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q_T -resummation for Higgs production via quark annihilation

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In order to exploit the full potential of the high-precision measurements at LHC new theory predictions are needed. The Higgs boson plays an important role not only in the Standard Model (SM) but also in various BSM models. Thus, precise predictions of its kinematic distributions and of its decay products are crucial to be sensitive to possible deviations from the SM.

Unfortunately, in the kinematic region where most Higgs bosons are produced, the perturbative corrections are largest, which can even lead to a complete breakdown of the perturbative expansion. To avoid this the dominant contributions can be resummed to all orders in perturbation theory. This allows to make precise predictions for kinematic distributions even in this troublesome but important kinematic region.

In my talk, I will give a short introduction to q_T -resummation in soft-collinear effective field theory (SCET) and present a new prediction for Higgs production via quark annihilation where these perturbative corrections are resummed to $N^3\text{LL} + N^3\text{LO}$ accuracy.

Category

Particle / Astroparticle / Cosmology (Theory)

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