Gluonic Pole Matrix Elements for Fragmentation Function and Universality[1] LEONARD GAMBERG, Penn State University Berks — The non-vanishing of gluonic pole matrix elements can explain the appearance of transverse single spin asymmetries (TSSAs) in high-energy scattering processes. Such matrix elements appear in principle both for transverse momentum dependent (TMD) distribution functions such as the Sivers function and fragmentation functions such as the Collins function. We find that for a specific class of model field theories that the contribution of the gluonic pole matrix element for fragmentation functions vanishes. This outcome is important in the study of universality for fragmentation functions and has impact for QCD theory as it relates to experiments exploring the generalized angular momentum structure of the nucleon. With this result we explore various transverse spin and azimuthal asymmetries for hard process for for various experimental facilities such as JLAB and RHIC-Spin.

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