

## Centrality and transverse momentum dependence of the nuclear modification of charged particle spectra in PbPb collisions at 2.76 TeV from CMS

*Thursday, May 26, 2011 4:20 PM (20 minutes)*

The nuclear modification factor  $R_{AA}$  is one of the key signatures for the energy loss of fast partons traversing a QCD medium. Charged particle transverse momentum ( $p_T$ ) spectra have been measured by CMS for pp collisions at  $\sqrt{s}=0.9$  and 7 TeV, corresponding to integrated luminosities of 231  $\text{ub}^{-1}$  and 2.96  $\text{pb}^{-1}$ , respectively. Calorimeter-based high-transverse-energy jet triggers are employed to enhance the statistical reach of the high- $p_T$  measurements. The results are compared to various generator tunes and also to an empirical scaling of different collision energies with  $x_T=2p_T/\sqrt{s}$  over the  $p_T$  range up to 200 GeV/c. Using a combination of  $x_T$  scaling and direct interpolation at fixed  $p_T$ , a reference  $p_T$  spectrum at  $\sqrt{s}=2.76$  TeV is constructed from  $p_T = 1-100$  GeV/c with less than 13% systematic uncertainty. We have obtained  $R_{AA}$  in bins of collision centrality for a PbPb data sample with an integrated luminosity of 7  $\text{ub}^{-1}$ , dividing by the interpolated reference spectrum. As seen at lower energies, the charged particle spectrum in central PbPb collisions is suppressed by at least a factor of five ( $R_{AA} < 0.2$ ) compared to binary scaling around  $p_T = 5-10$  GeV/c. Above  $p_T = 10$  GeV/c, however, there is a significant rise in the nuclear modification factor, which will be presented out to  $p_T = 80$  GeV/c.

**Author:** CMS, Collaboration (UCLouvain)

**Presenter:** YOON, Andre (Massachusetts Inst. of Technology (MIT))

**Session Classification:** Jets

**Track Classification:** Jets