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Towards NNLO QCD corrections for the production of a heavy-quark pair in association with a massive boson

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In the past few years, remarkable progresses in multi-loop calculations have opened the doors to the computation of massless two-loop five-point scattering amplitudes, allowing to complete NNLO QCD predictions for complicated $2 \to 3$ processes like tri-photon, tri-jet and di-photon plus jet production. Very recently, also the two-loop five-point scattering amplitudes with one external massive leg have been made available in literature.
Due to these successful progresses in multi-loop computations, it is reasonable thinking that two-loop five-point amplitudes with more than one massive leg will also be accessible in the next future, allowing to complete NNLO QCD computations for higher-multiplicity processes with massive final-state particles.
In this talk we will present recent progresses in NNLO QCD computations for processes where a heavy-quark pair is produced in association with a massive boson.
We will discuss about $t\bar{t}H$ and $Wb\bar{b}$ production, mainly focusing on the techniques we adopted to circumvent the bottleneck of the missing two-loop amplitudes, namely a soft Higgs-boson approximation and the massification of massless $Wb\bar{b}$ amplitudes.

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