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Recent STAR results on the W boson program at RHIC at BNL

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The STAR experiment at the Relativistic Heavy-Ion Collider at Brookhaven National Laboratory is carrying out a spin physics program in high-energy polarized proton collisions at $\sqrt{s} = 200$ GeV and $\sqrt{s} = 500$ GeV to gain a deeper insight into the spin structure and dynamics of the proton.

The collision of polarized protons at $\sqrt{s} = 500$ GeV opens a new era of spin-flavor structure measurements from $W^{-(+)}$ boson production. $W^{-(+)}$ bosons are produced in $\bar{u} + d$ ($\bar{d} + u$) collisions and can be detected through their leptonic decays, $e^- + \bar{\nu}_e$ ($e^+ + \nu_e$), where only the respective charged lepton is measured. The discrimination of $\bar{u} + d$ ($\bar{d} + u$) quark combinations requires distinguishing between high p_T $e^{-(+)}$ through their opposite charge sign, which in turn requires precise tracking information. Recent STAR results on the measurement of W^-/W^+ and Z boson production at mid-rapidity will be shown.

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