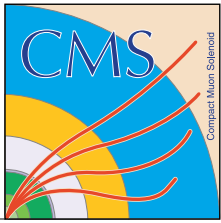


Diboson summary

16/04/2013 - LHC EW WG meeting

Nicolas Chanon (ETH Zürich), Matt Herndon (University of Wisconsin) - CMS

Zhijun Liang (University of Oxford), Alexander Oh (University of Manchester) - ATLAS



Diboson cross-sections

Standardize total cross-section predictions

- Common program between ATLAS and CMS
 - Mostly MCFM - use others in addition?
 - Both ATLAS and CMS will try each other setup (pdf, scales)
- Agreeing on common definition between ATLAS and CMS
 - Z window
 - Lepton dressing
 - Photon E_T selection

Unfolded differential distributions

- Standardize binning (in progress) would be useful ATLAS/CMS combination
- Distributions of interest: theory wishlist?
- Latest programs to compare: improve data/theory agreement?
 - NNLO (not yet available)
 - match/merged NLO+PS: Sherpa becoming available (see F. Kraus slides yesterday, WW+0/1jets@NLO), aMC@NLO



aTGC extraction

Effective Field Theory / anomalous coupling formalism

- EFT: What do we gain? (NLO treatment, scale of new physics?)

Form factors: are they needed?

- At minimum, ATLAS and CMS measure without form factor

Binning: Issues with probing predictions in highest vector boson pT bin?

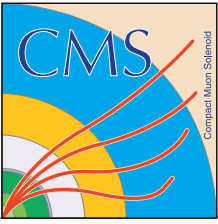
- Statistical treatment issue (how to define the last bin)
- Theory issue for very large aTGC? (EFT no longer valid)

Link with Higgs coupling

- In EFT, aTGC and Higgs couplings are the same operators (see e.g. arXiv: 1304.1151)
- Need to look into this possibility and investigate sensitivity

ATLAS / CMS aTGC combination:

- Work started. Preparing with 7 TeV, goal is 8 TeV



aQGC

Linear / non-linear realization

- Dim 6 Linear realization without Higgs (a la LEP)
 - Dim 8 non-linear realization with a Higgs
- => Any reason to pursue linear realization since we found a Higgs-like particle?

Form factors?

Available generators

- Madgraph, aMC@NLO, VBFNLO, Whizard
- Do generators exist for all charged/neutral couplings? (esp. $W\gamma\gamma$, $Z\gamma\gamma$)
- Straightforward relationship between dim6/dim8 for all couplings?

Link with Higgs operators?