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**Leading- and higher-twist double-spin asymmetries in proton-proton scattering** DANIEL PITONYAK, ANDREAS METZ, Temple University, ANDREAS SCHAEFER, JIAN ZHOU, Regensburg University — Extensive work has been done over the last four decades on the leading-twist (twist-2) double-longitudinal spin asymmetry  $A_{LL}$ . The main goal of this research has been to understand how the spin of the nucleon can be explained in terms of the partons that compose it. Similarly, the twist-3 longitudinal-transverse double-spin asymmetry  $A_{LT}$ , like the one studied in inclusive DIS and Drell-Yan, also provides important information on the spin structure of hadrons. This talk will focus on the analysis of  $A_{LT}$  for photon, hadron, and jet production from nucleon-nucleon collisions, which gives one access to a complete set of collinear twist-3 functions for a transversely polarized nucleon. Moreover, we will discuss how this observable could give insight into both the  $A_{LL}$  and transverse single-spin asymmetry  $A_{UT}$  domains.

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