

**The 16th Workshop of the  
LHC Higgs Cross Section  
Working Group**

**Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Welcome and introduction

*Wednesday, 16 October 2019 09:00 (10 minutes)*

**Session Classification:** Plenary

Contribution ID: 2

Type: **not specified**

## **Gluon fusion**

*Wednesday, 16 October 2019 09:15 (15 minutes)*

**Presenter:** MASSIRONI, Andrea (CERN)

**Session Classification:** Plenary

Contribution ID: 3

Type: **not specified**

## Vector boson fusion

*Wednesday, 16 October 2019 09:55 (15 minutes)*

**Presenter:** Dr KARLBERG, Alexander (Universitaet Zuerich (CH))

**Session Classification:** Plenary

Contribution ID: 4

Type: **not specified**

## VH

*Wednesday, 16 October 2019 09:35 (15 minutes)*

**Presenter:** PANDINI, Carlo Enrico (CERN)

**Session Classification:** Plenary

Contribution ID: 5

Type: **not specified**

## **ttH/tH: EXP**

*Wednesday, 16 October 2019 11:15 (15 minutes)*

**Presenters:** THOMAS-WILSKER, Joshua (Institute Of High Energy Physics, Beijing); Dr MORENO LLACER, Maria (Univ. of Valencia and CSIC (ES))

