

**14th International Workshop  
on Top Quark Physics  
(TOP2021)**

**Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Introduction

*Monday, 13 September 2021 14:00 (15 minutes)*

**Presenters:** WOREK, Malgorzata Maria (Rheinisch Westfaelische Tech. Hoch. (DE)); SCHWIENHORST, Reinhard (Michigan State University (US))

Contribution ID: 2

Type: **not specified**

## Keynote talk

*Monday, 13 September 2021 14:20 (30 minutes)*

**Presenters:** WULZER, Andrea (CERN and EPFL); WULZER, Andrea

Contribution ID: 3

Type: **not specified**

## LHC machine status

*Monday, 13 September 2021 15:00 (20 minutes)*

**Presenter:** ARDUINI, Gianluigi (CERN)

Contribution ID: 4

Type: **not specified**

## **Inclusive & differential cross-section measurements of single top-quark production with ATLAS and CMS**

*Monday, 13 September 2021 15:30 (20 minutes)*

ATLAS+CMS, CMS speaker, ATLAS helper

**Presenter:** RODRIGUEZ BOUZA, Victor (Universidad de Oviedo (ES))

Contribution ID: 5

Type: **not specified**

## Highlights in single top quark physics

*Monday, 13 September 2021 16:00 (20 minutes)*

**Presenter:** CAMPBELL, John

Contribution ID: 6

Type: **not specified**

## **Inclusive & differential cross-section measurements of top-quark-pair production with ATLAS and CMS**

*Monday, 13 September 2021 16:30 (20 minutes)*

ATLAS+CMS, ATLAS speaker, CMS helper

**Presenter:** MARTINELLI, Luca (Sapienza Università e INFN, Roma I (IT))

Contribution ID: 7

Type: **not specified**

## Flavored jets in top physics and beyond

*Monday, 13 September 2021 17:30 (20 minutes)*

**Presenter:** CZAKON, Michal Wiktor (Rheinisch Westfaelische Tech. Hoch. (DE))



Contribution ID: 8

Type: **not specified**

## Top quark angular correlations at LHC with ATLAS and CMS

*Monday, 13 September 2021 18:00 (20 minutes)*

ATLAS+CMS, ATLAS speaker, CMS helper

**Presenters:** HOWARTH, James (University of Manchester-Unknown-Unknown); HOWARTH, James William (University of Glasgow (GB))

