

Pseudorapidity dependence of charged hadron multiplicity and transverse energy densities in PbPb collisions from CMS

Monday, May 23, 2011 3:40 PM (20 minutes)

The pseudorapidity and centrality dependence of transverse energy and charged particle multiplicities offers insight into the properties of the matter produced in the collisions of ultra-relativistic heavy nuclei. Multiplicities as a function of center-of-mass energy and collision centrality are important for exploring the role of hard and soft scattering in particle production and for looking at novel effects in nucleus-nucleus collisions (e.g. scaling, saturation).

Measurements of the charged hadron multiplicity and transverse energy are presented for minimum bias PbPb collisions at a center-of-mass energy of 2.76 TeV per nucleon pair. The number of charged hadrons was obtained by two different methods based on the inner silicon pixel system of the CMS detector at the LHC. One technique involved counting the number of reconstructed single particle hits in the pixel detector, while the other formed hit pairs ('tracklets') from the different detector layers. The two methods are in excellent agreement. For the transverse energy measurement, CMS has almost hermetic calorimetry coverage with fine granularity and excellent resolution. In addition for particles near central rapidity momenta from the tracker can be combined with the calorimeter data to give a significant improvement of the system resolution. The measurements is compared with heavy-ion results from earlier experiments, where a smooth dependence on the collision energy is observed. The results as a function of centrality are compared to the corresponding value in pp collisions interpolated from existing CMS measurements

Primary author: CMS, Collaboration (UCLouvain)

Presenter: KRAJCZAR, Krisztian (KFKI Research Institute for Particle and Nuclear Physics of the Hungarian Academy of Sciences)

Session Classification: Global and collective dynamics

Track Classification: Global and collective dynamics