TAMARA VAZQUEZ SCHRÖDER

CELEBRATING LISA'S AWESOMENESS

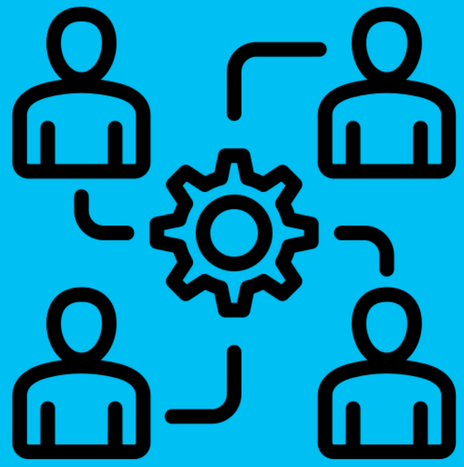
highlights of Lisa's unforgettable imprint in our lives *(with a slight bias)*

20th September 2024

UNIVERSITÄT
GÖTTINGEN

FROM GÖTTINGEN FIRST STEPS

TO DIVING INTO THE HEART OF CERN



CERN

ACADEMIC MENTOR

Back in the day the logo looked like this:

GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

My Phd supervisors:

Betreuungsausschuss

Prof. Dr. Kevin Kröninger
II. Physikalisches Institut, Georg-August-Universität Göttingen, now at Experimentelle Physik IV, Technische Universität Dortmund

Prof. Dr. Arnulf Quadt
II. Physikalisches Institut, Georg-August-Universität Göttingen

Dr. Elizaveta Shabalina
II. Physikalisches Institut, Georg-August-Universität Göttingen

Lisa quickly turned into a fantastic supervisor,

fearless, confident and kind

Closing the cycle!

Lisa visiting the university where I did my undergrad studies (Tenerife, Canary Islands)

EVIDENCE OF TTW AND TTZ

JHEP

PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: *September 18, 2015*
ACCEPTED: *November 3, 2015*
PUBLISHED: *November 24, 2015*

Measurement of the $t\bar{t}W$ and $t\bar{t}Z$ production cross sections in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector

JHEP11(2015)172

The ATLAS collaboration

E-mail: atlas.publications@cern.ch

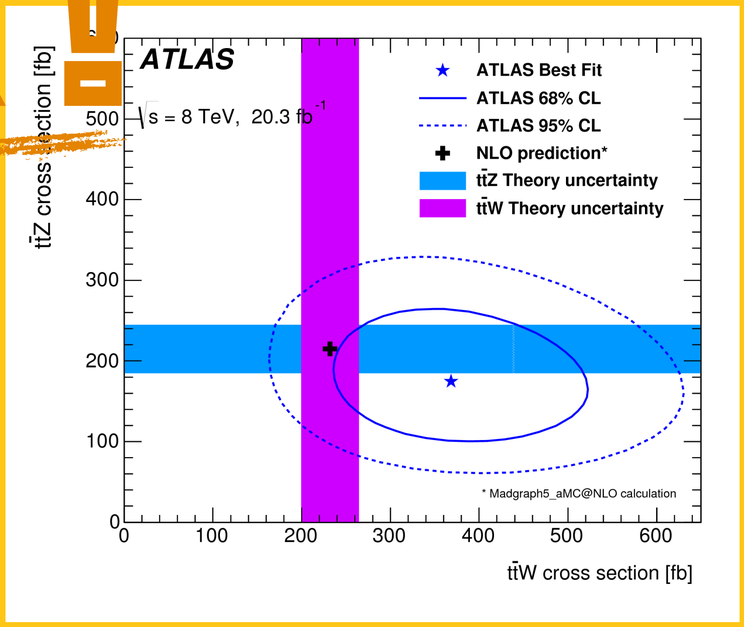
ABSTRACT: The production cross sections of top-quark pairs in association with massive vector bosons have been measured using data from pp collisions at $\sqrt{s} = 8$ TeV. The dataset corresponds to an integrated luminosity of 20.3 fb^{-1} collected by the ATLAS detector in 2012 at the LHC. Final states with two, three or four leptons are considered. A fit to the data considering the $t\bar{t}W$ and $t\bar{t}Z$ processes simultaneously yields a significance of 5.0σ (4.2σ) over the background-only hypothesis for $t\bar{t}W$ ($t\bar{t}Z$) production. The measured cross sections are $\sigma_{t\bar{t}W} = 369^{+100}_{-91}$ fb and $\sigma_{t\bar{t}Z} = 176^{+58}_{-52}$ fb. The background-only hypothesis with neither $t\bar{t}W$ nor $t\bar{t}Z$ production is excluded at 7.1σ. All measurements are consistent with next-to-leading-order calculations for the $t\bar{t}W$ and $t\bar{t}Z$ processes.

