LIGHT HADRON PRODUCTION IN Cu+Au COLLISIONS AT 200 GeV

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The purpose of the high energy nuclei collision experiment is the creation of quark-gluon plasma (QGP) in a laboratory and investigation of its properties. From the previous studies [1], various results, which indicate the creation of QGP, have been reported. According to these results, it was found out that the QGP appears to be not a gas-like form of matter as originally was expected but strong-coupled QGP which seems to be nearly ideal fluid with very small viscosity reaching thermal equilibrium soon after the collision. We are now at the stage where detailed characteristics of QGP are being studied. One of the signal which indicates the strong-coupled QGP is the suppression of the high pT particle production. The cause of the suppression lies in high transverse momentum partons which are experiencing energy loss in dense QGP matter.

The Relativistic Heavy Ion Collider (RHIC) [2] at Brookhaven National Lab allows nuclear matter to be studied at extremely high temperatures and energy densities. The flexibility of RHIC to collide asymmetric nuclei such as Cu+Au at 200 GeV can provide controlled asymmetry in geometry and density both in the transverse and longitudinal plane, allowing us to systematically investigate the effects of initial geometry and density on particle production.

The results for light hadron production obtained from PHENIX [3] experiment at RHIC collider will be presented in the talk: spectra as a function of centrality, nuclear modification factors R_{AA} and particle ratios such as proton/pion, and antiproton/proton will also be shown. The comparison with other colliding systems such as Au+Au will be carried out.

1. K.Adcox *et al.* // Nucl. Phys. A. 2005. V.757. P.184.
2. G.Baym // Nucl. Phys. A. 2002. V.698. P.23.
3. K.Adcox *et al.* // Nucl. Instrum. Meth. A. 2003. V.499. P.469.