

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

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June 25, 2020

Jets provide the primary tool to study the partons inside protons. At RHIC, the dominant processes of the hard partonic interactions in proton-proton collisions is quark-gluon and, at high jet transverse momentum p_T , quark-quark scatterings. 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. The STAR detector at a center-of-mass energy $\sqrt{s} = 200$ GeV provides measurements at $x_T \equiv \frac{2p_T}{\sqrt{s}}$ as high as ~ 0.4 . At this energy and in this kinematics region, the direct scattering on gluons inside the colliding protons contributes a sizeable fraction of the total events. Thus, measuring the inclusive jet cross section at RHIC, together with the past DIS measurements, can provide at high x further constraints on the gluon Parton Distribution Function. An update towards a new measurement of inclusive jet cross section at mid-rapidity at STAR using the $\sqrt{s} = 200$ GeV 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 end-cap electromagnetic calorimeters acceptance with full unfolding of the detector response, and correcting jet parameters for underlying event contributions.