

The 20th Workshop of the LHC Higgs Working Group

Report of Contributions

Contribution ID: 1

Type: **not specified**

WG1 Higgs XS&BR: Outlook and Plans (10'+5')

Wednesday, 15 November 2023 16:00 (15 minutes)

Presenter: Dr KARLBERG, Alexander (CERN)

Session Classification: Summary and Closeout Plenary

Contribution ID: 2

Type: **not specified**

WG2 Higgs Properties: Outlook and Plans (10'+5')

Wednesday, 15 November 2023 16:15 (15 minutes)

Presenter: HEIM, Sarah (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Summary and Closeout Plenary

Contribution ID: 3

Type: **not specified**

WG3 BSM Higgs: Outlook and Plans (10'+5')

Wednesday, 15 November 2023 16:30 (15 minutes)

Presenter: KALOGEROPOULOS, Alexis (Kansas State University (US))

Session Classification: Summary and Closeout Plenary

Contribution ID: 4

Type: **not specified**

WG4 HH and multi-Higgs: Outlook and Plans (10'+5')

Wednesday, 15 November 2023 16:45 (15 minutes)

Presenter: MAZZITELLI, Javier (Universidad de Buenos Aires (AR))

Session Classification: Summary and Closeout Plenary

Contribution ID: 5

Type: **not specified**

Closeout (10')

Wednesday, 15 November 2023 17:00 (10 minutes)

Session Classification: Summary and Closeout Plenary

Contribution ID: 6

Type: **not specified**

Welcome (10')

Monday, 13 November 2023 09:00 (10 minutes)

Presenter: LENEY, Katharine (Southern Methodist University (US))

Session Classification: Opening and Cross-Topic Plenary

Contribution ID: 7

Type: **not specified**

CP violation in the Higgs couplings and beyond (20'+10')

Monday, 13 November 2023 09:10 (30 minutes)

Presenters: BAHL, Henning; BAHL, Henning

Session Classification: Opening and Cross-Topic Plenary

Contribution ID: 8

Type: **not specified**

Monte Carlo harmonisation (20'+10') (remote)

Monday, 13 November 2023 11:30 (30 minutes)

Presenter: SUN, Xiaohu (Peking University (CN))

Session Classification: Cross-Topic Plenary

Contribution ID: 9

Type: **not specified**

LHC Higgs Working Group Plans (15'+5')

Monday, 13 November 2023 09:40 (20 minutes)

Presenter: HEINRICH, Gudrun (KIT)

Session Classification: Opening and Cross-Topic Plenary

Contribution ID: **10**

Type: **not specified**

Charting the Higgs self-coupling boundaries (20' + 10')

Monday, 13 November 2023 10:00 (30 minutes)

Presenter: DURIEUX, Gauthier (CP3 - UCLouvain)

Session Classification: Opening and Cross-Topic Plenary

Contribution ID: 11

Type: **not specified**

Triple Higgs production: A window on SM and BSM physics (20'+10') (remote)

Monday, 13 November 2023 11:00 (30 minutes)

Primary author: FUKS, Benjamin

Presenters: FUKS, Benjamin; ROBENS, Tania Natalie (Rudjer Boskovic Institute (HR))

Session Classification: Cross-Topic Plenary

Contribution ID: 12

Type: **not specified**

Updates from PDF global fits and aN3LO benchmarking (20'+10') (remote)

Monday, 13 November 2023 12:00 (30 minutes)

Presenter: UBIALI, Maria

Session Classification: Cross-Topic Plenary

Contribution ID: 13

Type: **not specified**

SMEFT in the Higgs sector in CMS (15'+7')

Wednesday, 15 November 2023 14:00 (22 minutes)

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

Session Classification: Plenary joint with LHC EFT WG

Contribution ID: 14

Type: **not specified**

SMEFT in ATLAS (15'+7')

Wednesday, 15 November 2023 14:22 (22 minutes)

Presenter: ROSSI, Eleonora (University of Oxford (GB))

Session Classification: Plenary joint with LHC EFT WG

Contribution ID: 15

Type: **not specified**

Higgs-gluon coupling in SMEFT (and EFT H+HH plans) (15'+7')

