

# **The 18th Workshop of the LHC Higgs Working Group**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Introduction

**Primary authors:** Dr KARLBERG, Alexander (University of Oxford); CAMPBELL, John; MALCLES, Julie (Université Paris-Saclay (FR)); DI NARDO, Roberto (Università e INFN Roma Tre (IT))

**Presenters:** Dr KARLBERG, Alexander (University of Oxford); CAMPBELL, John; MALCLES, Julie (Université Paris-Saclay (FR)); DI NARDO, Roberto (Università e INFN Roma Tre (IT))

**Session Classification:** Wednesday Afternoon

Contribution ID: 2

Type: **not specified**

## **ggF - theory update**

*Wednesday, 1 December 2021 13:00 (10 minutes)*

**Presenter:** JONES, Stephen Philip (University of Durham (GB))

**Session Classification:** Wednesday Afternoon

Contribution ID: 3

Type: **not specified**

## VBF

*Wednesday, 1 December 2021 13:25 (20 minutes)*

**Presenter:** DE MARIA, Antonio (Nanjing University (CN))

**Session Classification:** Wednesday Afternoon

Contribution ID: 4

Type: **not specified**

## VH

*Wednesday, 1 December 2021 13:50 (20 minutes)*

**Presenter:** CALANDRI, Alessandro (Eidgenoessische Technische Hochschule Zuerich (CH))

**Session Classification:** Wednesday Afternoon

Contribution ID: 5

Type: **not specified**

## **tH/ttH: experiment summary**

*Wednesday, 1 December 2021 14:15 (15 minutes)*

**Presenter:** MCFAYDEN, Josh (University of Sussex)

**Session Classification:** Wednesday Afternoon

Contribution ID: 6

Type: **not specified**

## Offshell - theory summary

*Wednesday, 1 December 2021 14:50 (10 minutes)*

**Presenter:** KAUER, Nikolas (Royal Holloway, University of London)

**Session Classification:** Wednesday Afternoon

Contribution ID: 7

Type: **not specified**

## PDF4LHC update

*Friday, 3 December 2021 14:30 (20 minutes)*

**Primary author:** THORNE, Robert Samuel (University College London (UK))

**Presenter:** THORNE, Robert Samuel (University College London (UK))

**Session Classification:** Friday Afternoon



Contribution ID: 8

Type: **not specified**

## **Higgs pT Spectrum and Total Cross Section with Fiducial Cuts at Third Resummed and Fixed Order in QCD**

*Friday, 3 December 2021 14:00 (20 minutes)*

**Primary authors:** MICHEL, Johannes (MIT CTP); EBERT, Markus (MIT)

**Presenters:** MICHEL, Johannes (MIT CTP); EBERT, Markus (MIT)

**Session Classification:** Friday Afternoon

Contribution ID: 9

Type: **not specified**

## Offshell - experiment summary

*Wednesday, 1 December 2021 15:00 (10 minutes)*

**Presenter:** KYRIACOU, Savvas (Johns Hopkins University (US))

**Session Classification:** Wednesday Afternoon

Contribution ID: 10

Type: **not specified**

## **Single and Double Higgs processes: Interpretation in the $k_\lambda$ and EFT frameworks**

*Friday, 3 December 2021 13:00 (20 minutes)*

**Primary author:** DE BLAS, Jorge (Universidad de Granada (ES))

**Presenter:** DE BLAS, Jorge (Universidad de Granada (ES))

**Session Classification:** Friday Afternoon

Contribution ID: 11

Type: **not specified**

## Exotic Decay Working Group Summary

*Thursday, 2 December 2021 13:00 (20 minutes)*

**Presenter:** SHUVE, Brian (Harvey Mudd College)

**Session Classification:** Thursday Afternoon

Contribution ID: 12

Type: **not specified**

## Extended Higgs Theory Summary

*Thursday, 2 December 2021 13:30 (10 minutes)*

**Presenter:** ROBENS, Tania Natalie (Rudjer Boskovic Institute (HR))

**Session Classification:** Thursday Afternoon

Contribution ID: 13

Type: **not specified**

## **MSSM Working Group Summary (Theory)**

*Thursday, 2 December 2021 14:00 (10 minutes)*

**Presenter:** BAGNASCHI, Emanuele Angelo (Universita e INFN Roma Tre (IT))

**Session Classification:** Thursday Afternoon

Contribution ID: 14

Type: **not specified**

## NMSSM Working Group Summary

*Thursday, 2 December 2021 14:30 (20 minutes)*

**Presenters:** WINTERBOTTOM, Daniel (Imperial College (GB)); MÜHLEITNER, Milada Margarete; MÜHLEITNER, Milada (KIT - Karlsruhe Institute of Technology (DE)); ELLWANGER, Ulrich Bernhard (Université Paris-Saclay (FR)); ELLWANGER, Ulrich (University Paris 11)

