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Transverse momentum dependent (un)polarized gluon distributions in Higgs production

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We discuss transverse momentum dependent (un)polarized gluon distributions (gluon TMDs) and their proper definitions in the context of factorization theorems. All the gluon TMDs have a scale evolution driven by a universal evolution kernel which is resummed to NNLL. By an explicit NLO calculation of the three gluon TMDs which are matched onto leading twist parton distribution functions (PDFs) we demonstrate that they are free from rapidity divergences, and calculate the Wilson coefficients of their expansion in terms of the PDFs. We investigate the effects of evolution and discuss their impact on the transverse momentum spectrum of color singlet production, such as Higgs boson production in gluon fusion.

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