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LHC Higgs Combination Group (LHC-HCG)

Charge

The working group has been charged to produce a combined Higgs result from LHC (ATLAS and CMS) Higgs analyses. The mandate of the group is as follows

- The implementation of Higgs boson theory aspects based on LHC Higgs XS WG recommendations will be discussed within the group. If needed, the group will request additional information from the LHC Higgs XS WG.
- Monte Carlo generators and systematic variations are to be compared and unified where profitable and consistent with the overall MC and systematic uncertainty strategy in the individual experiments. This could result in sharing MC samples between ATLAS and CMS.
- Technical aspects regarding the construction and usage of likelihood functions are to be discussed and solutions implemented as homogeneously as possible, including common naming conventions and tools. This includes efforts to construct simplified likelihood functions.

Composition

role	ATLAS	CMS
Conveners & Contact	Roberto Di Nardo, Jianming Qian	Andrew Gilbert, Nick Wardle
Combination Contacts		
Higgs X-section representatives		
GammaGamma contact		
ZZ contact		
TauTau contact		
WW contact		
bb contact(s)		
ttH contact(s)		
MuMu contact(s)		
Fiducial and differential		
Signal modelling contact(s)		

Other members are: ATLAS and CMS spokespeople and physics coordinators and participating experts as and when needed.

Run 1 composition

▣ Run1 contacts ▣ Hide

role	ATLAS	CMS
Combination Contacts	Nicolas Berger	Andrew Gilbert
Higgs X-section representatives	Reisaburo Tanaka	Chiara Mariotti
GammaGamma contact	Hongtao Yang	Nick Wardle
ZZ contact	Richard Mudd	Mingshui Chen
TauTau contact	Swagato Banerjee	Andrew Gilbert
WW contact	Stefan Gadatsch	Xavier Janssen
bb contact(s)	Giacinto Piacquadio	Stephane Cooperstein
ttH contact(s)	Stefan Guindon, Maria Moreno Llacer	Matthias Schroeder
MuMu contact(s)	Haifeng Li	Andrew Brinkerhoff
Fiducial and differential	Florian Bernlochner	Predrag Milenovic
Signal modelling contact(s)		David Sperka

Documentation

Support Note SVN	
Editors:	
ATLAS:	contacts + Tim Adye, Stefan Gadatsch, Fangzhou Zhang, Hongtao Yang & Eilam Gross
CMS:	All Contacts + Marco Pieri, Mingshui Chen, Nick Wardle
ATLAS Combination	Conf
CMS Combination	Twiki

Paper SVN	
Contact Editors:	
ATLAS:	Daniel Froidevaux (main), Tim Adye, Stefan Gadatsch, Fangzhou Zhang & Eilam Gross
CMS:	Marco Pieri, Mingshui Chen, Nick Wardle
ATLAS Combination	Conf
CMS Combination	Twiki, arXiv

Communication tools

e-group mailing list ↗	For group's global issues, announcement of group meetings, meeting summary, ... Follow this link ↗ to subscribe yourself to the mailing list.
Contacts e-group mailing list ↗	For contact persons (restricted access).
Indico pages ↗	Group's workshop and subgroup meeting agenda system.
TWiki page	Static information site that is updated mainly by contact persons. Group organization, minutes, documents, link for tools and meetings, ...

Software

The agreed framework for the Higgs combination is the RooStats package available from ROOT releases and RooFit's RooWorkspace [↗](#) is the preferred format for sharing the data and likelihood model.

Discussion TWiki

- Parameters of interest
- Nuisance Parameters

repository

Main Repository in GitLab [↗](#)

The levels of repositories follows the structure shown in the image below. To clone a sub-repository use


```
git clone https://gitlab.cern.ch/lhc-hcg/Run-X/sub-project/repo.git
```


Show figure [▢](#) Hide [▢](#)

Subgroups and projects

Shared projects


Archived projects


▼  **R** **Run-1** Owner
Subgroup for Run-1 Combinations


▼  **C** **couplings** Owner
Run-1 Couplings group

 **A** **atlas**
Area for ATLAS workspaces/tools

 **C** **cms**
Area for CMS workspaces/tools


 **C** **combination**
Area for combined workspaces

 **D** **documentation**
An area for public notes / papers

▼  **M** **mass** Owner
Group for Run-1 Mass combination

 **A** **atlas**
An area for ATLAS workspaces/tools

 **C** **cms**
An area for CMS workspaces / tools

 **C** **combination**
An area for combined workspaces

SVN Repository (Outdated)

SVN Repository
Couplings Work Spaces
Support note SVN
Paper: SVN

Some simple SVN instructions are at: <https://svn.cern.ch/repos/lhchcg/doc/using-svn.txt>

The repository can be accessed like so:

```
-----  
svn co svn+ssh://svn.cern.ch/repos/lhchcg  
svn co https://svn.cern.ch/repos/lhchcg  
-----
```

We should start organizing some materials there, even if for now they are based on toy data:

- the WorkSpaces for ATLAS and CMS
- the combined WorkSpace
- any pieces of codes that could/should be shared
- documentation
- etc

Links

Past meetings: <https://indico.cern.ch/categoryDisplay.py?categId=3328>

Useful Material

- Phystat 2011 talk: RooStats for searches [↗](#) (G. Schott)
 - Phystat 2011 talk: Combining ATLAS and CMS Higgs searches [↗](#) (K. Cranmer)
-
-

This topic: LHCPhysics > HiggsCombination

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