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Low mass lepton pair production at large transverse momentum JIANWEI QIU, ZHONGBO KANG, Iowa State University, WERNER VOGELSANG, Brookhaven National Laboratory — PHENIX collaboration has recently measured the transverse momentum distribution of lepton pair production at RHIC with the pair's invariant mass as low as $120 < Q < 300$ MeV. We will show that the distribution of low mass lepton pair production at large transverse momentum $Q_T \gg Q$ can be systematically calculated in terms of the perturbative QCD factorization approach. All factorized short-distance parotnic hard parts are evaluated at a distance scale $\sim 1/Q_T$, while all long-distance non-perturbative physics are factorized into the universal parton-to-lepton pair fragmentation functions. We introduce a model for the input lepton pair fragmentation functions at a scale $\mu \sim 1$ GeV, which are then evolved perturbatively to scales relevant at RHIC. Using the evolved fragmentation functions, we calculate the transverse momentum distributions of low mass lepton pair production in hadron-hadron, hadron-nucleus, and nucleus-nucleus collisions. We demonstrate that the transverse momentum distribution of low mass lepton pairs is extremely sensitive to the shape of gluon distribution.

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