

Charged particle production in Pb-Pb collisions at the LHC with the ALICE detector

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(on behalf of the ALICE Collaboration)

The ALICE experiment measured charged particle production in $\sqrt{s_{NN}} = 2.76$ -TeV Pb-Pb collisions at the LHC. We report on results on charged particle multiplicity and transverse momentum spectra.

All the results are presented as a function of centrality, estimated with a Glauber Monte Carlo fit to multiplicity distributions reconstructed in various detectors. The applicability of the Glauber picture at LHC energies, the resolution of the centrality determination and the related systematic uncertainties will be discussed in detail.

Particles are tracked in the pseudorapidity window $|\eta| < 0.8$ with the silicon Inner Tracking System (ITS) and the Time Projection Chamber (TPC), allowing us to cover the range $0.15 < p_t$ *less* 50 -GeV/c. The low- p_t cut-off is further reduced in the multiplicity measurement using “tracklets”, reconstructed in the 2 innermost layers of the ITS.

The charged particle multiplicity is measured to be $dN_{ch}/d\eta = 1601 \pm 60$ in 0-5% most central Pb-Pb collisions, indicating an energy density a factor ~ 3 higher than at RHIC.

Its evolution with centrality shows a pattern strikingly similar to the one measured at RHIC.

High transverse momentum particles are found to be strongly suppressed with respect to pp collisions, consistent with a large energy loss of hard-scattered partons in the hot and dense medium. The results are presented in terms of the nuclear modification factor R_{AA} and compared to theoretical expectations.

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