Particle suppression at large x_F at RHIC

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The available kinematic phase-space at large Feynman-x (x_F) demands the probability of particle production to be constrained. In the nuclear medium, the effect is expected to be enhanced by multiple interactions given to the projectile partons. This nuclear-induced effect, referred to as the Sudakov suppression[1], has been shown to be scaled with x_F. To understand the dynamic nature of nuclear collisions, it is necessary to distinguish such kinematically dominated effects from dynamically driven processes, such as parton energy loss in the hot nuclear medium and gluon saturation in the initial state.

The BRAHMS experiment have measured centrality dependent particle productions in wide kinematic ranges ($0 < p_T < 4$ GeV/c, $0 < x_F < 0.5$) in d+Au, Au+Au, and Cu+Cu at RHIC. The x_F-dependent nuclear modification factors of negative hadron yields will be presented in the context of parton energy loss[2] and energy conservation in the medium. Comparisons with lower-energy measurements and theoretical models will be also discussed.

[1] B.Z. Kopeliovich *et al.*, arXiv:hep-ph/0501260, and references therein.
[2] M. Gyulassy *et al.*, arXiv:nucl-th/0302077, and references therein.