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Forward particle production in d+Au collisions

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Parton distribution functions have been determined by perturbative QCD (pQCD) fits to experimental data. Due to QCD bremsstrahlung, gluon density quickly rises and dominate as the momentum fraction of partons bound within a nucleon (Bjorken x) becomes small. However, gluon density cannot grow forever and it is expected to saturate when the density is high enough that recombination effects cannot be ignored. In pQCD picture, forward particle production at a hadron collider probes asymmetric parton collisions of high-x quark and low-x gluon. During FY08, RHIC had d+Au collisions, in addition to p+p collisions. The expectation that gluon saturation occurs at larger x in a heavy nucleus may make it to possible to search gluon saturation by RHIC energy, while the deuteron provides dilute partons as a probe of saturation. Both the STAR and the PHENIX experiments at RHIC had major detector upgrades in the forward region, making forward particle production at RHIC an excellent place to study low-x gluons. A summary of new experimental results from FY08 d+Au collisions at RHIC will be presented.