

ρ^0 Production at High- p_T in Central Au+Au and $p + p$ collisions at $\sqrt{s_{NN}} = 200$ GeV in STAR

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The ρ^0 ($\rho^0 \rightarrow \pi^+\pi^-$) has been measured in peripheral Au+Au and $p + p$ at low transverse momentum (p_T), where mass shifts of ~ 70 and ~ 40 MeV/ c^2 were observed, respectively. Whether this behavior extends to high- p_T is of interest. In addition, the spectra of π , ρ^0 , and $(\bar{p})p$ in $p + p$ and central Au+Au collisions can be used to study the effect of energy loss on fragmentation. The ρ^0 production at high- p_T ($5.0 \leq p_T \leq 10.0$ GeV/ c) measured in minimum bias and central Au+Au, minimum bias d +Au, and $p + p$ collisions will be presented. The ρ^0/π ratios measured in $p + p$ will be compared to PYTHIA calculations as a test of perturbative quantum chromodynamics (pQCD) that describes reasonably well particle production from hard processes. The ρ^0 nuclear modification factors (R_{AA} and R_{dAu}) will also be presented. In $p + p$ collisions, charged pions and (anti-)protons are measured in the range $5.0 \leq p_T \leq 15.0$ GeV/ c and the meson to meson and the baryon to meson ratios of these hadrons will be discussed.