

Contribution ID: 78

Type: Parallel

Matching NLL to NLO in Higgs and Z plus jet at the LHC and FCC

Monday 7 July 2025 15:40 (20 minutes)

Recent studies of high-energy inclusive Higgs boson hadroproduction rates, incorporating fixed-order N^3LO QCD corrections, have demonstrated that high-energy resummation effects can contribute up to 10\% at the nominal energies of the FCC. This finding underscores the importance of resummation physics for electroweak processes at 100 TeV. We present new predictions for rapidity and transverse-momentum distributions that probe the emission of a Higgs boson in association with a jet in proton collisions. These results are computed at NLO accuracy in QCD and matched to next-to-leading logarithmic accuracy and beyond (NLL/NLO⁺) in the high-energy regime. Additionally, we report preliminary progress in extending this approach to Z-boson production. To our knowledge, this work represents the first implementation of a matching procedure in the high-energy resummation framework for two-particle final states separated in rapidity. We emphasize that refining fixed-order predictions for Higgs- and Z-boson plus jet distributions is essential for accurately describing key observables in Higgs and electroweak physics at both LHC and FCC energies.

Secondary track

T05 - QCD and Hadronic Physics

Author: CELIBERTO, Francesco Giovanni (UAM Madrid)

Co-authors: DELLE ROSE, Luigi (Università della Calabria); Prof. PAPA, Alessandro (Università della Calabria & INFN-Cosenza)

Presenter: CELIBERTO, Francesco Giovanni (UAM Madrid)

Session Classification: T08

Track Classification: T08 - Higgs Physics