Wednesday, 15 November 2023 14:44 (22 minutes)

Presenter: DI NOI, Stefano (Università di Padova and INFN, Sezione di Padova)

Session Classification: Plenary joint with LHC EFT WG

Contribution ID: 16

Type: **not specified**

Diboson production in the SMEFT from gluon fusion (15'+7')

Wednesday, 15 November 2023 15:06 (22 minutes)

Presenter: THOMAS, Marion (University of Manchester)

Session Classification: Plenary joint with LHC EFT WG

Contribution ID: 17

Type: **not specified**

ATLAS HH experimental overview

Tuesday, 14 November 2023 11:15 (15 minutes)

Presenter: PETIT, Elisabeth (CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))

Session Classification: Plenary (WG4)

Contribution ID: **18**

Type: **not specified**

CMS HH experimental overview

Tuesday, 14 November 2023 11:00 (15 minutes)

Presenter: ALVES, Bruno (Centre National de la Recherche Scientifique (FR))

Session Classification: Plenary (WG4)

Contribution ID: **19**

Type: **not specified**

NLO EW corrections for di-Higgs production

Tuesday, 14 November 2023 12:10 (20 minutes)

Presenter: SCHÖNWALD, Kay (University of Zuerich)

Session Classification: Plenary (WG4)

Contribution ID: 20

Type: **not specified**

Higgs boson production in association with bottom quarks at NLO matched to parton showers

Tuesday, 14 November 2023 11:50 (20 minutes)

Presenters: MAZZITELLI, Javier; MAZZITELLI, Javier (Paul Scherrer Institut (CH))

Session Classification: Plenary (WG4)

Contribution ID: 21

Type: **not specified**

Higgs boson pair production at NLO in the POWHEG approach and the top quark mass uncertainties

Tuesday, 14 November 2023 11:30 (20 minutes)

Presenter: BAGNASCHI, Emanuele Angelo (CERN/INFN Laboratori Nazionali di Frascati)

Session Classification: Plenary (WG4)

Contribution ID: 22

Type: **not specified**

Non-factorizable corrections to Higgs production in Vector Boson Fusion (15'+5')

Wednesday, 15 November 2023 09:22 (15 minutes)

Presenter: Dr LONG, Ming-Ming (KIT-TTP)

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 23

Type: **not specified**

ATLAS off-shell results (15')

Wednesday, 15 November 2023 11:45 (15 minutes)

Presenter: VEEN, Michiel Jan (University of Massachusetts (US))

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 24

Type: **not specified**

CMS off-shell results (15') [remote]

Wednesday, 15 November 2023 12:00 (15 minutes)

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

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 25

Type: **not specified**

ggF status report (20'+10')

Tuesday, 14 November 2023 09:00 (20 minutes)

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

Session Classification: Plenary (WG1)

Contribution ID: 26

Type: **not specified**

VBF status report (20'+10')

Tuesday, 14 November 2023 09:30 (20 minutes)

Presenter: PELLEN, Mathieu (University of Freiburg)

Session Classification: Plenary (WG1)

Contribution ID: 27

Type: **not specified**

ggZH status and prospects (20'+10')

Tuesday, 14 November 2023 10:00 (20 minutes)

Presenter: VITTI, Marco

Session Classification: Plenary (WG1)

Contribution ID: 28

Type: **not specified**

ttH/tH status report (20'+10')

Tuesday, 14 November 2023 14:00 (20 minutes)

Presenter: SANCHEZ CRUZ, Sergio (Universitaet Zuerich (CH))

Session Classification: Plenary (WG1 + Future Colliders)

Contribution ID: 29

Type: **not specified**

Off-shell (20'+10')

Tuesday, 14 November 2023 14:30 (20 minutes)

Presenter: COELHO LOPES DE SA, Rafael (University of Massachusetts (US))

Session Classification: Plenary (WG1 + Future Colliders)

Contribution ID: 30

Type: **not specified**

Signal-Background interference effects in diphoton production beyond NLO QCD (17'+5')

Wednesday, 15 November 2023 09:00 (17 minutes)

Presenter: BUCCIONI, Federico

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: **31**

Type: **not specified**

Charged Higgs Cross section Updates

Wednesday, 15 November 2023 09:00 (18 minutes)

