

Recent heavy-ion results at CMS from the LHC run 2

Wei Li (Rice University)

Please visit:

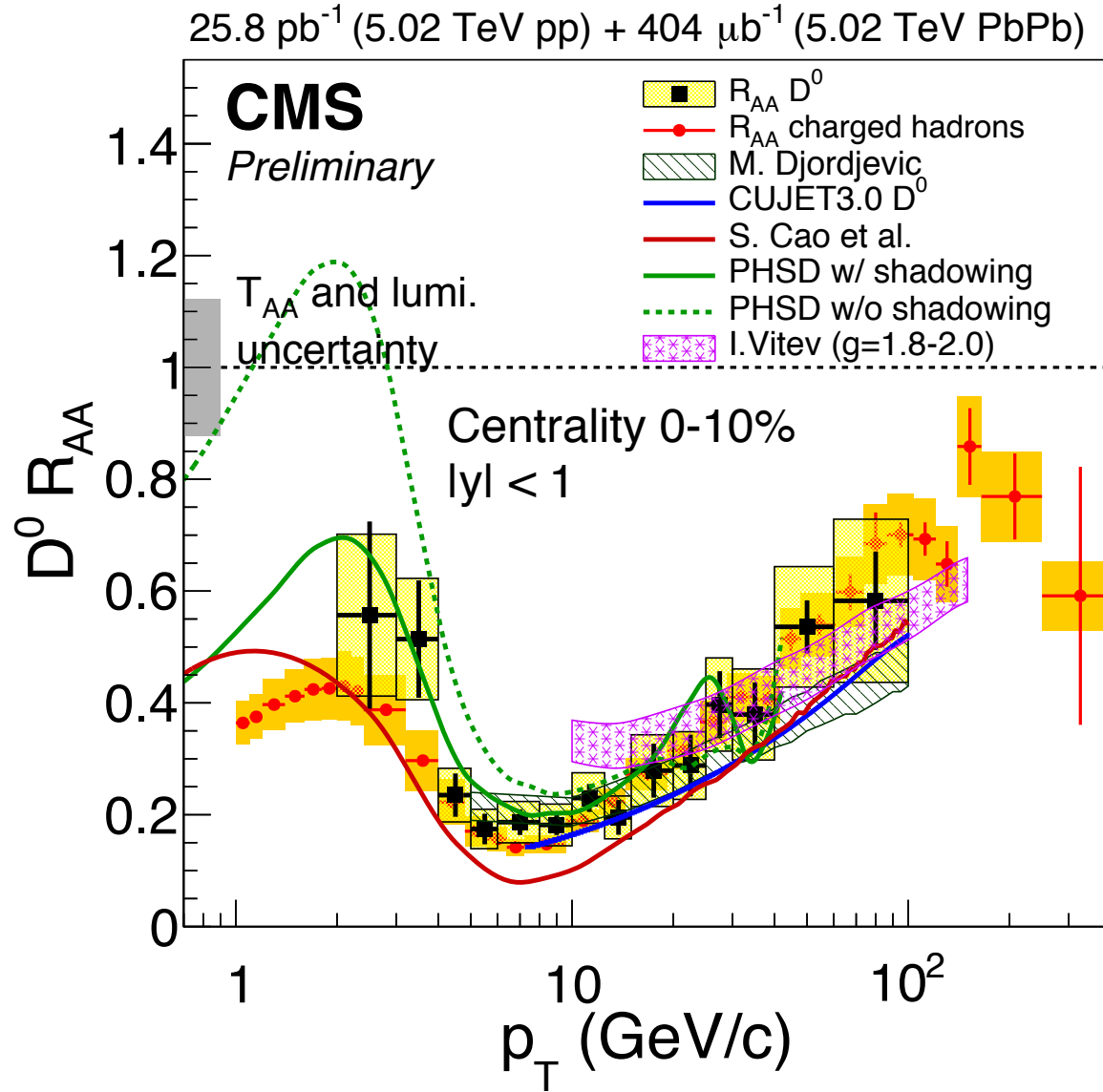
<https://twiki.cern.ch/twiki/bin/view/CMSPublic/PhysicsResultsHIN>



