

HXSWG WG1 Off-shell and interference subgroup: Yellow Report 4 status

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Off-shell and interference section outline

- ▶ Input parameters and PDF recommendation for $gg (\rightarrow H) \rightarrow VV$ interference
- ▶ $H \rightarrow ZZ$ and $H \rightarrow WW$ modes
 - ▶ GGF and VBF benchmark cross sections and distributions
 - ▶ Multijet merging effects in $gg \rightarrow \ell\bar{\nu}_\ell\bar{\ell}'\nu_{\ell'}$ using Sherpa
 - ▶ ATLAS MC comparison for $gg \rightarrow H^* \rightarrow VV$ and treatment of QCD-related uncertainties → approval very soon
 - ▶ Higgs boson off-shell simulation with the MCFM and JHU generator frameworks
 - ▶ Interference contributions to gluon-initiated heavy Higgs production in the 2HDM using Golem
- ▶ $H \rightarrow \gamma\gamma$ mode
 - ▶ Theory overview → Livia's talk
 - ▶ Monte Carlo interference implementations → Livia's talk
 - ▶ Studies from ATLAS → approval very soon
- ▶ $gg \rightarrow VV$ at NLO QCD and recommendations
 - ▶ $gg \rightarrow VV$ at NLO QCD status → Raoul's talk
 - ▶ Recommendation for $gg (\rightarrow H) \rightarrow VV$ interference K -factor

Summary

- Draft is in reasonable shape, lots of material already included (33 pages)
- $gg (\rightarrow H) \rightarrow VV$ interference: new recommendations for PDF and K -factor
- Plan to complete draft text in next 2-3 weeks
- More numerical results to be calculated and added in next 6 weeks
- Have ideas for future work, but requires more discussion