

Lepton-hadron collisions in MadGraph5_aMC@NLO

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In the coming years, the Electron-Ion-Collider (EIC) in the United States will enable researchers to study lepton-hadron collisions with unprecedented precision. To consolidate figures of merit of a variety of measurements at the EIC, it is essential to include radiative corrections in simulations of electron-proton and electron-nucleus collisions. For the time being, there do not exist any automated simulation tools for such reactions, including even only next-to-leading order (NLO) radiative corrections.

In this talk, I will present our recent progress in the implementation of photoproduction, where the photon is either coming from an electron or from a proton in an ultra-peripheral collision at the LHC. We perform the calculations at NLO in the fixed-order mode within MadGraph5_aMC@NLO, a framework for (N)LO computation, intensively used at the LHC. In addition, I will also present the development for asymmetric hadron collisions in order to provide predictions e.g. for proton-nucleus collisions.

Author: MANNA, LABONI

Co-authors: KUSINA, Aleksander; Dr FLORE, Carlo (IJCLab Orsay, Paris-Saclay U. / IN2P3-CNRS); KIKOLA, Daniel (Warsaw University of Technology); SHAO, Huasheng (Centre National de la Recherche Scientifique (FR)); LANSBERG, Jean-Philippe (IPN Orsay, Paris Saclay U. / IN2P3-CNRS); MATTELAER, Olivier (UCLouvain)

Presenter: MANNA, LABONI

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