

Towards Higgs and Z boson plus jet at NLL+ matched to NLO

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Recent analyses on high-energy inclusive Higgs-boson rates in proton collisions, matched with the state-of-the-art fixed-order $N^3\text{LO}$ accuracy, have shown that the impact of high-energy resummation corrections reaches 10% at the FCC nominal energies. This supports the statement that electroweak physics at 100 TeV is expected to receive relevant contributions from small- x physics. In this talk we will present novel predictions for rapidity and transverse-momentum distributions sensitive to the emission of a Higgs boson accompanied by a jet in proton collisions, calculated within the NLO fixed order in QCD and matched with the next-to-leading energy-logarithmic accuracy and beyond (NLL/NLO⁺). We will also highlight first advancements in the extension of our analysis to the Z -boson case. According to our knowledge, this represents a first and novel implementation of a matching procedure in the context of the high-energy resummation for rapidity-separated two-particle final states. We come out with the message that the improvement of fixed-order calculations on Higgs- and Z -boson plus jet distributions is a core ingredient to reach the precision level of the description of observables relevant for Higgs and electroweak physics at current LHC energies as well as at nominal FCC ones.

Primary track

Is the speaker a PhD student or post-doc?

Yes - I need some financial support (fee reduction) to attend Higgs 2024

Primary authors: Dr CELIBERTO, Francesco Giovanni (UAH Madrid); DELLE ROSE, Luigi (Università della Calabria); GATTO, Gabriele; PAPA, Alessandro

Presenter: Dr CELIBERTO, Francesco Giovanni (UAH Madrid)

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