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## Improving predictions for associated $t\bar{t}H$ production at the LHC: soft gluon resummation through NNLL accuracy

Friday, July 7, 2017 11:30 AM (15 minutes)

Recent results on the resummation of soft gluon corrections to the  $pp \rightarrow t\bar{t}H$  cross section at the LHC will be presented. The resummation was carried out at next-to-next-to-leading-logarithmic (NNLL) accuracy using the Mellin space technique and matched to the NLO cross section. The process probes directly the top-Higgs Yukawa coupling that may be particularly sensitive to physics beyond the Standard Model. The measurement of the  $pp \rightarrow t\bar{t}H$  cross section is among the highest priorities of the current LHC physics program and therefore, improvement of the theoretical accuracy is of the central importance. We show that the resummation leads to reduction of scale-variation uncertainty of the total  $pp \rightarrow t\bar{t}H$  cross section and three-particle invariant mass distributions.

### Experimental Collaboration

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