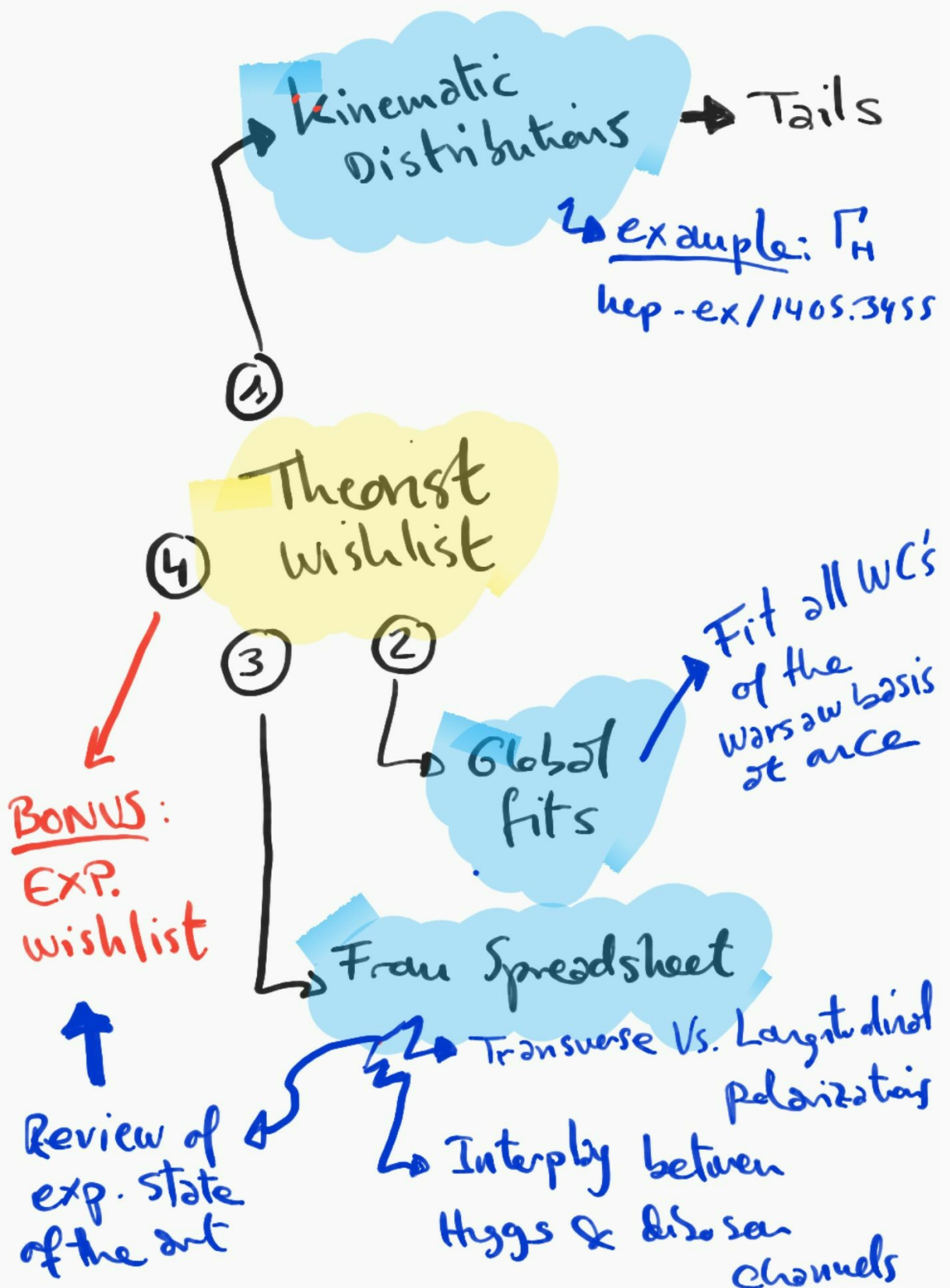


Theorist Wishlist



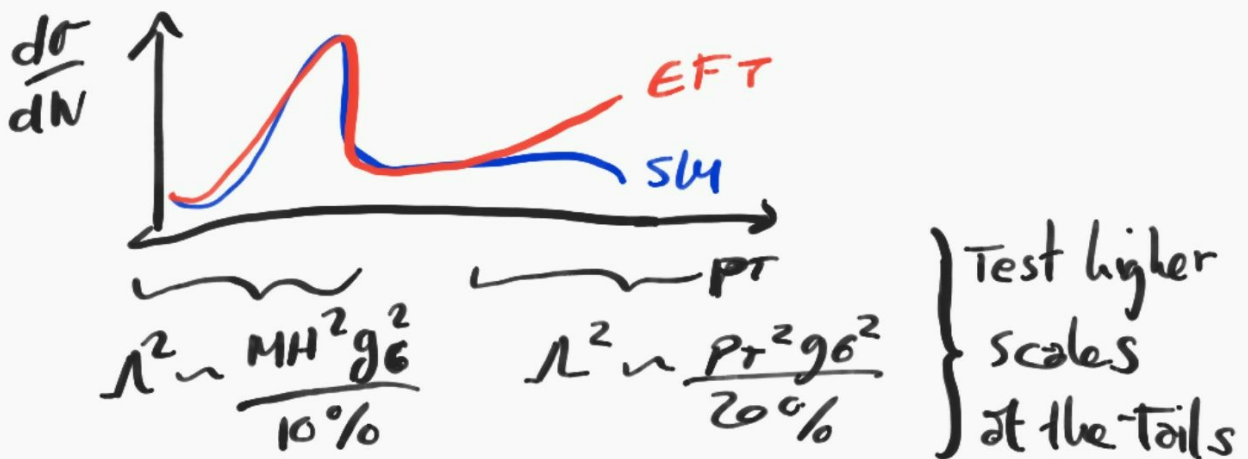
1) Kinematic distributions

- Comparing tail with peak, Γ_H constrain can be improved orders of magnitude

$$\sigma_{\text{off-shell}} / \sigma_{\text{peak}} \propto \Gamma_H$$

- ↳ can be extended to EFT
- ↳ Not directly related to VBS, but interesting)

2) New physics is expected @ TAILS*



* INTUITIVELY: Expansion in $E/\Lambda \rightarrow$
 \rightarrow bigger effects for bigger E

⊕ Exp. cuts for VBS/VBF have high p_T anyways

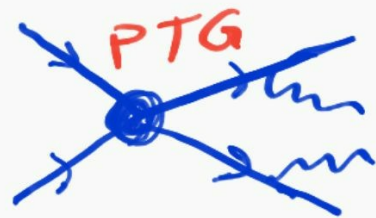
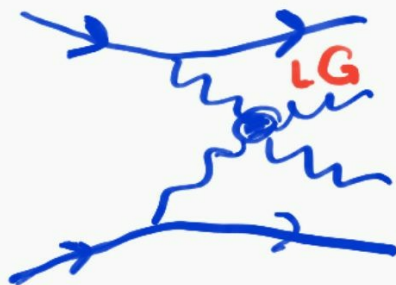
2) Global fits of Wilson coeffs.

* Some ideas

① Varying WC one by one is not EFT, it is the κ -framework

② The κ -framework analysis was not wrong (only unfruitful) → could be an example to study

③ Coefficients for TGC's/QGC's are suppressed wrt. other (for example 4-fermion operator)



↑ cuts?

④ WC's mix beyond LO, assumptions at high energy are not valid anymore at low energies



THEO. & EXP have to work together to design the strategy

↳ Fex. to decide the theory output that will be exp. input
we need the exp. wishlist too!!

Some Questions:

- 1) What is VBS? VBF is VBS?
- 2) What are VBS final states?
 - $vvjj \times BR(v \rightarrow ll)^2$
 - $lllljj$
- 3) Is it possible to fit 60 coeffs. at a time? yes? How?
- 4) STXS \rightarrow Not valid if exp. cuts are not kinematic. \rightarrow is it possible in VBS?

Some links:

1. Short presentation on constraining the higgs width:
<https://www.slideshare.net/RaquelGomezAmbrosio/constraints-on-the-higgs-boson-width-from-offshell-production-and-decay-to-zboson-pairs>
2. EFT spreadsheet:
<https://docs.google.com/document/d/1mW4u0TVfi4Ep-3pa0J0k1tqlzUDjaq8GJPzWR3THwSI/edit?usp=drivesdk>
3. "Higgs production in association with a top-antitop pair in the Standard Model Effective Field Theory at NLO in QCD" Maltoni *et.al.* -> [hep-ph/1607.05330](https://arxiv.org/abs/hep-ph/1607.05330)