XII Quark Confinement and the Hadron Spectrum
Aug. 29 – Sep. 3, 2016



Nuclear modification of heavy vs light quarks

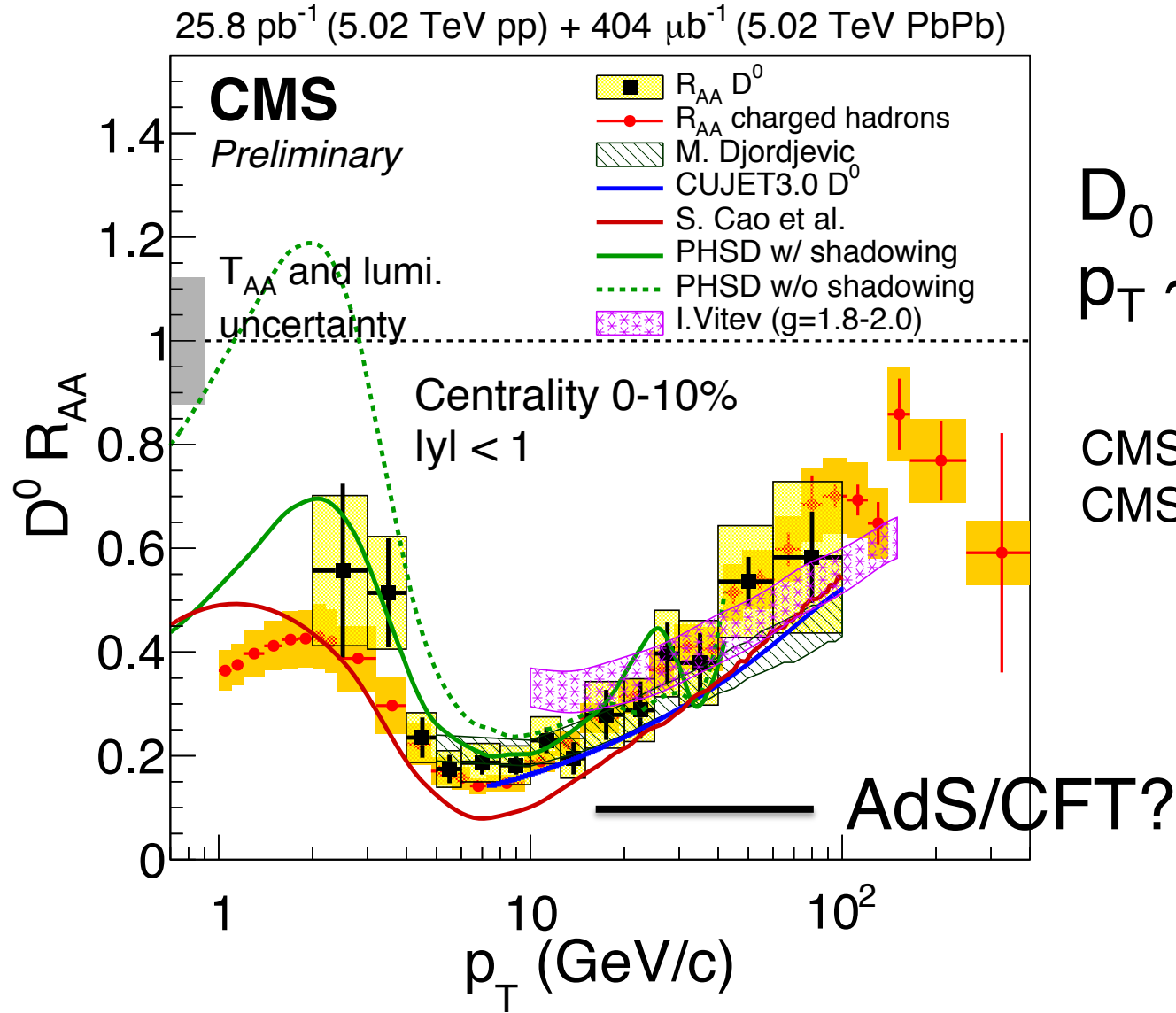


$D^0 R_{AA}$ up to
 $p_T \sim 100$ GeV/c!

