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On the BLM optimal renormalization scale setting for semihard processes

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We apply the BLM scale setting procedure directly to the amplitudes (cross sections) of several semihard processes. It is shown that due to the presence of $\{\beta_0\}$ -terms in the NLA results for the impact-factors the obtained optimized renormalization scale is not universal, it depends both on the energy and on the type of the process in question. We illustrate this general conclusion considering in details the following semihard processes:

$p + p \rightarrow \text{jet} + \text{jet} + X$, the inclusive production of two forward high- p_T jets separated by large interval in rapidity Δy (Mueller-Navelet jets); the high-energy behaviour of the total cross section for highly virtual photons; the forward amplitude of production of two light vector mesons in collision of two virtual photons $\gamma^* \gamma^* \rightarrow V_1 V_2$.

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