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Perturbative T -odd asymmetries in the Drell-Yan process revisited

Thursday, 30 May 2024 17:00 (30 minutes)

I will present a calculation of perturbative T -odd contributions to the lepton angular distribution in the Drell-Yan process. The talk is based on work done with Valery Lyubovitskij, Werner Vogelsang, and Alexey Zhevlakov; the corresponding pre-print is available under [arXiv:2403.18741](#).

Using collinear factorization, we worked at the first order in QCD perturbation theory where these contributions appear, $\mathcal{O}(\alpha_s^2)$, and address both W^\pm and γ/Z^0 boson exchange. A major focus of our calculation is on the regime where the boson's transverse momentum Q_T is much smaller than its mass Q . We carefully expanded our results up to next-to-next-to-leading power in Q_T/Q . Our calculation provides a benchmark for studies of T -odd contributions that employ transverse-momentum dependent parton distribution functions. In the neutral-current case we compare our results for the T -odd structure functions to available ATLAS data.

Primary authors: ZHEVLAKOV, Alexey; WUNDER, Fabian (Eberhard Karls Universität Tübingen); LYUBOVITSKIJ, Valery (Tuebingen University); VOGELSANG, Werner (Univ. Tuebingen)

Presenter: WUNDER, Fabian (Eberhard Karls Universität Tübingen)

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