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Factorisation tools for infrared subtraction beyond NLO

Wednesday, November 27, 2019 10:30 AM (20 minutes)

I will review some recent work on the infrared subtraction problem beyond NLO, focusing in particular on the general definition of local subtraction counterterms. The starting point is the infrared factorisation of virtual corrections to fixed-angle scattering amplitudes in massless gauge theories, which can be used to define local soft and collinear counterterms in terms of matrix elements of field operators and Wilson lines, to all orders in perturbation theory. Tracing the connection between factorisation and subtraction uncovers significant simplifications in the structure of counterterms, especially for nested singular regions, and we believe that it will be a crucial ingredient for the construction of minimal, stable, and efficient subtraction algorithms, at NNLO and beyond. I will also briefly discuss a detailed implementation at NNLO, where we have completed the relevant analytic integrations forany massless final state.

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