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Twist-three Generalized Parton Distributions and Transverse Angular Momentum Sum Rules[1] YUXUN GUO, University of Maryland, College Park, XIANGDONG JI, University of Maryland, College Park; Center for Nuclear Femtography, KYLE SHIELLS, Center for Nuclear Femtography — We survey and report our analysis on the leading and subleading generalized parton distributions (GPDs) relevant to the nucleon's internal spin structure. We construct both covariant and partonic spin sum rules for the cases of both a longitudinally and transversely polarized nucleon in terms of twist-2 and twist-3 (generalized) parton distribution functions, connecting them to previous results in the literature. In particular, we found a new twist-3 sum rule for the transverse spin which involves the well-know spin structure function $g_T(x)$, and transverse gluon polarization density $\Delta G_T(x)$, and some novel twist-3 GPDs.

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