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Unpolarized gluon PDF for the proton using the twisted mass formulation

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We present results of the x-dependence of the unpolarized gluon PDF for the proton. We use an Nf = 2 + 1 + 1 ensemble of maximally twisted mass fermions with clover improvement and the Iwasaki improved gluon action. The quark masses are tuned so that the pion mass is 260 MeV. We use a 32^3 × 64 lattice size with a lattice spacing a = 0.093 fm giving a spatial extent of 3 fm. We employ the pseudo-distribution approach and obtain the light-cone Ioffe time distribution (ITD) combining data for nucleon momentum boosts up to 1.67 GeV and Wilson line length, z, up to 0.56 fm. We explore systematic effects such as the dependence on the maximum value of z entering the fits to obtain the ITD. We also study various options to reconstruct the x-dependence of the gluon PDF.

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