

Estimate on spin asymmetry for Drell-Yan process at Fermilab with tensor-polarized deuteron

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The polarized deuteron has new structure functions in charged-lepton deep inelastic scattering due to its spin-one nature, and they are b_1 , b_2 , b_3 , and b_4 . The twist-two structure functions b_1 and b_2 are expressed by tensor-polarized parton distribution functions in the deuteron [1]. There is an approved experiment at JLab to measure them and it is expected to start in 2019. On the other hand, the Drell-Yan process for unpolarized proton - tensor-polarized deuteron is possible and its measurement is now under consideration at Fermilab. It is expected to provide crucial information on tensor-polarized antiquark distributions. Since the distributions are small quantities, it is important to estimate the tensor-polarized spin asymmetry theoretically to find feasibility of the experiment for an actual proposal at Fermilab. In this talk, I show our estimate on the spin asymmetry for the proton-deuteron Drell-Yan process with tensor-polarized deuteron [2]. References: [1] P. Hoodbhoy, R. L. Jaffe, and A. Manohar, Nucl. Phys. B 312, (1989) 571; S. Kumano, J. Phys. Conf. Ser. 543 (2014) 012001. [2] S. Kumano and Qin-Tao Song, research in progress.

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