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Generalization of the fastNLO approach to NNLO calculations

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Precision higher order calculations in perturbative QCD for hadron-hadron collisions often require large computing power and are time consuming, in particular in next-to-next-to-leading order (NNLO) accuracy and for non-inclusive or differential quantities. However, such computations are used frequently in modern phenomenological analyses like determinations of the strong coupling constant, α_s, and the parton distribution functions (PDFs) of the proton.
The fastNLO framework uses multi-dimensional interpolation techniques to factorize the convolutions of the perturbative coefficients with the PDFs and α_s. The time-consuming part is only performed once and the results are stored in a flexible standardized format and can then subsequently be used for very fast calculations of the same quantity for arbitrary PDFs, α_s, and for any choice of the renormalization and factorization scales.
This talk focusses on recent develepments on the fastNLO framework and the generalization of the fastNLO approach to NNLO calculations. The fastNLO concept presented can be applied to any kind of process in high energy particle collisions and a new flexible computer code can easily be interfaced with any existing cross section calculation.
As an example, we discuss the usage of recent differential cross section calculations for top-quark pair production in approximate NNLO in the fastNLO framework.

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