

# Longitudinal Double-Spin Asymmetries for Forward Di-jet Production in Polarized $pp$ Collisions at $\sqrt{s} = 200$ GeV

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## Abstract

One of the primary goals of the STAR spin program is to determine the spin-dependent gluon distribution,  $\Delta G$ , of the proton. Recent measurements of the longitudinal double-helicity asymmetry,  $A_{LL}$ , from inclusive jets place strong constraints on  $\Delta G$  and, for the first time, find evidence for non-zero gluon polarization values for partonic momentum fraction  $x$  greater than 0.05. In contrast to inclusive jets, di-jet correlation measurements provide access to partonic kinematics, at leading order, and thus give better constraints on the behavior of  $\Delta G$  as a function of gluon momentum fractions. Furthermore, di-jet measurements at forward rapidity probe the lower  $x$  values where  $\Delta G$  is poorly constrained. Status of the first measurement of  $A_{LL}$  for di-jet with  $-0.8 < \eta_1 < 0.8$  and  $0.8 < \eta_2 < 1.8$ , from 2009 proton+proton collisions at  $\sqrt{s} = 200$  GeV will be presented.