Contribution ID: **44** Type: **not specified**

Heaviside functions and the same-hemisphere triple-gluon contribution to the zero-jettiness soft function at N3LO QCD

Friday 22 April 2022 09:30 (20 minutes)

The advancement of computation techniques enables a number of N3LO calculations in perturbative QCD, which are crucial to reaching percent level accuracy in the LHC (and the upcoming HL-LHC) phenomenology. An important part of this effort involves properly extracting IR singularities at N3LO. The N-jettiness slicing scheme is one of the techniques to deal with this problem, but is only available up to N2LO due to the complexity introduced by the Heaviside functions in the soft function. In this talk, we will discuss how we handle the Heaviside functions in the calculation and report the recent result of the same-hemisphere triple-gluon contribution to the zero-jettiness soft function at N3LO QCD.

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Session Classification: Other