Phenomenology 2019 Symposium



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Type: parallel talk

$H \rightarrow b\overline{b}j$ at next-to-next-to-leading order accuracy

Monday 6 May 2019 14:45 (15 minutes)

We present the calculation of the process $H \to b\bar{b}j$ at next-to-next-to-leading order (NNLO) accuracy. We consider contributions in which the Higgs boson couples directly to bottom quarks, i.e. our predictions are accurate to order $\mathcal{O}(\alpha_s^3 y_b^2)$. We compute the various components needed to construct the NNLO contribution, including an independent calculation of the two-loop amplitudes. We compare our results for the two-loop amplitudes to an existing calculation (finding partial agreement) and we present multiple checks on our two-loop expression using the known infrared factorization properties as the emitted gluon becomes soft or collinear. We use our results to construct a Monte Carlo implementation of $H \to b\bar{b}j$ and present jet rates and differential distributions in the Higgs rest frame using the Durham jet algorithm.

Summary

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