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W Physics Result of PHENIX

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Measuring the flavor-separated quarks polarization is one of the primary goals in the PHENIX experiment at RHIC in order to understand the proton spin structure. The sea quark parton distribution function (PDF) is not well known while the valence quark PDF is well constrained. The asymmetry of W production A_L from polarized proton is sensitive to the helicity distribution of quarks and anti-quarks, so that the asymmetry measurement enables to access the sea quark contribution to the proton spin.

RHIC provides us unique opportunity to perform this measurement using the longitudinally polarized proton collisions at center of mass energy up to $\sqrt{s} = 510$ GeV. PHENIX has measured W through their leptonic decays into electrons at central rapidity ($|\eta| < 0.35$) and muons at forward/backward rapidities ($1.2 < |\eta| < 2.2$). In succession to the first measurement performed in 2011, PHENIX collected twice of the data with integrated luminosity of 100 nb^{-1} in 2012 with fully upgraded detectors and triggering system. We will present recent results of W to electron and muon decay channels and the prospect of the further analysis.

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