Contribution ID: 9

Type: **not specified**

## **SM parameters from top quark measurements at LHC with ATLAS and CMS**

*Monday, 13 September 2021 18:30 (20 minutes)*

ATLAS+CMS, CMS speaker, ATLAS helper

**Presenter:** WUCHTERL, Sebastian (Deutsches Elektronen-Synchrotron (DE))

Contribution ID: **10**

Type: **not specified**

## **Top Quark Modelling and Tuning in ATLAS and CMS**

*Tuesday, 14 September 2021 14:00 (20 minutes)*

ATLAS+CMS, CMS speaker, ATLAS helper

**Presenter:** NEGRO, Giulia (Purdue University (US))

Contribution ID: 11

Type: **not specified**

## **NNLO event generation for top-quark pair production**

*Tuesday, 14 September 2021 14:30 (20 minutes)*

**Presenters:** ZANDERIGHI, Giulia (CERN); ZANDERIGHI, Giulia (Max-Planck-Institut für Physik (DE))

Contribution ID: 12

Type: **not specified**

## **Associated top quark production: $pp \rightarrow t(\bar{t})+X$ where $X = Z, W, \gamma$ with ATLAS and CMS**

*Tuesday, 14 September 2021 15:00 (20 minutes)*

ATLAS+CMS, CMS speaker, ATLAS helper

**Presenter:** KNOLLE, Joscha (Ghent University (BE))

Contribution ID: 13

Type: **not specified**

## **Associated top quark production: $pp \rightarrow t(t)+X$ where $X = cc, bb, j, jj, \dots$ , in ATLAS and CMS**

*Tuesday, 14 September 2021 16:00 (20 minutes)*

ATLAS+CMS, CMS speaker, ATLAS helper

**Presenter:** SAIBEL, Andrej (Deutsches Elektronen-Synchrotron (DE))

Contribution ID: 14

Type: **not specified**

## **ttbb at the LHC: On the size of corrections and bottom-jet definitions**

*Tuesday, 14 September 2021 16:30 (20 minutes)*

**Presenter:** KRAUS, Manfred (Florida State University)

Contribution ID: 15

Type: **not specified**

## **t(t) + H and 4tops cross section measurements with ATLAS and CMS**

*Tuesday, 14 September 2021 17:00 (20 minutes)*

ATLAS+CMS, ATLAS speaker, CMS helper

**Presenter:** THEVENEAUX-PELZER, Timothee (Humboldt University of Berlin (DE))



Contribution ID: 16

Type: **not specified**

## Poster session

*Wednesday, 15 September 2021 14:00 (1 hour)*

<https://indico.cern.ch/event/1018454/contributions/4339334/>

The poster session will be organized as separate Zoom rooms for individual presenters. Conference participants can visit as many poster rooms as you like during the session by moving from Zoom room to Zoom room, similarly to a normal poster session. We will award a prize for the best poster.

We expect that posters are in the traditional poster format, either horizontal or vertical. However, if you have a preferred format for your poster, please email the conference organizers.

**Presenters:** WANG, Alex Zeng (University of Wisconsin Madison (US)); WONGEL, Alicia (Deutsches Elektronen-Synchrotron (DE)); DE, Amandip (Indian Institute of Science (IN)); DE, Amandip (Indian Institute of Science); SAIBEL, Andrej (Deutsches Elektronen-Synchrotron (DE)); WILDRIDGE, Andrew (Purdue University (US)); RAFANOHARANA, Dimbinaiaina (Albert Ludwigs Universitaet Freiburg (DE)); RAFANOHARANA, Dimbinaiaina Soanasolo (University of Witwatersrand); NASUFI, Jasmina (RWTH-Aachen); THIEMAN, Jason (Purdue University (US)); VOSS, Katharina (Universitaet Siegen (DE)); VOSS, Katharina (Deutsches Elektronen-Synchrotron DESY); LIN, Kuan-Yu (Michigan State University (US)); LI, Lingfeng (HKUST); MANTANI, Luca (UCLouvain); MORENO LLACER, Maria (Univ. of Valencia and CSIC (ES)); LUPATTELLI, Michele; LONG, Mingming (University of Science and Technology of China); JACKA, Petr (Czech Academy of Sciences (CZ)); DAS, Souvik (Purdue University (US))

