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Cross section measurements of kinematically reconstructed weak bosons in unpolarized p+p collisions at STAR

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We present cross sections for the weak bosons measured by the STAR experiment at RHIC in unpolarized proton-proton collisions at $\sqrt{s}$ = 500(510) GeV. The results combine data from run 2011, 2012, and 2013, corresponding to an integrated luminosity of 350~pb^{-1}. The differential Z^0 cross section measured as a function of the boson's p_T, provides important constraints on the energy dependence of intrinsic transverse momentum effects of partons inside the proton. The W^+/W^- cross-section ratio as function of the boson's rapidity, is sensitive to the non-pertubative $\bar{d}/\bar{u}$ distribution. The probed x range ($0.1 < x < 0.3$) covered by our data naturally complements the phase space accessed at the LHC, providing critical input to global fits.

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