

# Considerations on the suppression of charged particle production in high energy heavy ion collisions

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Results from RHIC for Au-Au and from LHC for Pb-Pb collisions are compiled in terms of  $R_{AA}$ ,  $R_{CP}$  and ratio of the  $p_T$  spectra, normalized with the corresponding  $dN_{ch}/d\eta$ , for each centrality to the most peripheral one ( $R_{CP}^N$ ). The studies are focused on the  $p_T$  range in the region of maximum suppression evidenced in the experiment. The  $R_{CP}$  for  $4 \text{ GeV}/c < p_T < 6 \text{ GeV}/c$  as a function of  $\sqrt{s_{NN}}$  evidences a suppression enhancement from  $\sqrt{s_{NN}} = 39 \text{ GeV}$  up to  $200 \text{ GeV}$  after which a saturation sets in up to the highest energy of  $\sqrt{s_{NN}} = 5.02 \text{ TeV}$ . For collision energies from  $200 \text{ GeV}$  (Au-Au) up to  $5.02 \text{ TeV}$  (Pb-Pb), within the error bars, a good scaling of  $R_{AA}$  as a function of  $\langle N_{part} \rangle$  is evidenced. This scaling improves for  $R_{AA}$ , when only the core contribution is considered.  $R_{CP}^N$  evidences the same saturation starting from  $200 \text{ GeV}$  collision energy and a very good scaling as a function of  $\langle N_{part} \rangle$  for  $\sqrt{s_{NN}} = 200 \text{ GeV}$  (Au-Au) and for  $\sqrt{s_{NN}} = 2.76 \text{ TeV}$  and  $\sqrt{s_{NN}} = 5.02 \text{ TeV}$  (Pb-Pb). A comparison in terms of Bjorken energy density times formation time ( $\varepsilon_{Bj} \cdot \tau$ ) and particle density per unit of rapidity and overlapping area ( $(dN/dy)/S_{\perp}$ ) is presented.

## Secondary track (number)

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