Contribution ID: 17

Type: **not specified**

## **Precision measurements in boosted top quark production with ATLAS**

*Wednesday, 15 September 2021 15:00 (20 minutes)*

ATLAS speaker

**Presenters:** ERDMANN, Johannes; ERDMANN, Johannes (TU Dortmund)

Contribution ID: **18**

Type: **not specified**

## **Interpreting top quark LHC measurements in the standard model effective field theory**

*Wednesday, 15 September 2021 17:00 (20 minutes)*

**Presenter:** MIMASU, Ken (King's College London)

Contribution ID: 19

Type: **not specified**

## **Rare and Anomalous couplings in top quark production within the SM and beyond with ATLAS and CMS**

*Wednesday, 15 September 2021 17:30 (20 minutes)*

ATLAS+CMS, ATLAS speaker, CMS helper

**Presenter:** STEVENSON, Thomas James (University of Sussex (GB))

Contribution ID: 20

Type: **not specified**

## Theory issues in SMEFT fits

*Wednesday, 15 September 2021 18:00 (20 minutes)*

**Presenter:** BRIVIO, Ilaria (University of Heidelberg)

Contribution ID: 21

Type: **not specified**

## Top quarks at the HL-LHC and Future

*Wednesday, 15 September 2021 18:30 (20 minutes)*

ATLAS+CMS, CMS speaker, ATLAS helper

**Presenter:** KIESELER, Jan (CERN)

Contribution ID: 22

Type: **not specified**

## **New physics with top quarks: from supersymmetry to exotic final states with ATLAS and CMS**

*Thursday, 16 September 2021 17:20 (20 minutes)*

ATLAS+CMS, ATLAS speaker, CMS helper

**Presenter:** MARJANOVIC, Marija (University of Oklahoma (US))

Contribution ID: 23

Type: **not specified**

## Testing the EFT paradigm with top quark final states in pp collisions at LHC with ATLAS and CMS

*Thursday, 16 September 2021 17:50 (20 minutes)*

Theory + ATLAS + CMS, CMS Speaker, ATLAS helper

**Presenter:** SCHWARZ, Dennis (Austrian Academy of Sciences (AT))



Contribution ID: 24

Type: **not specified**

## **Inclusive & differential $t\bar{t}$ measurement in the dilepton channel with CMS**

*Friday, 17 September 2021 14:00 (20 minutes)*

CMS speaker

**Presenter:** MESTDACH, Gianni (Ghent University (BE))

Contribution ID: 25

Type: **not specified**

## **Machine learning for top quark physics at the edge in LHC pp collisions with ATLAS and CMS**

*Friday, 17 September 2021 15:30 (20 minutes)*

ATLAS+CMS, ATLAS speaker, CMS helper

**Presenters:** NELLIST, Clara (Nikhef National institute for subatomic physics (NL)); NELLIST, Clara (Radboud University Nijmegen and NIKHEF (NL))

Contribution ID: 26

Type: **not specified**

# Lepton universality in beauty-quark decay and top-quark physics

*Friday, 17 September 2021 16:00 (20 minutes)*

**Presenter:** MARZOCCA, David (INFN Trieste)

Contribution ID: 27

Type: **not specified**

## Experimental summary

*Friday, 17 September 2021 17:00 (30 minutes)*

**Presenter:** ALDAYA MARTIN, Maria (DESY)

Contribution ID: 28

Type: **not specified**

## Theory summary

*Friday, 17 September 2021 17:45 (30 minutes)*

**Presenter:** WACKEROTH, Doreen (SUNY Buffalo)

Contribution ID: 29

Type: **not specified**

## **Announcement of Top2022**

*Friday, 17 September 2021 18:35 (5 minutes)*

**Presenter:** PECJAK, Ben (IPPP Durham)

Contribution ID: **30**

Type: **not specified**

## Closeout

Contribution ID: 31

Type: **not specified**

## **Measurements of the inclusive production cross section of a top-quark-antiquark pair in association with a Z boson at $\sqrt{s} = 13$ TeV with the ATLAS detector**

*Wednesday, 15 September 2021 15:30 (7 minutes)*

YSF talk ATLAS 1

**Presenter:** MINCE, Laurynas (University of Glasgow (GB))

**Session Classification:** Young Scientist Forum



Contribution ID: 32

Type: **not specified**

## **Inclusive and differential cross-sections measurements in the single top $tW$ e- $\mu$ channel with CMS**

*Wednesday, 15 September 2021 15:40 (7 minutes)*

**Presenter:** SOTO RODRIGUEZ, Alejandro (Universidad de Oviedo (ES))

**Session Classification:** Young Scientist Forum

Contribution ID: 33

Type: **not specified**

## **The impact of top-quark modeling on the exclusion limits in $t\bar{t}+DM$ searches at the LHC**

*Wednesday, 15 September 2021 15:50 (7 minutes)*

**Presenter:** HERMANN, Jonathan (RWTH Aachen)

**Session Classification:** Young Scientist Forum

Contribution ID: 34

Type: **not specified**

## **Measurements of the differential production cross sections of a top-quark-antiquark pair in association with a Z boson at $\sqrt{s} = 13$ TeV with the ATLAS detector**

*Wednesday, 15 September 2021 16:00 (7 minutes)*

YSF talk ATLAS 2

**Presenter:** BABAL, Dominik (Comenius University (SK))

**Session Classification:** Young Scientist Forum

Contribution ID: 35

Type: **not specified**

## Measurement of $tW$ production in lepton jets channel with CMS

*Wednesday, 15 September 2021 16:10 (7 minutes)*

**Presenter:** LEGGAT, Duncan (Chinese Academy of Sciences (CN))

**Session Classification:** Young Scientist Forum

Contribution ID: 36

Type: **not specified**

## **Non-factorizable two-loop contribution to t-channel single-top production**

*Wednesday, 15 September 2021 16:20 (7 minutes)*

**Presenter:** BROENNUM-HANSEN, Christian (University of Edinburgh)

**Session Classification:** Young Scientist Forum

Contribution ID: 37

Type: **not specified**

## **Search for the single production of vector-like top quarks in the decay $T \rightarrow Ht$ or $T \rightarrow Zt$ with the ATLAS detector**

