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## The $q_T$ spectrum for Higgs production via quark annihilation at $N^3LL' + aN^3LO$

Due to the limited detector resolution and the challenges involving the tagging of individual quark flavors, it is difficult to measure the Yukawa coupling of bottom, charm and strange quarks from the final state.

A precise prediction of the  $q_T$  spectrum for Higgs production via quark annihilation allows to access the Yukawa coupling for bottom and lighter quarks from the initial state as the  $q_T$  spectra of the quark flavors show a different shape.

Especially in the peak region this allows for a possible discrimination of bottom, charm, and strange initiated production once a full treatment of mass effects is included.

I will present an  $N^3LL' +$  approximate  $N^3LO$  prediction for Higgs production via quark annihilation where I will in particular focus on the differences to the related Drell-Yan process.

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