**Session Classification:** Plenary

Contribution ID: 6

Type: **not specified**

## **Offshell: TH**

*Wednesday, 16 October 2019 10:45 (10 minutes)*

**Presenter:** RONTSCH, Raoul Horst

**Session Classification:** Plenary

Contribution ID: 7

Type: **not specified**

## **ggF STXS uncertainties**

*Wednesday, 16 October 2019 14:10 (15 minutes)*

**Presenter:** ABIDI, Syed Haider (University of Toronto (CA))

**Session Classification:** Plenary: WG1+WG2



Contribution ID: 8

Type: **not specified**

## **VBF STXS uncertainties**

*Wednesday, 16 October 2019 13:30 (15 minutes)*

**Presenter:** HADDAD, Yacine (Northeastern University (US))

**Session Classification:** Plenary: WG1+WG2

Contribution ID: 9

Type: **not specified**

## **VH STXS uncertainties**

*Wednesday, 16 October 2019 13:50 (15 minutes)*

**Presenter:** PALMER, Chris (Princeton University (US))

**Session Classification:** Plenary: WG1+WG2

Contribution ID: **10**

Type: **not specified**

## **WG1 discussion summary**

*Friday, 18 October 2019 11:30 (30 minutes)*

**Session Classification:** Plenary

Contribution ID: 11

Type: **not specified**

## **WG2 discussion summary**

*Friday, 18 October 2019 12:00 (30 minutes)*

**Session Classification:** Plenary

Contribution ID: 12

Type: **not specified**

## **WG3 discussion summary**

*Friday, 18 October 2019 12:30 (30 minutes)*

**Session Classification:** Plenary

Contribution ID: 13

Type: **not specified**

## **HH discussion summary**

*Friday, 18 October 2019 13:00 (30 minutes)*

**Session Classification:** Plenary

Contribution ID: 14

Type: **not specified**

## **Theory developments and uncertainty projections for future Higgs measurements**

*Friday, 18 October 2019 14:00 (30 minutes)*

**Presenter:** Dr MONNI, Pier (CERN)

**Session Classification:** Plenary

Contribution ID: 15

Type: **not specified**

## **EW/Higgs physics at Future Colliders: Studies for the Update of the European Strategy for Particle Physics**

*Friday, 18 October 2019 14:35 (30 minutes)*

**Presenter:** DE BLAS, Jorge (Universita e INFN, Padova (IT))

**Session Classification:** Plenary



Contribution ID: 16

Type: **not specified**

## **BSM Higgs at HL-LHC and Future Colliders**

*Friday, 18 October 2019 15:10 (30 minutes)*

**Presenter:** LIU, Zhen

**Session Classification:** Plenary

Contribution ID: 17

Type: **not specified**

## Closing

*Friday, 18 October 2019 15:45 (15 minutes)*

**Session Classification:** Plenary

Contribution ID: **18**

Type: **not specified**

## **Offshell: EXP**

*Wednesday, 16 October 2019 10:55 (10 minutes)*

**Presenter:** SARICA, Ulascan (Univ. of California Santa Barbara (US))

**Session Classification:** Plenary

Contribution ID: **19**

Type: **not specified**

## **ttH/tH: TH**

*Wednesday, 16 October 2019 11:30 (15 minutes)*

**Presenter:** REINA, Laura (Florida State University (US))

**Session Classification:** Plenary

Contribution ID: **20**

Type: **not specified**

## **Introduction**

*Thursday, 17 October 2019 09:00 (10 minutes)*

**Session Classification:** Plenary

Contribution ID: 21

Type: **not specified**

## Summary of "Extended Higgs Sector" group activities

*Thursday, 17 October 2019 09:10 (30 minutes)*

**Presenter:** SANTOS, Rui (ISEL)

**Session Classification:** Plenary

Contribution ID: 22

Type: **not specified**

## Summary of "Exotic Higgs Decays" group activities

*Thursday, 17 October 2019 09:40 (30 minutes)*

**Presenter:** CAILLOL, Cecile Sarah (University of Wisconsin Madison (US))

**Session Classification:** Plenary

Contribution ID: 23

Type: **not specified**

## Summary of "MSSM" group activities

*Thursday, 17 October 2019 10:10 (30 minutes)*

**Presenter:** GILBERT, Andrew (Northwestern University (US))

**Session Classification:** Plenary



Contribution ID: 24

Type: **not specified**

## Summary of "NMSSM" group activities [vidyo]

*Thursday, 17 October 2019 12:00 (30 minutes)*

**Presenter:** MUHLEITNER, Milada (KIT - Karlsruhe Institute of Technology (DE))

**Session Classification:** Plenary

Contribution ID: 25

Type: **not specified**

## **Recommendations for the presentation of auxiliary information in BSM Higgs searches**

*Thursday, 17 October 2019 11:40 (20 minutes)*

**Presenter:** HEINEMEYER, Sven (CSIC (Madrid, ES))

**Session Classification:** Plenary

Contribution ID: 26

Type: **not specified**

## Higgs and Long-Lived Particles

*Thursday, 17 October 2019 10:40 (30 minutes)*

**Presenter:** CITRON, Matthew Daniel (Univ. of California Santa Barbara (US))

**Session Classification:** Plenary

Contribution ID: 27

Type: **not specified**

## **Summary of the activities of the LHC DM WG [vidyo]**

*Thursday, 17 October 2019 12:30 (30 minutes)*

**Presenter:** HARRIS, Philip Coleman (Massachusetts Inst. of Technology (US))

**Session Classification:** Plenary

Contribution ID: 28

Type: **not specified**

## Introduction

*Friday, 18 October 2019 09:00 (10 minutes)*

**Presenter:** CADAMURO, Luca (University of Florida (US))

**Session Classification:** Plenary

Contribution ID: 29

Type: **not specified**

## **Review of HH cross section computations and uncertainties**

*Friday, 18 October 2019 09:10 (20 minutes)*

**Presenter:** MAZZITELLI, Javier

**Session Classification:** Plenary

Contribution ID: **30**

Type: **not specified**

## **Experimental overview of HH at the LHC**

*Friday, 18 October 2019 09:40 (30 minutes)*

**Presenter:** FERRARI, Arnaud (Uppsala University (SE))

**Session Classification:** Plenary

Contribution ID: **31**

Type: **not specified**

## **Beyond SM HH**

*Friday, 18 October 2019 10:20 (30 minutes)*

**Presenters:** MÜHLEITNER, Milada Margarete; GROEBER, Ramona (HU Berlin)

**Session Classification:** Plenary



Contribution ID: **32**

Type: **not specified**

## **STXS overview and new binning**

*Wednesday, 16 October 2019 13:00 (25 minutes)*

**Presenter:** DUEHRSEN-DEBLING, Michael (CERN)

**Session Classification:** Plenary: WG1+WG2

Contribution ID: 33

Type: **not specified**

## Experimental summary

*Wednesday, 16 October 2019 14:30 (25 minutes)*

Experimental overview of recent fiducial, differential and STXS measurements by ATLAS and CMS, and their interpretations (kappa, EFT)