**Session Classification:** Thursday Afternoon

Contribution ID: 15

Type: **not specified**

## **MSSM Working Group Summary (Experiment)**

*Thursday, 2 December 2021 14:15 (10 minutes)*

**Presenter:** BARKLOW, Tim (SLAC National Accelerator Laboratory (US))

**Session Classification:** Thursday Afternoon



Contribution ID: 16

Type: **not specified**

## **WG activity on STXS ggF uncertainties (1.2): Summary and presentation of final results**

*Wednesday, 1 December 2021 16:10 (20 minutes)*

**Presenter:** ABIDI, Haider (Brookhaven National Laboratory (US))

**Session Classification:** Wednesday Afternoon 2: Working Group 2

Contribution ID: 17

Type: **not specified**

## **Kappa\_lambda from single Higgs measurements: towards a common parametrisation**

*Wednesday, 1 December 2021 16:34 (20 minutes)*

**Presenter:** MANZONI, Stefano (CERN)

**Session Classification:** Wednesday Afternoon 2: Working Group 2

Contribution ID: **18**

Type: **not specified**

## **Shedding light on the Higgs: EFT modelling and sensitivity to Higgs couplings to virtual photons**

*Wednesday, 1 December 2021 16:58 (20 minutes)*

**Presenter:** KYRIACOU, Savvas (Johns Hopkins University (US))

**Session Classification:** Wednesday Afternoon 2: Working Group 2

Contribution ID: 19

Type: **not specified**

## **Differential fiducial measurements next steps and combination**

*Wednesday, 1 December 2021 17:46 (20 minutes)*

**Presenter:** CHEN, Mingshui (Chinese Academy of Sciences (CN))

**Session Classification:** Wednesday Afternoon 2: Working Group 2

Contribution ID: **20**

Type: **not specified**

## **Introduction**

*Thursday, 2 December 2021 16:00 (5 minutes)*

**Session Classification:** Thursday afternoon 2

Contribution ID: 21

Type: **not specified**

## Experimental Overview

*Thursday, 2 December 2021 16:05 (30 minutes)*

**Presenter:** BETTI, Alessandra (Southern Methodist University (US))

**Session Classification:** Thursday afternoon 2

Contribution ID: 22

Type: **not specified**

## **Resonant Benchmarks for Spin-0 HH, SH and SS**

*Thursday, 2 December 2021 16:35 (20 minutes)*

**Presenter:** AZEVEDO, Duarte (Karlsruhe Institute of Technology (DE))

**Session Classification:** Thursday afternoon 2

Contribution ID: 23

Type: **not specified**

## Effective Field Theory for Higgs Pair Production

*Thursday, 2 December 2021 16:55 (20 minutes)*

**Presenter:** GROEBER, Ramona (Università di Padova and INFN, Sezione di Padova)

**Session Classification:** Thursday afternoon 2



Contribution ID: 24

Type: **not specified**

## **Higgs Boson Pair Production at NNLO in the Large-Mt Expansion**

**Session Classification:** Thursday afternoon 2

Contribution ID: 25

Type: **not specified**

## **Higgs Pair Production at Approximate NNLO QCD with Anomalous Couplings**

**Session Classification:** Thursday afternoon 2

Contribution ID: 26

Type: **not specified**

## **Machine Learning Augmented Probes of Light Yukawa Couplings from Higgs Pair Production**

**Session Classification:** Thursday afternoon 2

Contribution ID: 27

Type: **not specified**

## **Multiscalar Final States in the TRSM**

**Session Classification:** Thursday afternoon 2

Contribution ID: 28

Type: **not specified**

## Cuts for two-body decays at colliders

*Friday, 3 December 2021 13:30 (20 minutes)*

**Presenter:** SALAM, Gavin (University of Oxford)

**Session Classification:** Friday Afternoon

Contribution ID: 29

