Rapidity and energy dependence of high p_T hadron suppression in Au+Au collisions at $\sqrt{s_{NN}}$=200 GeV and 62.4 GeV

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Transverse momentum spectra of produced hadrons in ultrarelativistic nuclear collisions provide valuable information on particle production mechanisms as well as dynamics and properties of the produced matter. The intermediate p_T region is considered to have both soft and hard hadron production mechanisms. Soft part includes hydrodynamic collective flow, parton recombination and hard part includes jet fragmentation and its quenching. The suppression observed in the high p_T yields relative to the p+p collisions is understood as the energy loss of high p_T partons into the thermalized partonic matter and therefore can significantly enhance our understanding of the energy loss, in-medium fragmentation mechanism and medium properties. Using the unique feature of BRAHMS experiment to measure hadron production at forward rapidities, we will present results from high statistics run 4 Au+Au collisions at $\sqrt{s_{NN}}$=200 GeV and 62.4 GeV on charged and identified hadron production from midrapidity to most forward rapidities. The 200 GeV p+p reference data are collected also with the BRAHMS experiment. The (pseudo)rapidity and energy dependence of nuclear modification factors and central-to-peripheral factors in Au+Au collisions will be shown. For the most central 200 GeV Au+Au collisions the high p_T suppression persists over 3 units in pseudorapidity for charged hadrons. At 62.4 GeV, around midrapidity ($\eta = 0$, $\eta = 1$) the nuclear modification factors suggests a smaller degree of high p_T suppression than in the same reaction at higher energy. R_{AA} for identified particles from 200 GeV Au+Au data shows that mesons are strongly suppressed compared to peripheral Au+Au or p+p results while baryons show no suppression at intermediate p_T, leading to an anomalous p/π ratio for $2< p_T < 5$ GeV/c. An explanation of this effect could be quark recombination and/or strong partonic and hadronic radial flow. We will investigate the rapidity evolution of baryon enhancement relative to mesons determined by the nuclear modification factor. We will present these results indicating significant nuclear medium effects on high p_T hadron production at high rapidities and discuss the implications for understanding the hadronization in the hot and dense matter created in RHIC collisions.