CMS-PAS-HIN-16-001
CMS-PAS-HIN-15-015

Comparable suppression of heavy vs light flavor

Nuclear modification of heavy vs light quarks



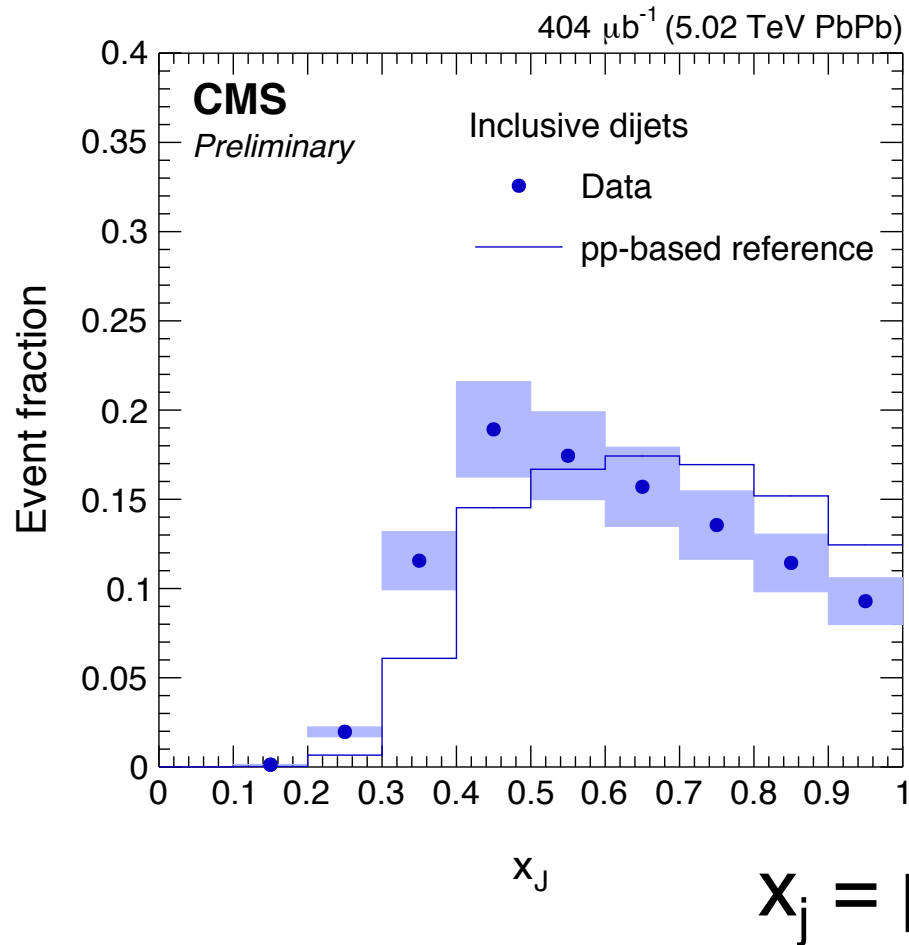
$D^0 R_{AA}$ up to
 $p_T \sim 100$ GeV/c!

CMS-PAS-HIN-16-001
CMS-PAS-HIN-15-015

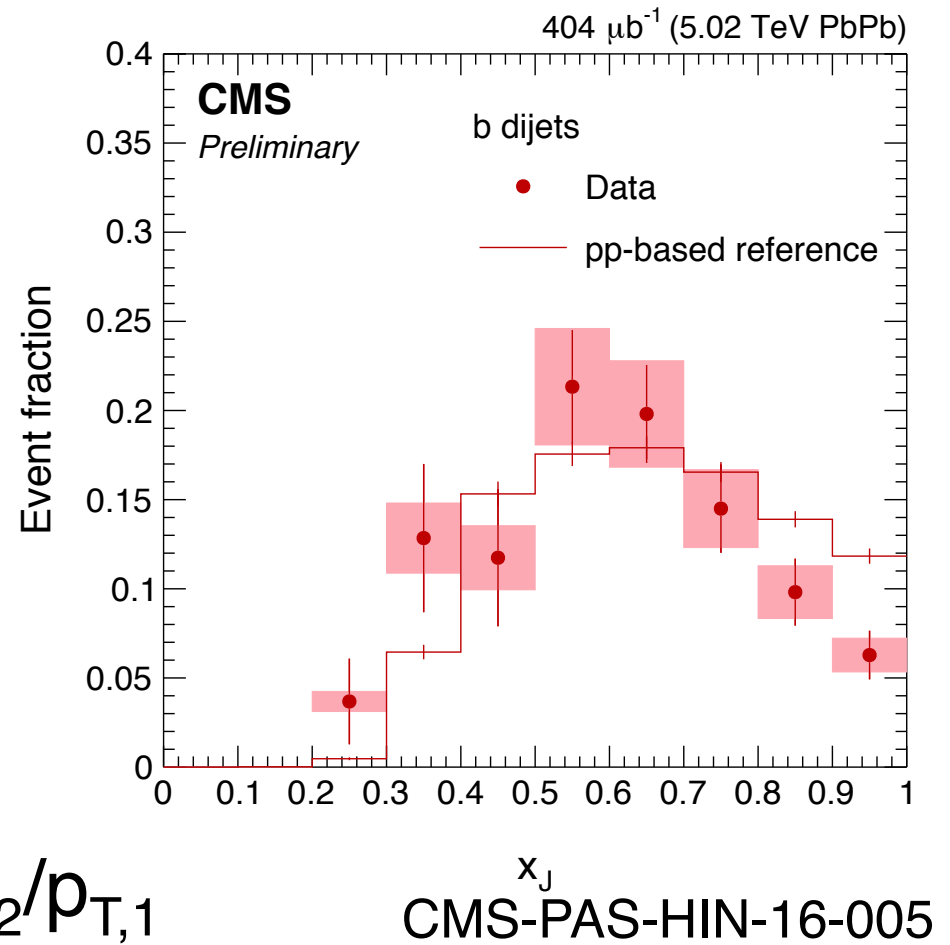
Comparable suppression of heavy vs light flavor