Type: **not specified**

## **ggF - experimental results**

*Wednesday, 1 December 2021 13:10 (10 minutes)*

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

**Session Classification:** Wednesday Afternoon

Contribution ID: **30**

Type: **not specified**

## **Contributed Lightning Talks**

*Thursday, 2 December 2021 17:15 (40 minutes)*

**Session Classification:** Thursday afternoon 2

Contribution ID: **31**

Type: **not specified**

## **Higgs studies from Snowmass**

*Friday, 3 December 2021 15:40 (20 minutes)*

**Presenter:** VERNIERI, Caterina (SLAC National Accelerator Laboratory (US))

**Session Classification:** Friday afternoon 2



Contribution ID: 32

Type: **not specified**

## WG1: summary and plans

*Friday, 3 December 2021 16:10 (15 minutes)*

**Presenters:** KARLBERG, Alexander (University of Oxford); CAMPBELL, John; MALCLES, Julie (Université Paris-Saclay (FR)); DI NARDO, Roberto (Università e INFN Roma Tre (IT))

**Session Classification:** Friday afternoon 2

Contribution ID: 33

Type: **not specified**

## **WG2: summary and plans**

*Friday, 3 December 2021 16:30 (15 minutes)*

**Presenters:** PANICO, Giuliano (University of Florence and INFN Florence); MIMASU, Ken (King's College London); DONEGA, Mauro (ETH Zurich (CH)); BERGER, Nicolas (Centre National de la Recherche Scientifique (FR))

**Session Classification:** Friday afternoon 2

Contribution ID: 34

Type: **not specified**

## WG3: summary and plans

*Friday, 3 December 2021 16:50 (15 minutes)*

**Presenters:** MOHAMMADI, Abdollah (University of Wisconsin Madison (US)); STEGGEMANN, Jan (EPFL and ETH Zurich (CH)); SCHAARSCHMIDT, Jana (University of Washington (US)); SU, Shufang (University of Arizona); LIU, Zhen; LIU, Zhen (University of Minnesota); LIU, Zhen (University of Minnesota (US))

**Session Classification:** Friday afternoon 2

Contribution ID: 35

Type: **not specified**

## HH: summary and plans

*Friday, 3 December 2021 17:10 (15 minutes)*

**Presenters:** BROST, Elizabeth (Brookhaven National Laboratory (US)); MAZZITELLI, Javier (Max-Planck-Institut für Physik (DE)); CADAMURO, Luca (University of Florida (US)); MÜHLEITNER, Margarete (Karlsruhe Institute of Technology (DE)); LU, Nan (California Institute of Technology (US)); GROEBER, Ramona (Università di Padova and INFN, Sezione di Padova)

**Session Classification:** Friday afternoon 2

Contribution ID: **36**

Type: **not specified**

## **General discussion**

*Friday, 3 December 2021 17:30 (30 minutes)*

**Session Classification:** Friday afternoon 2

Contribution ID: 37

Type: **not specified**

## **EFT in light of the latest Higgs/STXS measurements**

*Wednesday, 1 December 2021 17:22 (20 minutes)*

**Presenter:** VRYONIDOU, Eleni (University of Manchester (GB))

**Session Classification:** Wednesday Afternoon 2: Working Group 2

Contribution ID: **38**

Type: **not specified**

## **tH/ttH: theory summary**

*Wednesday, 1 December 2021 14:30 (15 minutes)*

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

**Session Classification:** Wednesday Afternoon

Contribution ID: 39

Type: **not specified**

## Extended Higgs Experimental Summary

*Thursday, 2 December 2021 13:45 (10 minutes)*

**Presenter:** D'ALFONSO, Mariarosaria (Massachusetts Inst. of Technology (US))

**Session Classification:** Thursday Afternoon



Contribution ID: 40

Type: **not specified**

## Introduction and welcome

*Wednesday, 1 December 2021 12:55 (5 minutes)*