**Presenter:** YANG, Hongtao (Lawrence Berkeley National Lab. (US))

**Session Classification:** Plenary

Contribution ID: 34

Type: **not specified**

## Higgs EFT parameterisation efforts

*Wednesday, 16 October 2019 14:55 (25 minutes)*

**Presenter:** HAYS, Chris (University of Oxford (GB))

**Session Classification:** Plenary

Contribution ID: 35

Type: **not specified**

## Higgs + top EFT interpretations

*Wednesday, 16 October 2019 15:20 (25 minutes)*

**Presenters:** MIMASU, Ken (Université Catholique de Louvain); MIMASU, Ken (Particle Physics-Rutherford Appleton Laboratory-STFC - Science &)

**Session Classification:** Plenary

Contribution ID: **36**

Type: **not specified**

## **Higgs + multi-boson EFT interpretations**

*Wednesday, 16 October 2019 16:15 (25 minutes)*

**Presenter:** RIEMBAU, Marc (Universite de Geneve (CH))

**Session Classification:** Plenary

Contribution ID: 37

Type: **not specified**

## Automated matching at 1-loop for EFTs

*Wednesday, 16 October 2019 16:40 (25 minutes)*

**Presenters:** CARMONA, Adrian (CERN); CARMONA BERMUDEZ, Adrian (Universidad de Granada (ES))

**Session Classification:** Plenary

Contribution ID: **38**

Type: **not specified**

## **Motivation for differential observables**

*Wednesday, 16 October 2019 17:05 (25 minutes)*

**Presenters:** TACKMANN, Frank; TACKMANN, Frank (Deutsches Elektronen-Synchrotron (DE))

**Session Classification:** Plenary

Contribution ID: **39**

Type: **not specified**

**test1**

**Session Classification:** Parallel Sessions



Contribution ID: **40**

Type: **not specified**

**test2**

**Session Classification:** Parallel Sessions

Contribution ID: 41

Type: **not specified**

## Overview of resonant HH searches at ATLAS and CMS

*Thursday, 17 October 2019 14:30 (15 minutes)*

**Presenter:** GUERRERO, Daniel (University of Florida (US))

**Session Classification:** Parallel Sessions

Contribution ID: 42

Type: **not specified**

## **C2HDM Higgs pair production**

*Thursday, 17 October 2019 14:45 (15 minutes)*

**Presenter:** DUARTE, Fontes

**Session Classification:** Parallel Sessions

Contribution ID: 43

Type: **not specified**

## **Double Higgs final states in Singlet Extensions of the SM [vidyo]**

*Thursday, 17 October 2019 15:00 (15 minutes)*

**Primary authors:** MÜHLEITNER, Milada Margarete; SANTOS, Rui (ISEL)

**Presenter:** MÜHLEITNER, Milada Margarete

**Session Classification:** Parallel Sessions

Contribution ID: 44

Type: **not specified**

## HH production for scalar Higgs sector extensions [vidyo]

*Thursday, 17 October 2019 15:15 (15 minutes)*

**Presenter:** ENGLERT, Christoph Peter (University of Glasgow (GB))

**Session Classification:** Parallel Sessions

Contribution ID: 45

Type: **not specified**

## **2HDM+S and the NMSSM: benchmark suggestions for HH production [vidyo]**

*Thursday, 17 October 2019 15:30 (15 minutes)*

**Presenters:** SHAH, Nausheen (Wayne State University); BAUM, Sebastian (Stockholm University and Oskar Klein Centre)

**Session Classification:** Parallel Sessions

Contribution ID: 46

Type: **not specified**

## **Experimental challenges in H and HH EFT fits**

*Thursday, 17 October 2019 16:15 (20 minutes)*

**Presenter:** MICHELI, Francesco (Eidgenoessische Tech. Hochschule Zuerich (ETH))

**Session Classification:** Parallel Sessions

Contribution ID: 47

Type: **not specified**

## **EFT fits and self-coupling extraction in H and HH: theory overview**

*Thursday, 17 October 2019 16:35 (20 minutes)*

**Presenter:** VRYONIDOU, Eleni (CERN)

**Session Classification:** Parallel Sessions



Contribution ID: 48

Type: **not specified**

## **Overview of HH MC generators in ATLAS and CMS**

*Thursday, 17 October 2019 17:45 (20 minutes)*

**Presenter:** SUN, Xiaohu (University of Manchester (GB))

**Session Classification:** Parallel Sessions

Contribution ID: 49

Type: **not specified**