*Friday, 17 September 2021 15:00 (7 minutes)*

YSF talk ATLAS 3

**Presenter:** BUXO VAZQUEZ, Carlos Josue (Michigan State University (US))

**Session Classification:** Young Scientist Forum

Contribution ID: **38**

Type: **not specified**

## **Inclusive $t\bar{t}$ production cross section at $\sqrt{s} = 5.02$ TeV with CMS**

*Friday, 17 September 2021 14:40 (7 minutes)*

**Presenter:** VICO VILLALBA, Carlos (Universidad de Oviedo (ES))

**Session Classification:** Young Scientist Forum

Contribution ID: 39

Type: **not specified**

## **Towards a precise interpretation of the top quark mass parameter in ATLAS Monte Carlo samples**

*Friday, 17 September 2021 14:30 (7 minutes)*

YSF talk ATLAS 3

**Presenter:** APARISI POZO, Javier Alberto (Univ. of Valencia and CSIC (ES))

**Session Classification:** Young Scientist Forum



Contribution ID: 40

Type: **not specified**

## **Measurement of the shape of the b quark fragmentation function using charmed mesons produced inside b jets from $t\bar{t}$ decays with CMS**

*Friday, 17 September 2021 15:10 (7 minutes)*

**Presenter:** YATES, Brent (Ohio State University (US))

**Session Classification:** Young Scientist Forum

Contribution ID: 41

Type: **not specified**

## **Top-Pair Events with B-hadrons at the LHC**

*Friday, 17 September 2021 14:50 (7 minutes)*

**Presenter:** GENERET, Terry (RWTH Aachen University)

**Session Classification:** Young Scientist Forum

Contribution ID: 42

Type: **not specified**

## **Single top quark production in association with a WZ pair at the LHC in the SMEFT at NLO in QCD**

*Friday, 17 September 2021 15:20 (7 minutes)*

**Presenter:** EL FAHAM, Hesham (Universite Catholique de Louvain (UCL) (BE))

**Session Classification:** Young Scientist Forum

Contribution ID: 43

Type: **not specified**

## **Top-quark couplings from Higgs factories to multi-teV lepton colliders**

*Thursday, 16 September 2021 14:00 (20 minutes)*

**Presenter:** DURIEUX, Gauthier (CERN)

**Session Classification:** Theory workshop: Top-quark physics @ Future colliders

Contribution ID: 44

Type: **not specified**

## **BSM top-related/inspired physics and future multi-TeV colliders**

*Thursday, 16 September 2021 14:35 (20 minutes)*

**Presenter:** SERRA MARI, Javier (CERN)

**Session Classification:** Theory workshop: Top-quark physics @ Future colliders

Contribution ID: 45

Type: **not specified**

## **Challenges for top tagging and reconstruction at future colliders**

*Thursday, 16 September 2021 15:10 (20 minutes)*

**Presenter:** SELVAGGI, Michele (CERN)

**Session Classification:** Theory workshop: Top-quark physics @ Future colliders

Contribution ID: 46

Type: **not specified**

## **Precision top-quark physics at the threshold in $e^+e^-$ colliders**

*Thursday, 16 September 2021 15:45 (20 minutes)*

**Presenter:** HOANG, Andre (University of Vienna)

**Session Classification:** Theory workshop: Top-quark physics @ Future colliders

Contribution ID: 47

Type: **not specified**

## **SM HL-LHC end-run opportunities for top-quark physics**

*Thursday, 16 September 2021 16:20 (20 minutes)*

**Presenter:** FRANCESCHINI, Roberto (Rome 3 U.)

**Session Classification:** Theory workshop: Top-quark physics @ Future colliders



Contribution ID: 48

Type: **not specified**

## **Announcement of Poster winner**

*Friday, 17 September 2021 18:30 (4 minutes)*

**Presenter:** SCHWIENHORST, Reinhard (Michigan State University (US))

Contribution ID: 49

Type: **not specified**

## 2. NLO QCD off-shell results for $t\bar{t}W$

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** NASUFI, Jasmina (RWTH-Aachen)

