

Conventions used in the Higgs WG: just two slides of comparisons



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Conventions used

Three “bases” used so far in Higgs results from ATLAS & CMS:

- **SILH**: used for earlier parametrization of STXS & BRs [LHCHXSWG-2019-004](#) & others (backend: [HEL UFO](#))
 - No longer being actively pursued → I won't discuss it.
- **Warsaw**: used e.g. in most recent ATLAS STXS-based results, and likely other upcoming STXS & BR parametrizations
 - Linear transformation based on PCA used to isolate the directions in parameter space that are constrained by the Higgs results
- **Higgs**: used e.g. in most recent CMS $H \rightarrow 4\ell$ results
 - Parametrization isolating the Higgs degrees of freedom from the rest, and consider only those in the fit

Conventions used

Both the PCA-rotated Warsaw and the Higgs “basis” can be seen as reparametrizations of the Warsaw basis for convenience of describing a limited set of observables.

- PCA rotation a-posteriori, Higgs “basis” a-priori
 - Higgs “basis” : directions defined by the tensor structure of the amplitudes, then analysis designed to try to separate them
- PCA-rotated directions include also modifications to non-H couplings (e.g Vff ones affecting VH and $H \rightarrow VV \rightarrow 4f$)
- Higgs reparametrization more difficult at higher precision:
 - input scheme dependency for SM-like interactions
 - NLO in couplings increases mixing between Warsaw basis wilson coefficients and observables (/ terms in amplitude analysis)