Presenter: BAGNASCHI, Emanuele Angelo (CERN/INFN Laboratori Nazionali di Frascati)

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: **32**

Type: **not specified**

2HDM scans

Wednesday, 15 November 2023 12:15 (15 minutes)

Presenter: BONANOMI, Matteo (Hamburg University)

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: **33**

Type: **not specified**

Recasts

Wednesday, 15 November 2023 09:18 (18 minutes)

Presenter: Dr CORPE, Louie Dartmoor (Laboratoire de Physique de Clermont (LPC))

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: **34**

Type: **not specified**

WG2+3 overview

Wednesday, 15 November 2023 09:36 (18 minutes)

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

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: 35

Type: **not specified**

Search for $X \rightarrow Yh \rightarrow VV\tau\tau$ with the ATLAS detector [remote]

Wednesday, 15 November 2023 10:12 (18 minutes)

Presenter: ALI, Babar (Czech Technical University in Prague (CZ))

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: 36

Type: **not specified**

Search for $h \rightarrow aa \rightarrow 2\mu 2b/2b2\tau$ with the CMS experiment

Wednesday, 15 November 2023 11:00 (15 minutes)

Presenter: DAS, Pallabi (Princeton University (US))

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: 37

Type: **not specified**

MSSM Working Group Summary

Monday, 13 November 2023 16:22 (22 minutes)

Presenter: BAGNASCHI, Emanuele Angelo (CERN/INFN Laboratori Nazionali di Frascati)

Session Classification: Plenary (WG3)

Contribution ID: **38**

Type: **not specified**

NMSSM Working Group Summary

Monday, 13 November 2023 17:06 (22 minutes)

Presenter: WINTERBOTTOM, Daniel (Imperial College (GB))

Session Classification: Plenary (WG3)

Contribution ID: 39

Type: **not specified**

Extended Higgs Sector Summary

Monday, 13 November 2023 16:00 (22 minutes)

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

Session Classification: Plenary (WG3)

Contribution ID: 40

Type: **not specified**

Exotic Higgs Decays Summary

Monday, 13 November 2023 16:44 (22 minutes)

Presenter: VAZQUEZ SIERRA, Carlos (Universidade de Santiago de Compostela (ES))

Session Classification: Plenary (WG3)

Contribution ID: 41

Type: **not specified**

bbH

Session Classification: Plenary (WG3)

Contribution ID: 42

Type: **not specified**

Recent couplings and cross-section measurements from ATLAS and CMS (15'+7', remote)

Monday, 13 November 2023 14:00 (22 minutes)

Presenter: RAN, Kunlin (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Plenary (WG2)

Contribution ID: 43

Type: **not specified**

Recent mass, width and CP results from ATLAS and CMS (15'+7', remote)

Monday, 13 November 2023 14:22 (22 minutes)

Presenter: ERRICO, Filippo (Sapienza Universita e INFN, Roma I (IT))

Session Classification: Plenary (WG2)

Contribution ID: 44

Type: **not specified**

BSM interpretations of Higgs measurements (15'+7')

Monday, 13 November 2023 14:44 (22 minutes)

Presenter: BIEKOETTER, Thomas

Session Classification: Plenary (WG2)

Contribution ID: 45

Type: **not specified**

Constraining ALPs with Higgs data via SMEFT (15'+7')

Monday, 13 November 2023 15:06 (22 minutes)

Presenter: BIEKOETTER, Anke (JGU Mainz)

Session Classification: Plenary (WG2)

Contribution ID: 46

Type: **not specified**

STXS beyond 1.2 (CPV and other considerations), experimental view (15'+7')

Wednesday, 15 November 2023 09:22 (22 minutes)

Presenter: WINTER, Benedict Tobias (Albert Ludwigs Universitaet Freiburg (DE))

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 47

Type: **not specified**

STXS beyond 1.2 (CPV and other considerations), experimental view (15'+7')

Presenter: WINTER, Benedict Tobias (Albert Ludwigs Universitaet Freiburg (DE))

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 48

Type: **not specified**

STXS in decays (15'+7')

Wednesday, 15 November 2023 09:44 (22 minutes)

