The effects of Parton Scattering at RHIC Energies as predicted by RBTNC

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Abstract

Results from a new model, the Relativistic Boltzmann Treatment of Nuclear Collisions (RBTNC), are presented. Beginning with the minijet initial condition as calculated by the HIJING event generator, the produced partons are allowed to scatter with their evolution being governed by the relativistic Boltzmann equation. Here, the processes $g+g \to g+g$, $g+g \leftrightarrow q+\bar{q}$, $g+q \to g+q$ and $g+\bar{q} \to g+\bar{q}$, along with radiation associated with the outgoing partons (final state radiation) are included. The effect of these interactions is to increase u and d quarks jets by 60%, s quark jets by 50%, and c quark jets by 40%. In addition, these newly produced jets are shown to have smaller mean p_T. Signatures of this scattering phase are particle ratios as a function of p_T and the acoplanarity of the D and $\bar{D}$ meson pair.

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