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## Comments on global parton analyses

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We consider a few effects which are usually ignored in PDF studies.

1. The double counting of the low  $k_T < Q_0$  contribution included in the NLO splitting and coefficient functions, and that hidden in the PDF input at  $Q = Q_0$ . Formally this is a power  $Q^2/\mu^2$  correction but it is non-negligible at moderate scales  $\mu$ .
2. The  $\epsilon/\epsilon$  contribution generated by the infrared (IR) divergence after the dimensional regularization. Since the IR divergence is cut off by confinement (or the quark mass) these terms must be deleted.
3. The role of the smooth transition through the heavy quark threshold and the need to work in the Physical scheme where at the NLO (and higher orders) there is no admixture of the quarks to gluon PDF (and gluons to quark PDF) which occur in the  $\overline{\text{MS}}$  scheme.

All these points are not uncertainties, but are real effects which certainly must be accounted for in global parton analysis.

**Primary author:** MIKHAIL , Ryskin

**Presenter:** MIKHAIL , Ryskin

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