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Status of Higher Order QCD calculations

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All physics reactions at the LHC are initiated by partonic processes, which are determined by QCD. To interpret potential signals and their backgrounds, one thus requires a solid understanding of the QCD dynamics, which is achieved by including higher order perturbative corrections. We review the recent progress on higher order calculations in QCD, focusing on the calculation of multi-leg processes at next-to-leading order (NLO) and on precision observables at next-to-next-to-leading order (NNLO). We summarize recent results and important physics implications, and discuss technical developments for the systematic calculation of QCD corrections.

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