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Logarithmic corrections for Jet Production at the LHC

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Several important processes and analyses at the LHC are sensitive to higher-order perturbative corrections beyond what can currently be calculated at fixed order. One important class of large logarithmic corrections are so-called high-energy logarithms which appear when the centre-of-mass energy of a QCD collision is much larger than the transverse momenta of the observed jets.

The effect of these logarithms is enhanced when there is a large rapidity separation between jets. It is therefore particularly important to study the effect of these higher-order corrections in, for example, the analysis of Higgs boson production in association with jets, as vector-boson fusion cuts provide exactly this enhanced impact to the gluon-fusion channel.

In this talk I will describe the High Energy Jets framework, which includes the dominant high-energy logarithms to provide all-order predictions for several relevant LHC processes including Higgs, W, or Z boson production in association with at least two jets. I will summarise the results from arXiv:1812.08072 and arXiv:2012.10310 and some ongoing work.

Preferred track

Jets & QCD at High Scales

Primary author: BYRNE, Emmet (University of Edinburgh)

Presenter: BYRNE, Emmet (University of Edinburgh)

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