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De-Confinement in small systems: Clustering of color sources in high multiplicity pbar-p collisions at sqrt{s}= 1.8 TeV

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It is shown that de-confinement can be achieved in high multiplicity non jet $\bar{p}p$ collisions at \sqrt{s} = 1.8 TeV Fermi National Accelerator Laboratory(FNAL- E735) experiment. In this paper we use the same data but analyze the transverse momentum spectrum in the framework of the clustering of color sources. This frame-work naturally predicts the reduction in the charged particle multiplicity with respect to the value expected from the number of independent strings. The initial temperature and energy density are obtained from the data via the color reduction factor $F(\xi)$ and the associated string density parameter ξ . The energy density (ε/T^4) ~ 11.5 for $\langle dN_c/d\eta \rangle \sim 25.0$ is close to the value for 0-10\%

central events in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. The shear viscosity to entropy density ratio(η/s) is \sim 0.2 at the transition temperature of 167 MeV.

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