Abstract

The STAR Collaboration reports the measurements of transverse single-spin asymmetry, A_N, for inclusive and diffractive electromagnetic jets (EM-jets) at center-of-mass energy of 200 GeV in transversely polarized proton-proton collisions in the pseudorapidity region of 2.6 to 4.1. The photon-multiplicity dependent (jetness) A_N results of inclusive EM-jets are investigated. They show the A_N of lower jetness inclusive EM-jets is significantly larger than that of higher jetness inclusive EM-jets. The A_N of inclusive EM-jets is observed to increase with increasing Feynman x (x_F) regardless of the jetness. For the diffractive EM-jets, the non-zero A_N is observed with 3.8-sigma significance. However, the A_N value is negative, which is opposite to the results for inclusive EM-jets A_N. The diffractive process is not the possible explanation for sources of larger A_N for lower jetness inclusive EM-jets or isolated π^0.