Presenter: DUEHRSEN-DEBLING, Michael (CERN)

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 49

Type: **not specified**

STXS beyond 1.2, BSM view (15'+7', remote)

Wednesday, 15 November 2023 10:06 (22 minutes)

Primary author: PLEHN, Tilman (Heidelberg University)

Co-author: MIMASU, Ken (University of Southampton)

Presenters: PLEHN, Tilman; PLEHN, Tilman; PLEHN, Tilman (Heidelberg University)

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 50

Type: **not specified**

Discussion - The path to the next STXS binning

Wednesday, 15 November 2023 11:20 (45 minutes)

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

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 51

Type: **not specified**

Constraints on EFT operators from Higgs property fits (20'+10', remote)

Wednesday, 15 November 2023 12:05 (25 minutes)

Presenter: GRITSAN, Andrei (Johns Hopkins University (US))

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 52

Type: **not specified**

Overview of triple Higgs physics at the LHC

Wednesday, 15 November 2023 09:00 (20 minutes)

Presenter: STAMENKOVIC, Marko (Brown University (US))

Session Classification: WG4 HH and multi-Higgs Parallel

Contribution ID: 53

Type: **not specified**

2HDM Triple Higgs couplings at NLO at the HL-LHC

Wednesday, 15 November 2023 09:30 (15 minutes)

Presenter: RADCHENKO SERDULA, Kateryna (DESY)

Session Classification: WG4 HH and multi-Higgs Parallel

Contribution ID: 54

Type: **not specified**

NLO QCD corrections in the 2HDM

Wednesday, 15 November 2023 09:50 (15 minutes)

Presenters: SPIRA, Michael (Paul Scherrer Institute (CH)); SPIRA, Michael (Unknown)

Session Classification: WG4 HH and multi-Higgs Parallel

Contribution ID: 55

Type: **not specified**

Vector-boson polarization in VBF di-Higgs production

Wednesday, 15 November 2023 10:10 (15 minutes)

Presenter: TEGETMEIER, Anna Sophie (Centre National de la Recherche Scientifique (FR))

Session Classification: WG4 HH and multi-Higgs Parallel

Contribution ID: 56

Type: **not specified**

Resonant di-Higgs production in the RxSM: Pure resonant vs. full cross sections

Wednesday, 15 November 2023 11:00 (15 minutes)

Presenter: VERDURAS, Alain

Session Classification: WG4 HH and multi-Higgs Parallel

Contribution ID: 57

Type: **not specified**

New trigger strategies targeting HH events at the CMS experiment in Run 3

Wednesday, 15 November 2023 11:20 (15 minutes)

Presenter: COOPERSTEIN, Stephane Brunet (Univ. of California San Diego (US))

Session Classification: WG4 HH and multi-Higgs Parallel

Contribution ID: 58

Type: **not specified**

ECFA Higgs/Top/Electroweak - overview, status and plans (20'+10')

Tuesday, 14 November 2023 15:00 (30 minutes)

Presenter: KOENEKE, Karsten (Albert Ludwigs Universitaet Freiburg (DE))

Session Classification: Plenary (WG1 + Future Colliders)

Contribution ID: 59

Type: **not specified**

Search for $h \rightarrow aa \rightarrow 4\gamma$ with the ATLAS experiment

Wednesday, 15 November 2023 11:15 (15 minutes)

Presenter: KRAMER, Peter (Johannes Gutenberg Universitaet Mainz (DE))

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: **60**

Type: **not specified**

Emerging jet probes of strongly interacting dark sectors

Wednesday, 15 November 2023 11:30 (15 minutes)

Presenter: Dr ZURITA, José Francisco (IFIC - Univ. of Valencia and CSIC (ES))

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: **61**

Type: **not specified**

How to study n-Higgs doublet models

Wednesday, 15 November 2023 09:54 (18 minutes)

Presenter: MANIATIS, Markos (Departamento de Ciencias Basicas, UBB, Chillan, Chile)

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: **62**

Type: **not specified**

SMEFT at NNLO+PS: Vh production

Wednesday, 15 November 2023 11:45 (15 minutes)

Presenter: SCHNELL, Luc (Max Planck Institute for Physics)

