

LHC WG1 - VH update

LHC Higgs WG1 VH Conveners - C. Williams, G. Ferrera, H. Arnold, A. Calandri

Updates on VH signal modeling @ 13.6 TeV

- **Updates for VH processes @ 13.6 TeV using `vh@nnlo` [R. Harlander, S.Y.Klein, L. Simon]**
 - csv files for all initial state processes available at this [link](#)
 - invited authors to give a report at upcoming LHC WG1 - VH sub-group meeting
 - updated PDF set: LUXqed17_plus_PDF4LHC15_nnlo_100 for photon-induced contribution and PDF4LHC21_40 for the remaining contributions
 - 7 point scale variations: $Q/3 \leq \mu_F, \mu_R \leq Q*3$, where Q is the invariant mass of the VH system
 - inclusion of ggZH and photon induced contribution with updated CoM energy and PDF set
 - MC integration error also included for completeness in CSV but negligible
 - following the prescription for scale uncertainty provided here:
<https://twiki.cern.ch/twiki/bin/view/LHCPhysics/LHCHWG136TeVxsec>
 - currently working on comparing these results to interpolated VH cross-section results provided here [WG1 Updated Higgs Cross Sections](#)
- **Several additional contributions on ggZH@NLO currently being worked out and discussed at LHC VH meeting (<https://indico.cern.ch/event/1197425/>) but no convergence on updated CoM and PDF's available yet - following up with authors**