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## TMD gluon density at low $x$ and soft and hard processes at LHC energies

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Transverse momentum dependent (TMD) parton distributions in a proton are important in high energy physics from both theoretical and phenomenological points of view. Using the latest LHC data on the inclusive soft hadron production at small transverse momenta, we determine the parameters of the initial TMD gluon density, derived within the soft QCD model at the low scale  $\mu_0 \sim 1 - 2$  GeV. Then, we apply the Catani-Ciafaloni-Fiorani-Marchesini (CCFM) evolution equation to extend the obtained TMD gluon density to the whole kinematical region. Using this TMD obtained at both low and large  $Q^2$  data on hard processes of  $b$ -jet production, Higgs production and the structure functions  $F_{2c}$ ,  $F_{2b}$  can be described quite satisfactorily.

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**Session Classification:** Low  $x$ , PDFs and hadronic final states

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