

Minutes of the General Discussion Session at the LHC Higgs XS WG Workshop

June 12-13, 2014, CERN Filtration Plant

InDico: <https://indico.cern.ch/event/313725/other-view?view=standard>

1) General Discussions

1. Recommendations from LHC Higgs XS to the collaborations

N. Kauer pointed out the lack of transparency in certain recommendations made by few theorists to the experimental collaborations in the past. He suggests “short notes” which describes theorists/experimentalists involved, question/topic to be addressed and the recommendations. This could be archived in public system with note ID, so that collaborations could quote for publications.

Discussions

- Lengthy discussions took place. While recognizing that it is an important suggestion, general reactions were that “short notes” would involve extra load, and as a consequence it might discourage another theory inputs.
- While collaborations need the citable source for publications (TWiki is not suitable), collaborations may survive with TWiki page for CONF note/PAS. TWiki already allows for documenting theory feedback.
- Official recommendations nevertheless should be submitted to arXiv or written in the Yellow Report so that collaborations can cite for publications in the journals.

Suggestions from Steering Committee

- Steering Committee will review on the protocol of how recommendations should be made and will submit the proposal to lhc-higgs mailing list for feedbacks from the community.

2. Discussions

With presence of ATLAS+CM directions, Physics Coordinators, Higgs WG conveners, some discussions on the general issues in our group took place.

- Everyone seemed to be happy with the proposed 3 working group structure.
- Question on the mailing list. Our main mailing list is lhc-higgs@cern.ch and everyone interested to subscribe to this. Dedicated mailing lists for each working group is planned to be created soon.

2) Relation with CERN

S. Bertolucci (Director for Research and Computing) expressed that CERN (CERN management) is willing to help LHC Higgs XS WG, for example by providing resources at CERN. Sergio said that it is too early to say how CERN should be represented but said that CERN is one main stakeholders in Higgs physics together with the ATLAS and CMS collaborations and the theory community. He also mentioned that it is important not to create conflict with other Higgs-related activities at CERN, e.g. HL-LHC and FCC.

Discussions

- CERN is eager to help theorists in logistics such as contract with CERN for user registration as Visiting Scientists (VISC). Question was raised if CERN could offer financial support for travels of theorists.
- Theorists always had good relationship with CERN-TH division, and we want to maintain it.

3) Working Group Organization

As we are still waiting the nominations of TH WG conveners, we have asked (already nominated) EXP WG conveners to chair the session to initiate the discussions on working group structure. Below is the summary of discussions including those discussed at each session.

1. WG1: Higgs XS&BR

B. Mellado reported on the first reflection of the group structure. The group has to cover wide range of topics, and suggested not to go into serious re-structure of the previous subgroups. Bruce suggested subgroups of ggF, VBF, VH, ttH/bbH, BR, Jets, MC and PDF.

Discussions

- Mixed opinions were expressed on group sub-structure on how many subgroups should exist in this group.
- One argument was that there were many subgroups which were functioning very well in the past, and such subdivision made it easy to identify where questions should be sent, and then answered to the collaborations. VBF and VH can be merged.
- Others felt that it would be better to identify questions to be answered for Higgs physics for RUN-2 in coming 1-2 years first, and then structure the group.
- MC is the common topic across different WG_i, and it was questioned if it is needed to create the dedicated subgroup.
- Dedicated PDF4LHC working group in LHC exists, and it was suggested that having the link to this working group could be enough.
- HH subgroup could exist in each HSG1/2/3, but cross-talk is very important.
- It would be good to revisit Les Houches MC wishlist for RUN-2.

2. WG2: Higgs Properties

A. David described the inherent topics in this working group, to measure the deviations from the SM in kappa-framework, and measurements in Effective Field Theory. No plan for now for creation of subgroups inside this working group, but dedicated meetings will be held for different topics and documents will be produced.

Discussions

- Moving to EFT framework for measurements will take time. kappa-framework to be kept as a way to search for deviations from the SM.
- Parity is an important aspect for both deviations and measurements.
- It was questioned if we need to continue the discussions on Higgs spin analysis, though admixtures of spin 1 decays in some channels and spin 0 decays in others are of relevance.
- There was some fear of the overlap between the EFT and the WG3. The conclusion is that EFT is unspecific, while WG3 work could be directed by concrete models (and classes of models).

3. WG3: BSM Higgs

G. Carrillo-Montoya (on behalf of N. Rompotis) reported on the initial thoughts on this working group activity. Emphasis was put on that the group should not play the role of selecting particular models for recommendation, but rather the group should provide the forum of information exchange between theory and experiment, providing the documentation, agreeing the convention, etc.

Discussions

- Experiments need the very clear benchmark scenarios as was done for MSSM and 2HDM in the past. Also experiments need the tools such as NLO/LO MC, ME calculator, etc.
- It was questioned which subgroups are needed, e.g. MSSM, 2HDM, NMSSM, XMSSM, Exotic decay, etc.

4) Plan

- Decision on subgroup composition and nominations for each contacts in each WG should happen after nominations of TH WG conveners.
- SC suggests each WG conveners to organize kickoff meeting to discuss the activities in each WG before summer break.

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Minutes taken by SC and WG_i conveners