Contribution ID: **58** Type: **not specified**

Next-to-Leading Order virtual correction to the Higgs-induced DIS

Wednesday 28 September 2022 15:20 (20 minutes)

We calculate the Next-to-Leading Order (NLO) virtual correction to the Higgs-induced DIS in the infinite top mass limit. Since we want to use this result in the framework of k_t-factorization to resum small-x logarithms up to Next-to-Leading-Logarithm (NLL), we work in light-cone gauge and we keep the incoming gluon off-shell. This choice raises many challenging points like the presence of spurious singularities and a different definition of the counter terms. We address these points by giving a method to compute integrals with spurious gauge singularities and by calculating the counter term for the effective vertex. This calculation is a necessary ingredient for the impact factor that will be used to resum up to NLL small-x logarithms for this process.

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Session Classification: Joint session: Recent theoretical results on QCD and saturation + low x, PDFs and hadronic final state

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