The Problem of Overlapping Formation Times

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Formation time
Are consecutive emissions independent?

Yes!
Are consecutive emissions independent?

No!
Are consecutive emissions independent? No!

Corrections parametrically of the order of coupling constant $\alpha(Q_T)$. 
We calculate:
1- Overlap corrections to bremsstrahlung rate.

\[ \left[ \frac{d\Gamma}{dx_e} \right]^{NLO} = -\frac{N_f\alpha_{EM}}{6\pi} \left[ \frac{d\Gamma}{dx_e} \right]^{LO} \log \left( \frac{x_e \mu^4}{(1-x_e)^3\hat{q}E} \right) \] + (Stuff)
We Calculate:
2- Overlap corrections to electron stopping length.
What we find?
Overlap effects *enhance* energy loss and *reduce* stopping distance.

\[
\frac{\Delta l_{\text{stop}}}{l_{\text{stop}}} = -1.28 N_f \alpha_{EM} \left( (\hat{q}E)^{1/4} \right)
\]
Thank You
We calculate overlap corrections

Overlap effects for real, double gluon bremsstrahlung in Large-Nc QCD.