Di-b-jet momentum imbalance

Inclusive jets



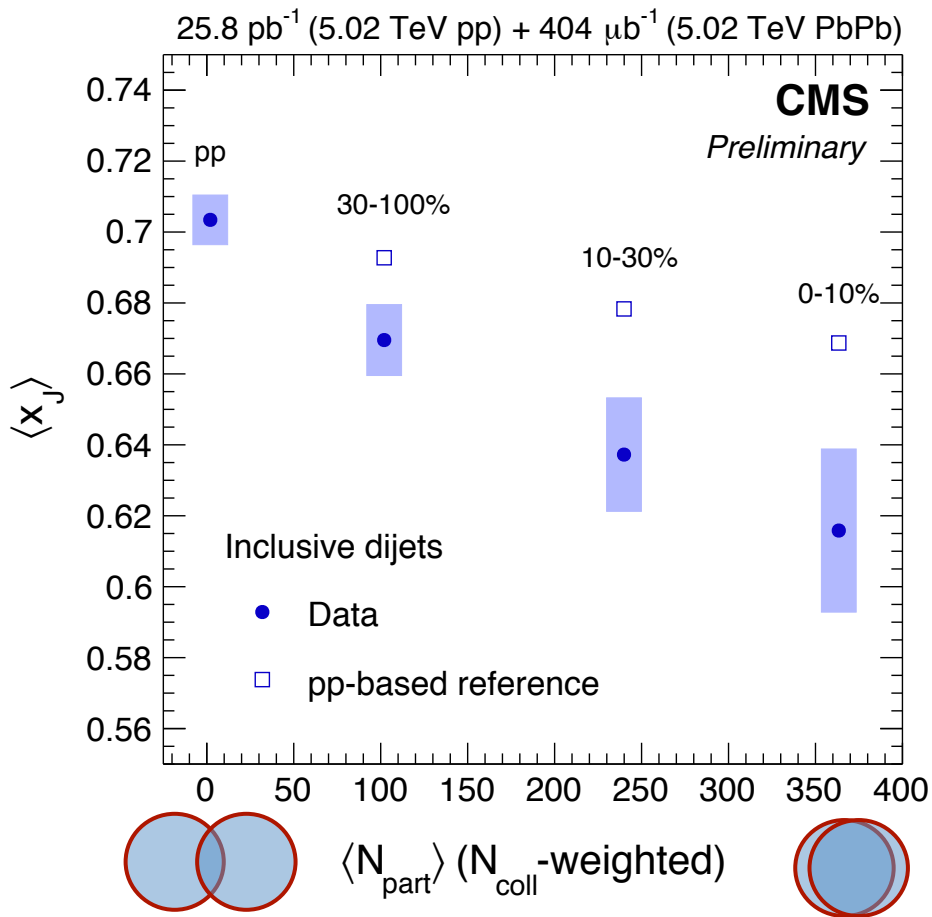
b-jets (both tagged as b-jet)



