

BSM Workshop @ LPC

“Roundtable” Discussion
“Experimental” Talking Points

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Impressive results from ATLAS and CMS, extensive theoretical progress...

- **H(125) property measurements and their interpretations**
 - New ideas of measurements?
 - New ways of interpreting the data?
 - What are the prospects of improving TH and PU uncertainties?
- **Analyses are mostly model-driven, final-state focused**
 - Models are “infinite”, final states are “limited”:
 - Are experiments covering all interesting final states in their searches? Can we make a list of final states along with interesting models that predict these final states (beyond 1312.4992)?
 - Broaden the coverage of existing searches, e.g. low mass $H/A \rightarrow \tau\tau/bb$, can theorists make a wish list? We heart about the $t\bar{t}$ -final state
- **Combining / comparing information with measurements beyond the Higgs sector**
 - We did not see many flavor physics results

- **Presentation of results**

Search results are usually presented as limits from the searches and their constraints on models:

- Neither are model independent, e.g., σ_{BR} limits depend on efficiencies which are general model-dependent. Can we do better? How useful are HEPDATA or RIVET?
- The EFT-approach allows a consistent analysis, but there are assumptions to.
- What are roles of benchmark models?
 - Characterizing search sensitivities and/or model exclusions? For MSSM, there have been long standing benchmarks such as m_{hmax} , m_{hmod} , etc. Shall we have more or less of them? How about new models?

- **Issues with searches**

- New particle width?
 - Resonance searches are usually only valid if the width is much smaller than the detector resolution;
- Interference with SM backgrounds
 - Are being considered by “high-profile” searches, not considered by more exotic-type searches.
- NLO should be the standard now

- There is still confusion on plots like this
 - Results are optioned with different sets of assumptions
 - Limits are not in competition but complementary