Contribution ID: 50

Type: **not specified**

### **3. NLO QCD corrections for off-shell $t\bar{t}b\bar{b}$**

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** LUPATTELLI, Michele

Contribution ID: 51

Type: **not specified**

## 4. Top and Higgs data interplay in the SMEFT framework

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** MANTANI, Luca (UCLouvain)

Contribution ID: 52

Type: **not specified**

## 5. Two-loop master integrals for the single top production associated with W boson

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** LONG, Mingming (University of Science and Technology of China)

Contribution ID: 53

Type: **not specified**

## 6. Theory input for $t\bar{t}$ + jet experimental analyses at the LHC

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** VOSS, Katharina (Deutsches Elektronen-Synchrotron DESY)

Contribution ID: 54

Type: **not specified**

## 7. Collider study of the $t\bar{t}h$ channel

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** LI, Lingfeng (HKUST)

Contribution ID: 55

Type: **not specified**

## 8. Boosted semi leptonic top tagging with tau

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenters:** DE, Amandip (Indian Institute of Science); DE, Amandip (Indian Institute of science (IN))



Contribution ID: 56

Type: **not specified**

## 9. Top quark electro-weak couplings after LHC Run 2

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** MORENO LLACER, Maria (Univ. of Valencia and CSIC (ES))

Contribution ID: 57

Type: **not specified**

## 10. Cross Sections for ttH production with the Top Quark $M_{S\bar{b}}$ Mass

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** SAIBEL, Andrej (Deutsches Elektronen-Synchrotron (DE))

Contribution ID: 58

Type: **not specified**

## **11. Differential $t\bar{t}$ cross-section measurement using boosted top quarks with 139/fb of ATLAS data**

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** JACKA, Petr (Czech Academy of Sciences (CZ))

Contribution ID: 59

Type: **not specified**

## **12. Search for $W^{\pm} \rightarrow tb$ decays in the fully hadronic final with the ATLAS experiment**

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** LIN, Kuan-Yu (Michigan State University (US))

Contribution ID: **60**

Type: **not specified**

## **13. Search for heavy resonances in four-top-quark final states with the ATLAS detector**

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** WONGEL, Alicia (Deutsches Elektronen-Synchrotron (DE))

Contribution ID: 61

Type: **not specified**

## **14. Studies of the Powheg-bb4l generator including non-resonant and off-shell effects in comparison with ATLAS data and other Monte Carlo generator predictions**

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** RAFANOHARANA, Diminiaina (Albert Ludwigs Universitaet Freiburg (DE))

Contribution ID: 62

Type: **not specified**

## 15. Measurements of Top-Higgs Yukawa Interaction Using the Higgs to Diphoton Decay Channel

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** WANG, Alex Zeng (University of Wisconsin Madison (US))

Contribution ID: 63

Type: **not specified**

## **16. Measurement of spin correlation density production matrix in dilepton decays at CMS**

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenter:** THIEMAN, Jason (Purdue University (US))



Contribution ID: 64

Type: **not specified**

## 17. Top quarks as a probe to quantum information

*Wednesday, 15 September 2021 14:00 (1 hour)*

**Presenters:** WILDRIDGE, Andrew (Purdue University (US)); DAS, Souvik (Purdue University (US))

Contribution ID: 65

Type: **not specified**

## **18. Poster 18, CMS**

Contribution ID: **66**

Type: **not specified**

## **19. Poster 19, CMS**

Contribution ID: 67

Type: **not specified**

## Poster session redux

*Thursday, 16 September 2021 13:30 (20 minutes)*

Posters are at <https://indico.cern.ch/event/1018454/contributions/4339334/>

Contribution ID: **68**

Type: **not specified**

## Poster session redux 2

*Thursday, 16 September 2021 18:20 (20 minutes)*

Posters are at <https://indico.cern.ch/event/1018454/contributions/4339334/>