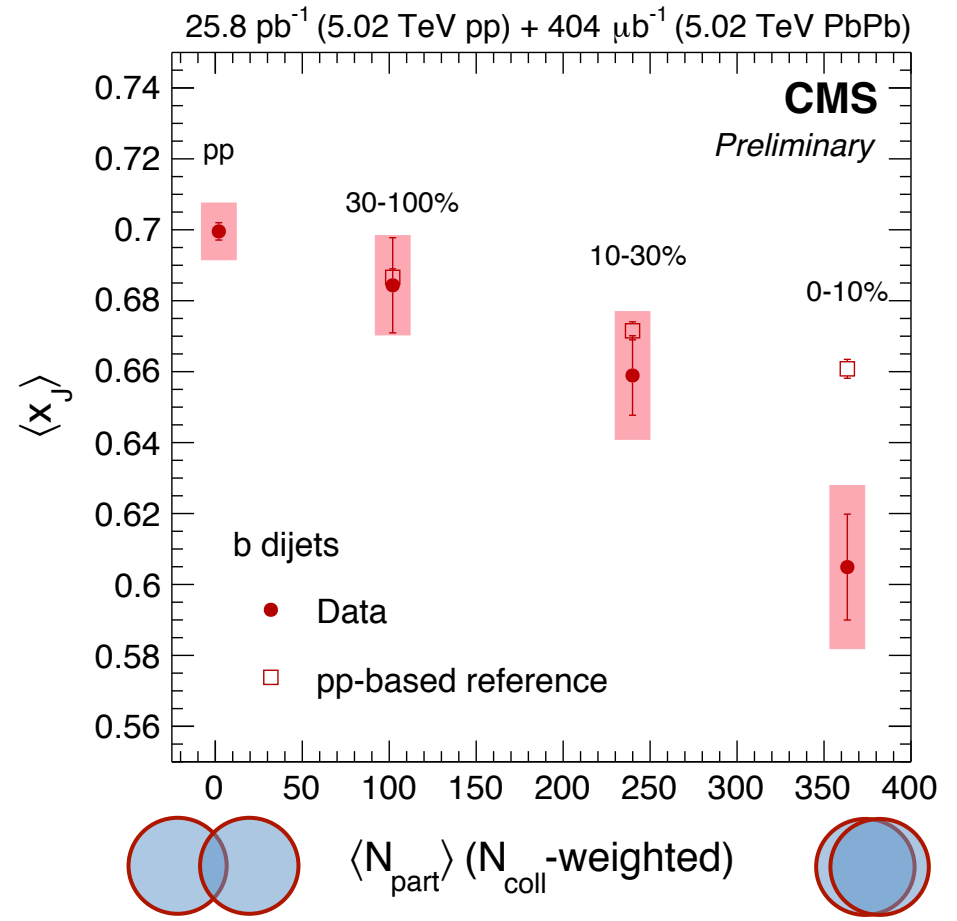
Similar p_T imbalance between inclusive jet and b-jet pairs

Di-b-jet momentum imbalance

Inclusive jets



b-jets (both tagged as b-jet)



