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Glauber Phases in Non-Global Observables

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The higher-order behavior of logarithmically enhanced contributions in non-global observables at hadron colliders is very intricate, in particular as double-logarithmic corrections arise first at four-loop order. For realistic values of the low energy scale and the partonic center-of-mass energy the contribution of these so called super-leading logarithms (SLLs) is comparable to the one of Glauber phases arising from soft parton exchange in initial- or final-state. Whereas the simultaneous resummation to all orders of SLLs and Glauber phases for quark-initiated $2 \to M$ scattering processes has been achieved, the situation is way more complicated for gluon-initiated processes. We develop a special formalism using matrices in the adjoint representation of $SU(N_c)$ to perform the resummation and present some preliminary results.

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