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On phase-space integrals with Heaviside functions

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Subtraction and slicing schemes allow for systematic isolation and cancellation of infrared singularities in fully-differential QCD calculations. They usually require integrals of approximations of matrix elements over the phase-space of unresolved real emission. In his talk, I will focus on soft contributions to the zero- and one-jettiness observable, which is defined through Heaviside functions. I will discuss an extended notion of reverse unitarity and integration-by-parts (IBP) relations for corresponding phase-space integrals, as well as their computation through multi-loop methods, such as IBP reduction to master integrals and the method of differential equations.

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