Similar p_T imbalance between inclusive jet and b-jet pairs

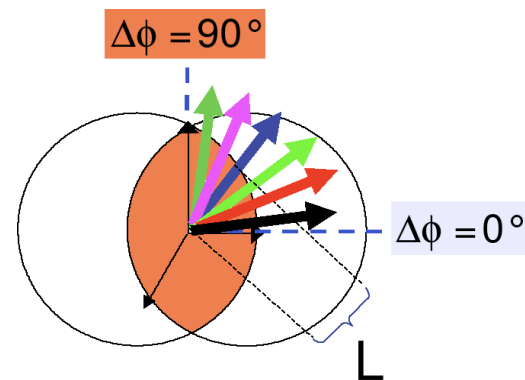
Path-length dependence of energy loss

$$\Delta E \sim L^\alpha:$$

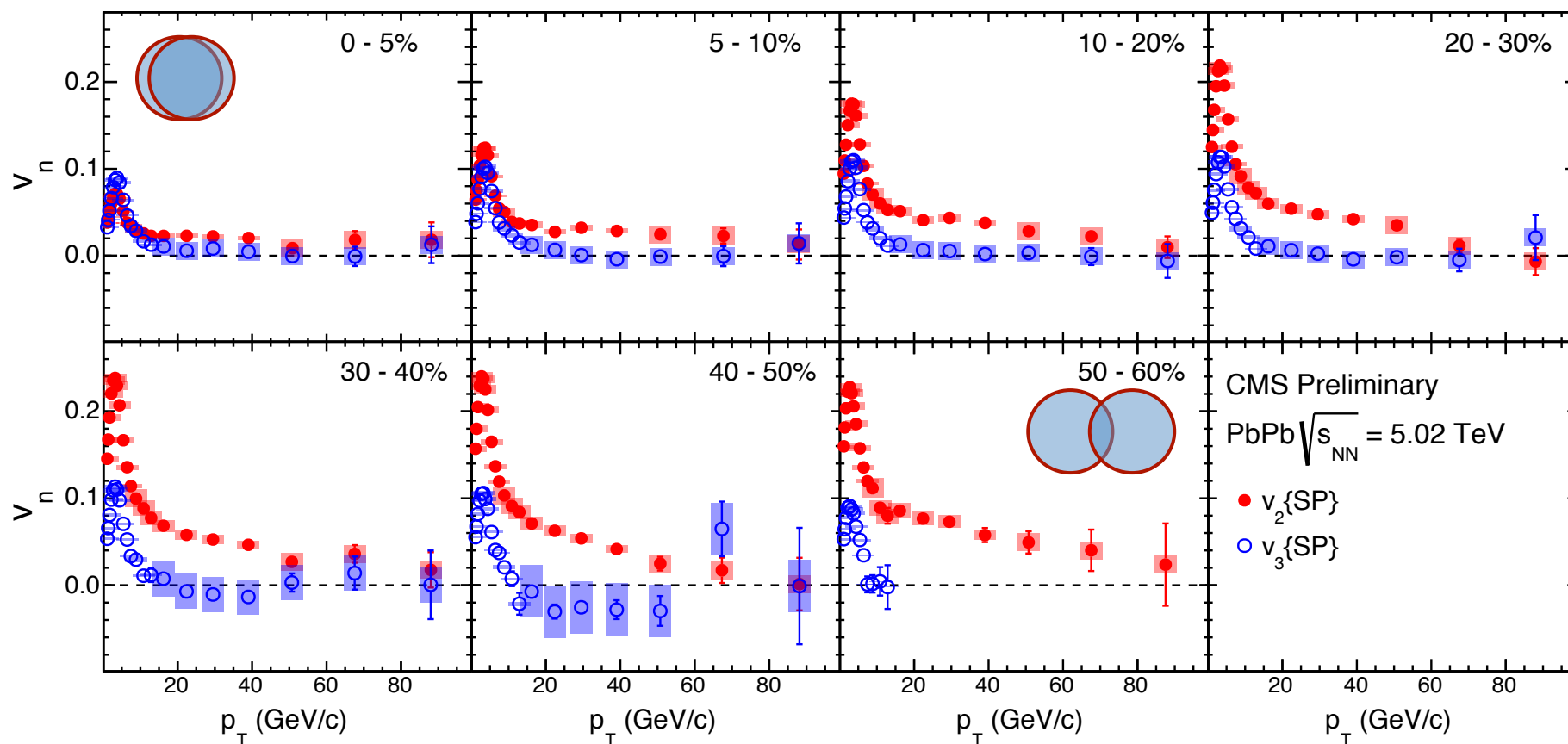
$\alpha = 1$ for QCD, collisional

$\alpha = 2$ for QCD, radiative

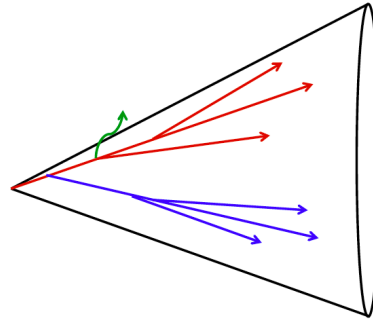
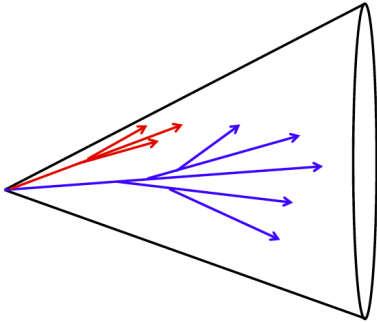
$\alpha = 3$ for AdS/CFT



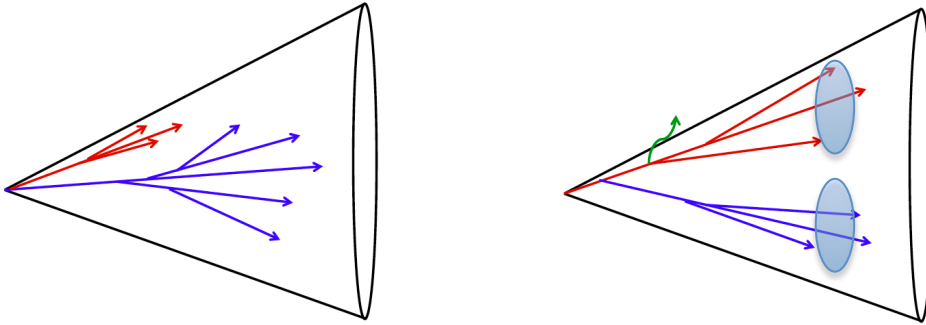
CMS-PAS-HIN-15-014



Jet substructure

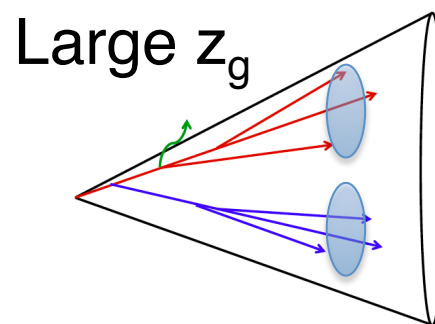
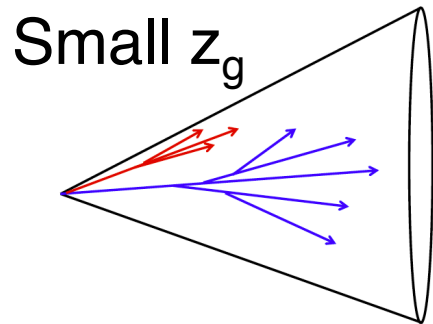


Jet substructure



Two coherent emitters?