## Discussion

*Thursday, 17 October 2019 18:05 (40 minutes)*

**Session Classification:** Parallel Sessions

Contribution ID: 50

Type: **not specified**

## **Motivation for differential observables - follow-up**

*Thursday, 17 October 2019 17:30 (20 minutes)*

**Presenters:** TACKMANN, Frank; TACKMANN, Frank (Deutsches Elektronen-Synchrotron (DE))

**Session Classification:** Parallel Sessions

Contribution ID: 51

Type: **not specified**

## **Extending STXS with final state information**

*Thursday, 17 October 2019 17:50 (40 minutes)*

**Presenters:** DUEHRSEN-DEBLING, Michael (CERN); BERGER, Nicolas (Centre National de la Recherche Scientifique (FR))

**Session Classification:** Parallel Sessions

Contribution ID: 52

Type: **not specified**

## **EFT parameterisation and Higgs total width in SMEFT**

*Thursday, 17 October 2019 14:30 (30 minutes)*

**Presenters:** BRIVIO, Ilaria (University of Heidelberg); BRIVIO, Ilaria (Universidad Autonoma de Madrid (ES))

**Session Classification:** Parallel Sessions

Contribution ID: 53

Type: **not specified**

## **EFT parameterisation of STXS (CMS)**

*Thursday, 17 October 2019 15:00 (10 minutes)*

**Presenter:** LANGFORD, Jonathon Mark (Imperial College (GB))

**Session Classification:** Parallel Sessions

Contribution ID: 54

Type: **not specified**

## **EFT parameterisation tools within ATLAS/CMS**

*Thursday, 17 October 2019 15:30 (20 minutes)*

**Presenter:** GILBERT, Andrew (Northwestern University (US))

**Session Classification:** Parallel Sessions

Contribution ID: 55

Type: **not specified**

## **A fragmentation-based study of heavy quark production**

*Thursday, 17 October 2019 15:00 (20 minutes)*

**Presenter:** ZARO, Marco (Nikhef)

**Session Classification:** Parallel Sessions



Contribution ID: 56

Type: **not specified**

## **ATLAS/CMS comparisons for the main $t\bar{t}H/tH$ backgrounds**

*Thursday, 17 October 2019 15:25 (20 minutes)*

**Presenter:** GREVTSOV, Kirill (Deutsches Elektronen-Synchrotron (DE))

**Session Classification:** Parallel Sessions

Contribution ID: 57

Type: **not specified**

## **Common session WG3 + HH group**

**Session Classification:** Parallel Sessions

Contribution ID: 58

Type: **not specified**

## **Discussion on the use of HXS4BSM numbers (WG3 + VBF)**

*Thursday, 17 October 2019 16:00 (1 hour)*

**Presenter:** MORAN, Dermot Anthony (Centro de Investigaciones Energéticas Medioambientales y Tecnológicas)

**Session Classification:** Parallel Sessions

Contribution ID: 59

Type: **not specified**

## **WG3 Discussion: Recommendations for the presentation of auxiliary information in the Run-2 legacy papers**

*Thursday, 17 October 2019 17:15 (1h 15m)*

**Session Classification:** Parallel Sessions

Contribution ID: **60**

Type: **not specified**

## **EFT parameterisation of STXS (ATLAS)**

*Thursday, 17 October 2019 15:10 (10 minutes)*

**Presenter:** CUETO GOMEZ, Ana Rosario (Centre National de la Recherche Scientifique (FR))

**Session Classification:** Parallel Sessions

Contribution ID: **61**

Type: **not specified**

## **Discussion**

*Thursday, 17 October 2019 15:20 (10 minutes)*

**Session Classification:** Parallel Sessions

Contribution ID: **62**

Type: **not specified**

## **Parton shower studies in WG1-VBF**

*Thursday, 17 October 2019 15:50 (15 minutes)*

**Presenter:** HADDAD, Yacine (Northeastern University (US))

**Session Classification:** Parallel Sessions

Contribution ID: **63**

Type: **not specified**

## **Summary of Les Houches studies**

*Thursday, 17 October 2019 16:10 (15 minutes)*

**Presenter:** PANDINI, Carlo Enrico (CERN)

**Session Classification:** Parallel Sessions



Contribution ID: **64**

Type: **not specified**

## **bbH final status**

*Thursday, 17 October 2019 13:00 (30 minutes)*

**Presenter:** WIESEMANN, Marius (Max-Planck-Institut für Physik (DE))

**Session Classification:** Plenary