INTRODUCTION

Collisions of gold nuclei at the relativistic heavy-ion collider (RHIC) offer a means to study strongly interacting matter at high energy densities. The aim is to create a relatively long-lived and large-volume state within which quarks are no longer confined within hadrons, the quark gluon plasma. In the study of heavy ion collisions, global observables such as the multiplicity and the single particle transverse momentum distributions of charged hadrons have been valuable tools to characterize the dynamics of the collision. We summarize here results collected in the √sNN=200 GeV run using the STAR detector, and compare to data at 130 GeV. We present the minimum-bias multiplicity distribution, the transverse momentum (pt) spectra and yields of charged hadrons at mid-rapidity (|η|<0.5).

The raw and corrected multiplicity distributions are shown above. All STAR analyses rely on a multiplicity selection to obtain centrality classes, so the actual raw distribution is shown here for reference. The distribution corrected for efficiency, acceptance and background contamination is also shown.

The pT distributions for various centrality bins are shown above. We fit a power-law of the form dpN/dpt = A(1+pT/p0)-n, from which we extract a value of <pT> = 2p0/(n-3). The values of <pT> for each curve are shown below as a function of central region.

We observe very little increase in <pT> from 130 to 200 GeV. For central collisions, the increase is consistent with zero, in contrast to the increase observed in going from SPS to RHIC energies. For comparison, we show the heavy-ion data as well as the ppbar data. In the 130-200 GeV range, the increase in the ppbar data is expected to be 3%.

The ratio of the observed multiplicities for corresponding multiplicity classes (0%-5%, 5-10%, 10-20%, 20-30%, 30-40%, 40-60%) is shown below. There are 2 components to the systematic uncertainty, a centrality dependent piece which is due to trigger efficiency and total cross section determination, and an overall correlated systematic uncertainty due to the determination of the tracking efficiency used in both analyses. The PHOBOS and BRAHMS results are also shown.

It has become customary to plot dN/dη / (<Npart>/2) vs. Npart, a plot shown below. We believe it is important to stress that the systematic errors on the determination of Npart for peripheral collisions has is consistent with zero, in contrast to the marked increase observed in going from SPS to RHIC energies. In particular, we find that the mean transverse momentum increases by less than 2% from 130 to 200 GeV for central Au+Au.