Contribution ID: **630** Type: **Poster**

Energy density in Pb-Pb Collisions at LHC

In ultra-relativistic heavy ion collisions at sufficiently large energy densities, a new state of strongly interacting matter is created, often referred to as the Quark Gluon Plasma (QGP).
The produced medium can be attributed a formation time, and a formed energy density can be estimated based on the transverse energy (E_T) produced in these collisions via the Bjorken
formula (Bjorken, 1983).

Data from Pb-Pb collisions at sqrt{s_NN}=2.76 TeV measured with the ALICE experiment in 2010 has been analyzed to extract dE_T/d_eta for different centrality bins. The measurement has been done with two methods, using the tracking system to obtain the hadronic part and calorimetry for the electromagnetic part of E_T. We will present the status of the measurements, with the main focus on the calorimetry measurement with the ALICE PHOS. Due to its high energy resolution PHOS is well suited for precision measurements starting at low gamma energies.

We will also compare to the available theoretical models, which display a rather large variation in their predictions. Results from earlier experiments up to RHIC energies are consistent with a
linear increase in E_T with ln(sqrt{s}). Gluon saturation models, which reproduce the charged particle multiplicity well, generally predict a much stronger increase in E_T towards the energies at LHC. The prospects for using E_T measurements to discriminate between theoretical models will be discussed.

Primary author: DJUVSLAND, Oeystein (University of Bergen)

Presenter: DJUVSLAND, Oeystein (University of Bergen)

Track Classification: Jets