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: 63

Type: **not specified**

Update on common format & toolchain for SMEFT parametrisations, STXS & beyond (15'+7')

Wednesday, 15 November 2023 09:00 (22 minutes)

Co-authors: CUETO GOMEZ, Ana Rosario (Universidad Autonoma de Madrid (ES)); KNIGHT, Charlotte (Imperial College London); ROSSI, Eleonora (University of Oxford (GB)); BRIVIO, Ilaria (University & INFN Bologna); LANGFORD, Jonathon Mark (Imperial College (GB)); MIMASU, Ken

Presenter: ROSSI, Eleonora (University of Oxford (GB))

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: **64**

Type: **not specified**

CMS Hbb boosted produced via VBF or gluon-fusion (15') [remote]

Wednesday, 15 November 2023 11:00 (15 minutes)

Presenter: DICKINSON, Jennet Elizabeth (Fermi National Accelerator Lab. (US))

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 65

Type: **not specified**

ATLAS boosted Higgs results (15') [remote]

Wednesday, 15 November 2023 11:15 (15 minutes)

Presenter: ZHENG, Zhi (SLAC National Accelerator Laboratory (US))

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 66

Type: **not specified**

Improving NLO QCD event generators with high-energy EW corrections: ttH production (17'+5')

Wednesday, 15 November 2023 09:42 (17 minutes)

Presenter: VITOS, Timea

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 67

Type: **not specified**

VH (TBD) (17'+7')

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: **68**

Type: **not specified**

Starting the LHC HXS WG - theory perspective

Tuesday, 14 November 2023 16:00 (20 minutes)

Presenters: DITTMAIER, Stefan (Albert Ludwigs Universitaet Freiburg (DE)); DITTMAIER, Stefan (MPI fuer Physik)

Session Classification: Anniversary Plenary

Contribution ID: **69**

Type: **not specified**

Starting the LHC HXS WG - experimental perspective

Tuesday, 14 November 2023 16:20 (20 minutes)

Presenter: TANAKA, Reisaburo (IJCLab, Université Paris-Saclay (FR))

Session Classification: Anniversary Plenary

Contribution ID: 70

Type: **not specified**

The good and bad of the Yellow Reports

Tuesday, 14 November 2023 16:40 (20 minutes)

Presenter: MARIOTTI, Chiara (INFN Torino (IT))

Session Classification: Anniversary Plenary

Contribution ID: 71

Type: **not specified**

STXS - SM view and discussion intro

Wednesday, 15 November 2023 11:00 (20 minutes)

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

Session Classification: WG2 Higgs Properties Parallel

Contribution ID: 72

Type: **not specified**

New Developments in MSSM Higgs Production and Decay

Wednesday, 15 November 2023 12:00 (15 minutes)

Presenter: SPIRA, Michael (Paul Scherrer Institute (CH))

Session Classification: WG3 BSM Higgs Parallel

Contribution ID: 73

Type: **not specified**

Discussion: CMS & ATLAS boosted Higgs results (15')

Wednesday, 15 November 2023 11:30 (15 minutes)

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 74

Type: **not specified**

Discussion: ATLAS & CMS offshell results

Wednesday, 15 November 2023 12:15 (15 minutes)

Session Classification: WG1 Higgs XS&BR parallel

Contribution ID: 75

Type: **not specified**

LHCHWG: the paradigm shift

Tuesday, 14 November 2023 17:00 (20 minutes)

Primary author: PASSARINO, Giampiero (Torino University)

Presenters: PASSARINO, Giampiero (Torino University); PASSARINO, Gian Piero (Universita e INFN Torino (IT))

Session Classification: Anniversary Plenary

Contribution ID: 76

Type: **not specified**

LHCHXSWG, the paradigm shift

Presenters: PASSARINO, Giampiero (Torino University); PASSARINO, Gian Piero (Universita e INFN Torino (IT))

Session Classification: Anniversary Plenary

Contribution ID: 77

Type: **not specified**

Light quark Yukawa couplings from off-shell Higgs production (17'+5') [remote]

Wednesday, 15 November 2023 10:04 (17 minutes)

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

Session Classification: WG1 Higgs XS&BR parallel