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Transverse Single-Spin Asymmetries of Direct Photons from Proton-Proton Collisions at Forward Rapidity OLEG EYSER, Brookhaven National Laboratory, STAR COLLABORATION — Transverse single-spin asymmetries in high energy collisions offer unique ways to study the nucleon structure beyond the conventional leading twist collinear picture in hard QCD processes. While transverse momentum dependent distribution and fragmentation functions require two scales (hard and soft), observables with a single hard scale can be described in a collinear framework with multiparton correlations (twist-3). Both are related when the intrinsic transverse momentum is integrated. Initial and final state effects can contribute to different probes and need to be disentangled. In 2015, the STAR experiment at RHIC has extended the forward calorimeter, $2.5 < \eta < 4.0$ with a preshower detector in order to study transverse asymmetries of direct photon production in proton-proton collisions at a center of mass energy of 200 GeV. This measurement will contribute to the universality test of initial state spin-orbit correlations (sign-change between hadronic collisions and deep inelastic scattering) and serve as first input to a proper evolution of higher twist functions as function of momentum transfer. We will present the status of the analysis and discuss implications on the theoretical description.

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