Jet substructure

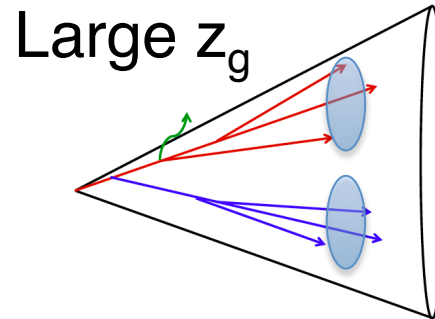
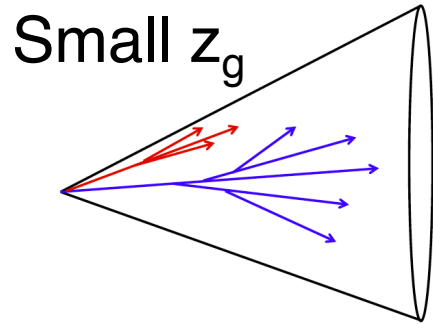


Momentum sharing
between two subjets

$$z_g = \frac{\min(p_{T,1}, p_{T,2})}{p_{T,1} + p_{T,2}} \ll 0.5$$

Two coherent emitters?

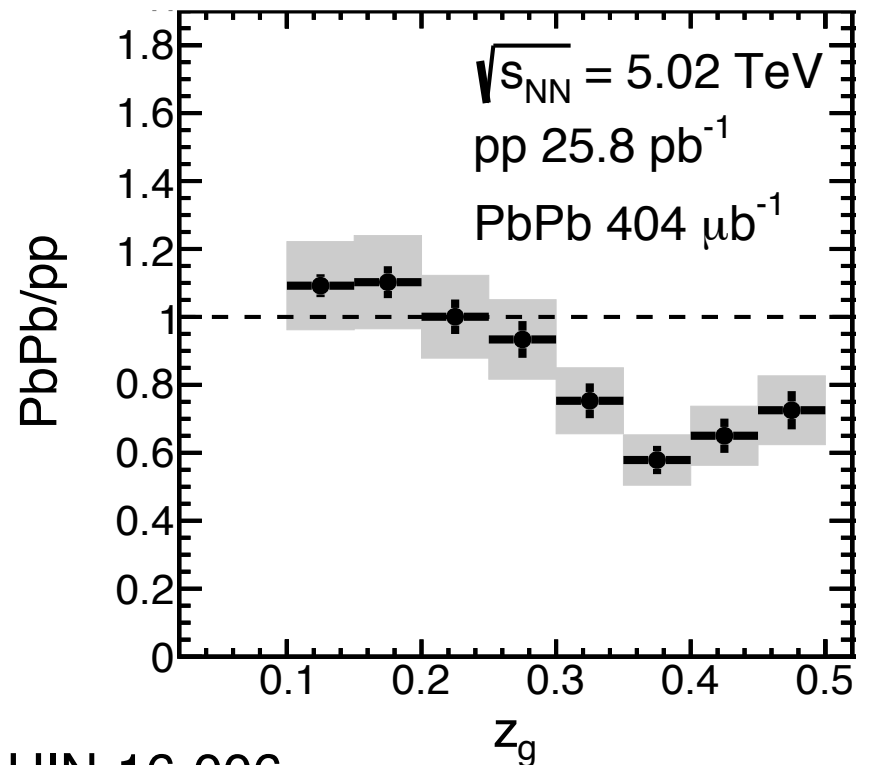
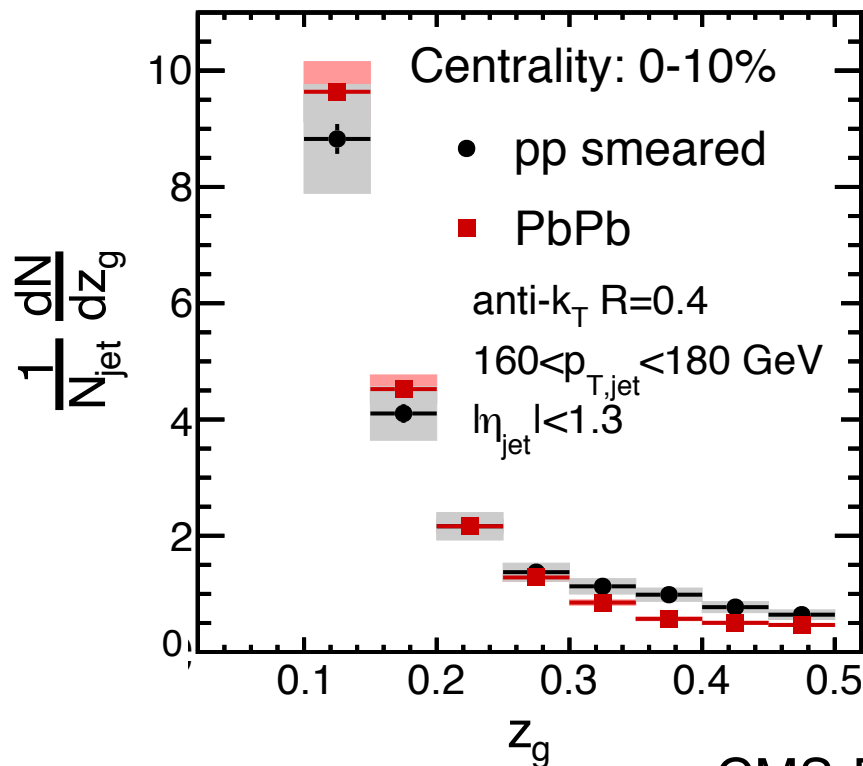
Jet substructure



