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Intrinsic k_T Distribution Independence in Drell-Yan Spectra Predictions: A Novel Insight from the Parton-Branching Method

Thursday 12 October 2023 12:20 (20 minutes)

The Parton-Branching method (PB) is a powerful tool for determining Transverse Momentum Dependent (TMD) parton densities across a wide range of transverse momentum (k_T). It provides insights into both intrinsic parton motion and the contribution of soft gluons, particularly in the small k_T range. Our research emphasizes the significance of soft gluons operating below a resolvable scale in shaping integrated and TMD parton densities.

To make predictions for Drell-Yan transverse momentum spectra across a diverse mass spectrum, we employ PB TMD parton densities in conjunction with NLO calculations following the MC@NLO style. By introducing a free parameter, we extract the intrinsic k_T width by comparing experimental data with predictions based on the PB-NLO-HERAI+II-2018 set2 TMD framework. Notably, unlike alternative methods, our approach reveals that the intrinsic k_T distribution width remains unaffected by the mass of the Drell-Yan pair and the center-of-mass energy (\sqrt{s}).

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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