structure of jet be influenced by the interaction with medium?

We studied **hadronization patterns of jet** in pp and PbPb

CMS Detector good for anti- k_T jet reconstruction

Silicon Tracker

Good efficiency & purity from low to high p_T

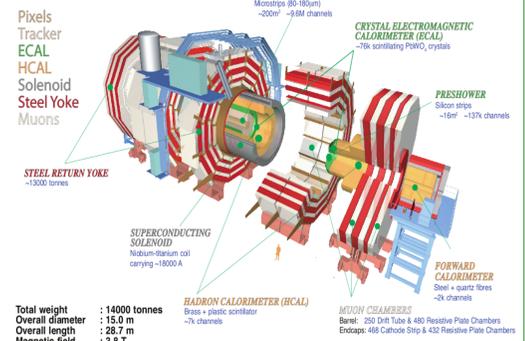
Calorimeters

High resolution & segmentation
Large η coverage up to 5 units
(Even larger with CASTOR)

Particle Flow method

Provides elemental energy blocks for anti- k_T jet algorithm
 $R = 0.3, p_T^{\text{jet}} > 100 \text{ GeV}/c$

CMS Detector



Differential Jet Shape PLB 730, 243 (2014)

$$\rho(r) = \frac{1}{J_{\text{ch}}} \frac{1}{dr} \frac{1}{N_{\text{jet}}} \sum_{\text{jets}} \frac{p_T(r - \delta r/2, r + \delta r/2)}{p_T^{\text{jet}}}$$

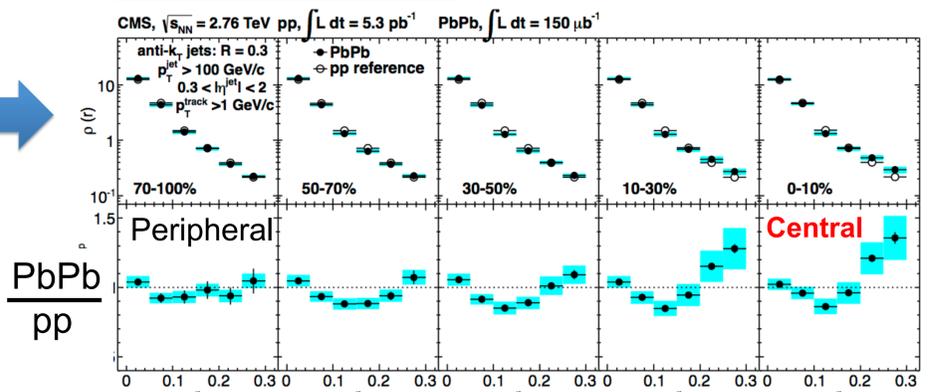
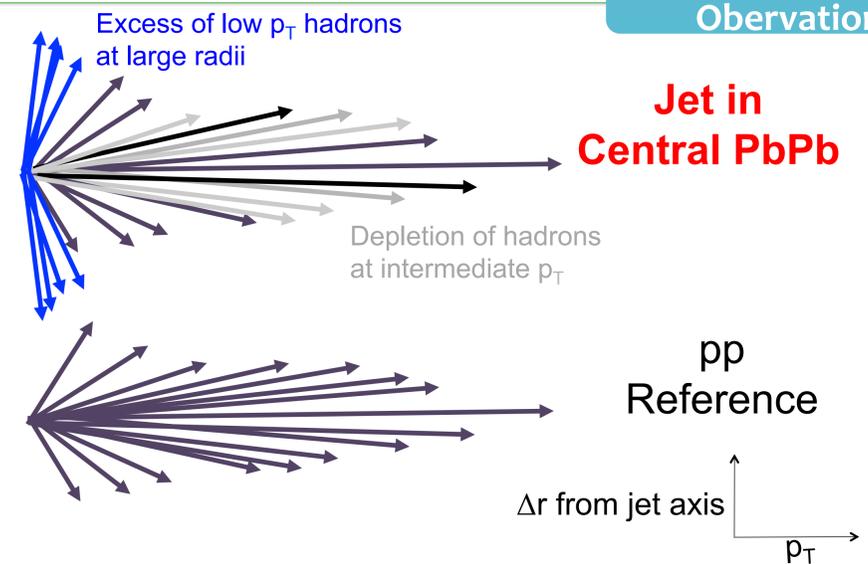
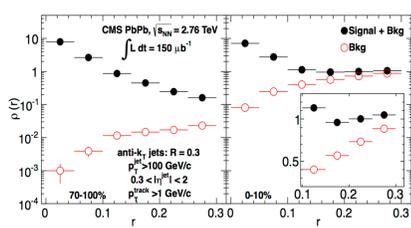
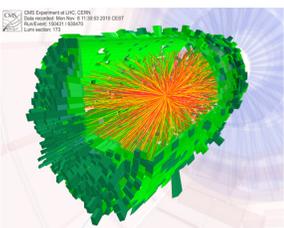


Illustration of Observations



Challenge in analysis

Combinatorial background due to tracks from underlying events. Uncorrelated tracks are subtracted by event mixing and pseudo-rapidity reflection method



Summary

Excess of low p_T particles in jet and energy on jet periphery

- Redistribution of energy inside jet cone was measured in PbPb collisions and compared to pp collisions
- A depletion of transverse momentum fraction at intermediate radii (0.1-0.2) and an excess at large radii (>0.2) were observed
- In the intermediate hadron p_T ($2 < \xi < 3$), a depletion of PbPb/pp ratio was seen, which is accompanied by a rise in low p_T ($3.5 < \xi < 5.5$)

Centrality dependence

The modifications of fragmentation function and differential shape are gradually intensified for higher centrality.

References

- [1] Eur.Phys.J. C72 (2012) 1945, J.Phys. G38 (2011) 124014
- [2] Phys. Rev.Lett. 105(2010), Phys.Lett. B712 (2012) 176-197