

Abstract Submitted
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The Proton Spin Puzzle: Recent Results and Prospects from STAR at RHIC WILLIAM CHRISTIE¹, Brookhaven National Lab, STAR COLLABORATION — Polarized deep-inelastic lepton-nucleon scattering measurements have shown that a surprisingly small fraction of the proton spin is carried by quark and anti-quark spins. This observation has renewed the interest in proton spin structure, which is currently being pursued by experiments worldwide. One of the main objectives of the STAR experiment at Relativistic Heavy Ion Collider is to determine the polarization of gluons, ΔG , in the polarized proton. Our measurements use proton-proton collisions at high center-of-mass energies. STAR measurements of inclusive jet and pion probes, using data collected in the years 2003-2006 at 200 GeV center-of-mass energy, have placed constraints on ΔG for gluon momentum fractions, x , over the range of about $0.03 < x < 0.3$. STAR has just completed a data taking period with substantially better statistics and has recorded also a first data sample at a higher beam collision energy of 500 GeV. The new 200 GeV data is expected to better constrain ΔG and, using correlated probes such as di-jets and photon-jets, to give insight also in its x -dependence. The 500 GeV data form the start of a program to delineate quark polarization by using leptonic decays of W -bosons as probes. I will present a summary of recent results and will discuss expectations from the 2009 data taking period as well as prospects for the further future.

¹On behalf of the STAR Collaboration

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