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Asymmetric collisions in MadGraph5_aMC@NLO

Monday 21 August 2023 09:40 (15 minutes)

We will gain unprecedented, high accuracy insights into internal structure of the atomic nucleus thanks to lepton-hadron collision studies in the coming years at the Electron-Ion-Collider (EIC) in the United States. A good control of radiative corrections is necessary for the EIC to be fully exploited and to extract valuable information from various measurements. However, there is a significant gap to fill: there are no automated simulation tools relevant for the EIC that can incorporate next-to-leading order (NLO) QCD radiative corrections.

This talk presents our implementation of photoproduction in MadGraph5_aMC@NLO, a widely used for (N)LO calculations at the Large Hadron Collider (LHC), at fixed order. It applies to in electron-hadron collisions, in which the quasi-real photon comes from an electron and to proton-nucleus, nucleus-nucleus collisions. In addition, I will also present another extension of the MadGraph5_aMC@NLO framework towards asymmetric collisions in order to provide predictions e.g. for proton-nucleus collisions.

Collaboration / Activity

Yes

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