



News

LHCHXSWG WG1 VH meeting

June 29th 2017

Carlo, Francesco, John, Luca

Practical info

- VH+VBF sub-group recently (re-)split into separate VH and VBF
- VH sub-group convener composition: Carlo Pandini (Geneva), Francesco Tramontano (Naples), John Campbell (Fermilab), Luca Perrozzi (ETH)
- VH conveners mailing list: lhc-higgs-vh-convener@cern.ch
- VH twiki <https://twiki.cern.ch/twiki/bin/view/LHCPhysics/LHCHXSWGVBH>
- For discussions/meetings advertisement use lhc-higgs-xsbr@cern.ch (WG1)
 - NO dedicated sub-group mailing list (lhc-higgs-xsbr-vhvbf@cern.ch in common with VBF is dismissed)
- Indico category for meeting agendas <https://indico.cern.ch/category/5847/>
- 13th HXSWG workshop [13-14 July 2017]: <https://indico.cern.ch/event/595100/>
 - Update on theory and experimental status (2x 20' talks) - starting from today's discussions

Topics of interest

- **Combination of NNLO QCD and NLO EW corrections in parton showers**
 - Short-term proposal: use POWHEG_MiNLO and reweight using YR4 EW correction factors either in the cross-section or differentially in VpT .
 - Longer-term: investigate/encourage authors to collaborate on joint implementation in POWHEG, as has already been done for (simpler) W/Z production.
- **How can predictions for $gg \rightarrow VH$ contribution be improved?**
 - try to improve approximation (tension between effectiveness of HEFT and boosted region where gg contribution is large);
 - can we exploit similarities with (very similar) $gg \rightarrow HH$ process of G. Heinrich et al;
 - is there any mileage in a direct appeal to the Goldstone equivalence theorem (perhaps applies well enough in boosted region)?
- **Benchmark existing calculations of $gg \rightarrow VH$**
 - Should benchmark existing calculations of $gg \rightarrow VH$, which may contain different treatments and approximations, both with and without matching/merging.
- **Discuss backgrounds**
 - Desire within experiments for more guidance/sharing of experience with background generation and benchmarking in boosted region.
 - General agreement that, while not the focus of this subgroup, we should help to facilitate such discussions.
- **VH theoretical uncertainties under simplified template cross-section approach (STXS)**
 - How should the calculation of uncertainties for VH be handled under simplified template cross-section approach (STXS), c.f. YR4.
 - In particular, correlated uncertainties between jet bins — either using Stewart/Tackmann or other similar approaches.
 - How to apply/extend ggF experience to VH ?