

Abstract Submitted  
for the DNP15 Meeting of  
The American Physical Society

**A Study of the Contribution from Non-Perturbative Effects to Di-jet Yields at Forward Rapidity**<sup>1</sup> ANNA POULSEN, University of Dallas, ZILONG CHANG, CARL GAGLIARDI, Texas A&M University, GAGLIARDI TEAM — It is well known that the proton's spin is equal to  $\hbar/2$ , but its internal structure and the spin contributions made by its parton constituents, especially gluons, remain enigmatic. By studying asymmetric di-jets produced in polarized proton-proton collisions at forward rapidity, more information about the spin contribution of the gluon can be attained. Next-to-leading order perturbative QCD calculations indicate that measurements of di-jets at forward rapidity with transverse momenta of 5 and 8 GeV/c can provide valuable information regarding the gluon polarization. However these calculations do not include background contributions from initial state-radiation, underlying events and beam remnants that can create additional particles which appear in the detector as jets. In this study, PYTHIA simulations were used to analyze jets of stable final state hadrons. A simple procedure is found to reject the background. Most of the di-jets that remain can be matched to initial hard scattered partons with momentum fractions  $x_2$  of the order  $10^{-3}$  and  $x_1$  of 0.4 or greater. These kinematics indicate that the remaining di-jets will provide relevant information about the gluon's polarization and lead to a better understanding of the proton's structure at the partonic level.

<sup>1</sup>This material is based upon work supported by the National Science Foundation Graduate Research Fellowship under Grant No. 1263281.

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Date submitted: 30 Jul 2015

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