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Transverse momentum gluon density at low-x

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We present new results on the unintegrated TMD (transverse momentum dependent)
gluon density (u.g.d.) at low x, which based on our previous study [1].
We match this u.g.d. at low transverse momenta | k_T | and starting scale $Q_0^2 = 1 - 3$GeV^2
to the exact solution of the BFKL equation outside of the saturation region at large | k_T |
obtained in [2], which includes all multiple Pomeron exchanges.
Then, to extend this u.g.d at higher Q^2 we use the Catani-Ciafoloni-Fiorani-Marchesini (CCFM)
evolution equation.
The inclusion of the CCFM evolution results in a large increase of the u.g.d. magnitude
at low x and large | k_T | above a few GeV/c. The application of the obtained
gluon distribution to the analysis of the ep deep inelastic scattering allows us
to get the results, which describe reasonably well the H1 and ZEUS data
on the longitudinal proton structure function $F_L(x, Q^2)$, $F_{2c}(x, Q^2$ and $F_{2b}(x, Q^2$.
In addition to this the use of new u.g.d. allows us to describe satisfactorily the LHC data on heavy
meson production and especially the correlation between two B-mesons produced in pp collisions.
The comparison of our new TMD unintegrated gluon density to the another ones is presented.
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References

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