Workshop on

(Re)interpreting the results of new physics searches at the LHC

The LHC collaborations are pursuing searches for new physics in a vast variety of channels. The full understanding of the implications of these searches requires the interpretation of the experimental results in the context of all kinds of theoretical models. This is a very active field, with several public tools being developed.

The goal of this workshop is to

- review the status of efforts and tools for the BSM (re)interpretation of LHC data, and to
- set the stage for a continued interaction between theorists and the experiments.

A possible outcome of the meeting is the creation of a working group, whose plan and organization can be outlined during the available discussion time.

CERN, 15-17 June 2016

Theory - experiment interaction on (re)using LHC data

Talkin' Bout a Revolution ?

Poor people gonna rise up
And get their share
Poor people gonna rise up
And take what's theirs

Don't you know
You better run, run, run...
Oh I said you better Run, run, run...
Finally the tables are starting to turn

Les Houches Recommendations

- At the PhysTev 2011 workshop, we started to discuss a set of recommendations for presenting the LHC results in a form that would be most useful to the community at large, and that would help to maximize the scientific return of the LHC.

- Initial recommendations were thoroughly discussed and refined with input from ATLAS and CMS collaborations in a dedicated LPCC miniworkshop 13 Feb 2012

  → final document arXiv:1203.2489 (33 authors)

  see also the Les Houches 2011 BSM working group report, arXiv:1203:1488

Conclusions from LH

- Set of recommendations for the presentation of LHC results on searches for new physics, which are aimed at facilitating the interpretation of the results in wide classes of models. (or even making such interpretations possible)

- Our wish is to stimulate discussions among the whole community and work towards a common standard for the presentation of results.

- Added value for the experiments, and the community as a whole:

  - ✓ faster and more precise feedback on the implications of the LHC results for a broad range of theoretical scenarios.

  - ✓ greatly facilitate the comparison and combination of analyses within and across the LHC collaborations, as well as the assessment of the physics potential of future facilities.

  - ✓ a further step towards a more comprehensive approach to the storage, persistence and future use of LHC results.

- The tools needed to provide extended experimental information require dedicated efforts in terms of resources and manpower, to be supported by both the experimental and the theory communities.

We want

no revolution

a clear and systematic description of the Data.

= the relevant details about the analyses plus
all crucial numbers regarding the results

Building bridges to make best use of the LHC results

Discussion about how to present the results is quite specific to BSM; SM groups report fiducial cross sections and provide Rivet routines

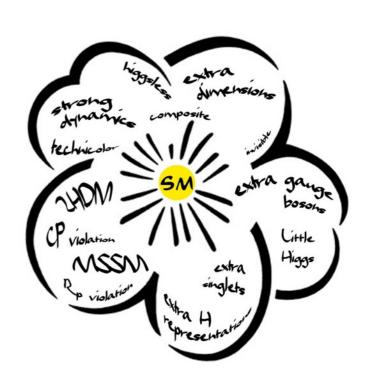Recently lots of progress on the BSM side regarding

✓ the development of public recasting tools,
✓ the information provided in the experimental publications,
✓ i.m.h.o. generally in the TH-EXP communication.

This workshop

- Where do we stand? What is the status of efforts and (public!) tools for the BSM reinterpretation of the LHC data?

- What information is / should / needs to be provided for an efficient and reliable usage of the experimental results? How can this be done in a systematic way?

- In what way can the experimental collaborations benefit from providing more information to theorists? What questions do experimentalists want theorists to address?

- (How) can we set the stage for a continued interaction between theorists and the experiments on this topic?

- Can we achieve a more open information exchange?

guiding principle:
mutual interest

Let's start with the tools …