

High Energy Jets (HEJ) applied to inclusive Higgs + jets production

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In order to further study the properties of the Higgs boson at the LHC, both gluon fusion (GF) and vector boson fusion (VBF) production modes have to be investigated. Within VBF cuts of large rapidity separation between jets, high energy effects are numerically significant and have to be taken care of appropriately. The High Energy Jets (HEJ) framework resums these large $\log(s/t)$ effects to all orders in the strong coupling, resulting in a suppression of the cross-section compared to fixed-order at large Δy_{12} or m_{jj} . In the case of Higgs production plus two jets, this suggests that the GF contribution within VBF cuts is further suppressed compared to fixed-order predictions. More recently, inclusive Higgs production plus one jet predictions have been made available within HEJ, thus extending the resummation range of the phase space containing at least two jets from previous predictions and providing the first HEJ results for processes involving only one jet.

In this talk, I will summarise the impact of high-energy resummation in $H+ \geq 1j$ and $H+ \geq 2j$, including new comparisons to experimental data.

Primary author: PALTRINIERI, Jérémy

Co-authors: Dr MAIER, Andreas Martin (DESY); SMILLIE, Jennifer (Higgs Centre for Theoretical Physics, Edin. U.); ANDERSEN, Jeppe Rosenkrantz (IPPP, University of Durham)

Presenter: PALTRINIERI, Jérémy

Session Classification: Selected topics on VBF and related