



Contribution ID: 58

Type: not specified

## Results from lead-lead collisions at $\sqrt{s_{NN}}=2.76$ TeV with ATLAS at the LHC (15'+5')

*Tuesday 7 June 2011 15:35 (20 minutes)*

A broad program of measurements using heavy ion collisions is underway in ATLAS, with the aim of studying the properties of QCD matter at high temperatures and densities. With the factor of 14 increase in collision energy compared to RHIC data, significant insight has already been gained using dijet asymmetry measurements, but a more detailed study of both high  $p_T$  probes and global features of the collisions is well underway. Elliptic flow is measured over 5 units of pseudorapidity, from -2.5 to 2.5, and over a broad range in transverse momentum, 0.5-20 GeV. The results will be discussed in the context of previous measurements and theoretical model predictions. We also present precision measurements for the first six flow harmonics ( $v_1-v-6$ ) using both the event plane method as well as two-particle correlations, a broad  $p_T$  range, and with fine centrality selections. The impact of these results on extracting features related to genuine jet-medium interactions will be discussed. The centrality dependence of the particle density near mid-rapidity scaled by the number of participating nucleon pairs ( $dN_{ch}/d\eta(|\eta| < 0.5)/(0.5N_{part})$ ) is presented, as well charged particle spectra and their ratios in different centrality bins over a wide range of transverse momenta and pseudorapidity. The centrality dependence of single muon production is used to study the production of  $W^\pm$  and heavy flavor, which are sensitive to initial and final state effects, respectively. Finally, we will present results from ATLAS measurements of single jet production, di-jet correlations and jet fragmentation in Pb+Pb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV. These results include an update on the original di-jet asymmetry analysis using the full statistics from the Fall 2010 LHC Pb+Pb run.

**Presenter:** BOLD, Tomasz (UC Irvine, AGH-UST Krakow)

**Session Classification:** 2C Parallel - Heavy Ion