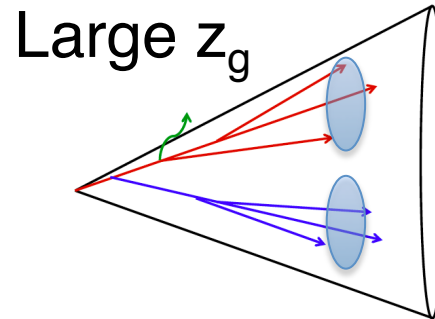
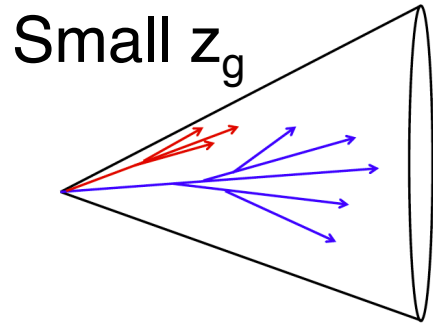
Momentum sharing
between two subjets

$$z_g = \frac{\min(p_{T,1}, p_{T,2})}{p_{T,1} + p_{T,2}} < 0.5$$

Two coherent emitters?



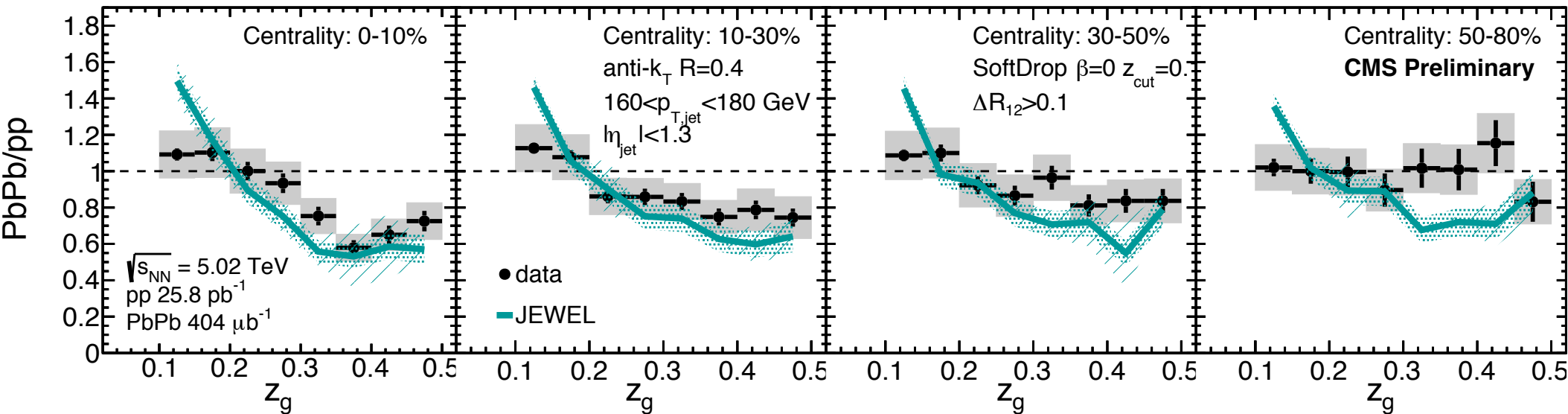
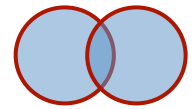
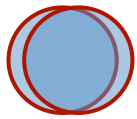
Jet substructure



Momentum sharing
between two subjets

$$z_g = \frac{\min(p_{T,1}, p_{T,2})}{p_{T,1} + p_{T,2}} < 0.5$$

Two coherent emitters?



Backups