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Measurement of Mid-rapidity Inclusive Jet Cross Section in pp Collisions at $\sqrt{s} = 200$ GeV

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Jets provide one of the primary tools to study the partons inside protons. The cross section of inclusive jet production is one of the main observables to study the hard scattering. It is well described by pQCD in the collinear factorization framework. For proton-proton collisions at RHIC at a center-of-mass energy $\sqrt{s} = 200$ GeV, the STAR detector provides measurements at $x_T \equiv \frac{2p_T}{\sqrt{s}}$ as high as ~ 0.4. At this energy and in this kinematic region, the direct scattering on gluons inside the colliding protons contributes about a half of the total cross section. Thus, measuring the inclusive jet cross section at RHIC, together with the past Deep Inelastic Scattering measurements, can provide further constraints on the gluon Parton Distribution Function at high x. The status report for a new measurement of inclusive jet cross section at mid-rapidity at STAR using the $\sqrt{s} = 200$ GeV pp data from 2012 will be presented. Compared to the previous measurement from 2006, improvements include: employing the anti-k_T jet reconstruction, a full barrel and endcap electromagnetic calorimeter acceptance, unfolding of the detector response, and correcting jet parameters for Underlying Event contributions.

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