Contribution ID: **32** Type: **not specified**

Transverse-momentum resummation for Drell-Yan production at NNLL accuracy

Thursday 16 September 2010 16:15 (30 minutes)

We consider the transverse-momentum (q_T) distribution of Drell–Yan lepton pairs produced in hadron collisions. At small values of q_T, we resum the logarithmically-enhanced perturbative QCD contributions up to next-to-next-to-leading logarithmic accuracy. At intermediate and large values of q_T, we consistently combine resummation with the known next-to-leading order perturbative result. All perturbative terms up to order alpha_S^2 are included in our computation which, after integration over q_T, reproduces the known next-to-next-to-leading order result for the Drell–Yan total cross section. We show and discuss the reduction in the scale dependence of the results with respect to lower-order calculations, estimating the corresponding perturbative uncertainty. We present a preliminary comparison with Tevatron Run II data.

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Session Classification: Afternoon II