

## Some personal considerations

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- Personal considerations from an experimentalist point of view
  - Not sure they all make sense
  - **NOT CMS-endorsed, NOT CMS statements**
- Much work on this already in progress in various WGs
  - This WG could provide additional expert-opinion that the other WGs could use at their profit
  - A cross-working-group effort analogous to cross-analysis-group efforts within experiments?

- *EFT effects should be incorporated not just on signals, but also backgrounds to these signals [...] for consistency, and is particularly relevant in tails of distributions (Veronica Sanz)*
- Important to sensitize the community about the need of accounting for effects on background (Andrea Giammanco)
- I think this also has implications for the statistical modelling of systematic uncertainties
  - Propagating effects to background is quite straightforward
  - From independent S and B normalizations to modelling a change of signal fraction
  - So far uncertainty in the parameterization (from fits to extract parameterization) is ridiculously small
  - Can it grow if effects on background are added? Is the effect on background supposed to be quadratic too?
- We parameterize weights from EFT parameters generated at LO
  - When applying that to NLO samples can have large corrections (discussed at the PREFIT school apparently?)
  - Additional uncertainty? Do we know the shape of that uncertainty?
    - Is it a continuous effect  $\rightarrow$  continuous nuisance parameter (NP) p.d.f.?
    - Or is it a two-point systematic, with no (or not trivial) interpolation?
    - Assuming "variations" are provided, would need to know how to interpolate them to obtain a continuous NP p.d.f.
  - Other additional uncertainties to describe lack of consensus on some prescriptions?
  - Should we worry for the tails (low-statistic effects might inflate/deflate uncertainty artificially)
- Can all of these variations be treated with production of MC weights to be applied to nominal samples?
  - Faster and would be particularly significant for very large background samples
- This WG could be a place for harmonizing work and discussions on this!

- *review in more detail the procedures used by the experiments to define the domain of applicability of the EFT regime, particularly for complex fiducial analyses with different cuts etc* (The current document draft)
- Harmonization of fiducial cuts across experiments (whenever possible) already pushed for in the various WGs
  - LHC Reinterpretation Forum has experience on this (Nick Wardle)
- This WG could provide suggestions for EFT-optimized phase spaces
  - Alert theoreticians on which fiducial definition they should better produce (differential) predictions for, thus reducing duplication whenever possible
- The existing WGs could then integrate these suggestions with their EFT-specific agreements/definitions
  - EFT results (particularly for combinations) could use these community-wide fiducial space definitions/recommendations
  - Change of basis usually also performed within the experiments to produce reparameterized results
- Indirect effect also helping smooth(er) combinations down the line

**THANKS FOR THE ATTENTION!**

# Backup