WHY STUDY $t\bar{t}$

WHEN YOU CAN STUDY

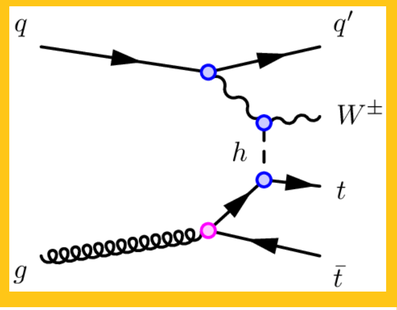
$t\bar{t}X$!

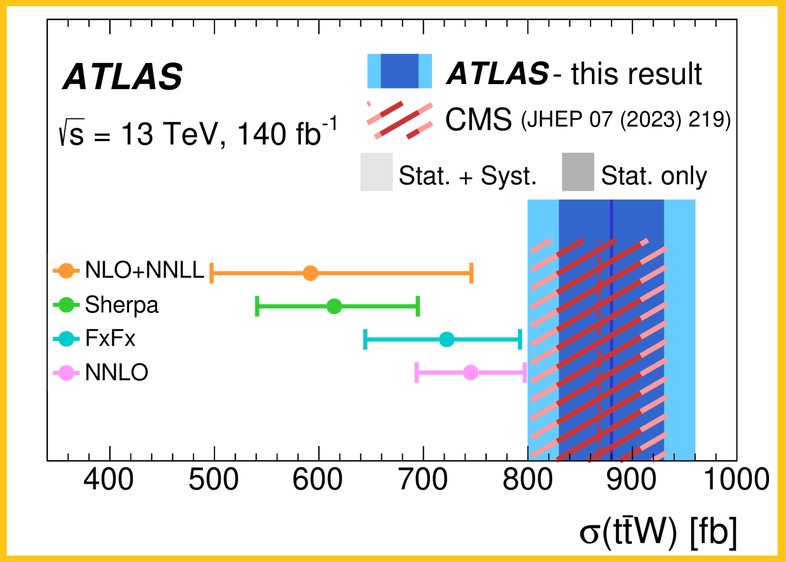
First evidence for $t\bar{t}Z$ and $t\bar{t}W$ in ATLAS with Run 1 dataset

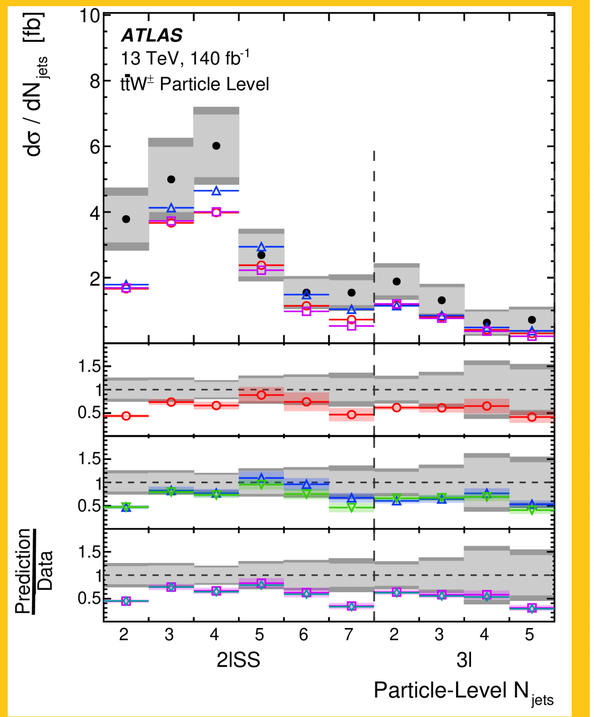


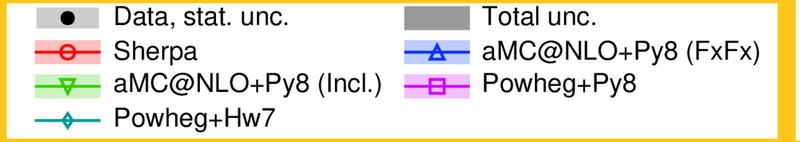
DIFFERENTIAL TTW

tt̄W proved to be quite mysterious ... and we were back to measuring its properties with Run 2 dataset!









JHEP

Published for SISSA by Springer

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Accepted: *April 15, 2024*
Published: *May 10, 2024*

Measurement of the total and differential cross-sections of $t\bar{t}W$ production in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector

The ATLAS collaboration

E-mail: atlas.publications@cern.ch

Abstract: Measurements of inclusive and differential production cross-sections of a top-quark-top-antiquark pair in association with a W boson ($t\bar{t}W$) are presented. They are performed by targeting final states with two same-sign or three isolated leptons (electrons or muons) and are based on $\sqrt{s} = 13$ TeV proton-proton collision data with an integrated luminosity of 140 fb^{-1}, recorded from 2015 to 2018 with the ATLAS detector at the Large Hadron Collider. The inclusive $t\bar{t}W$ production cross-section is measured to be 880 ± 80 fb, compared to a reference theoretical prediction of 745 ± 50 (scale) ± 13 (2-loop approx.) ± 19 (PDF, α_s) fb. Differential cross-section measurements characterise this process in detail for the first time. Several particle-level observables are compared with a variety of theoretical predictions, which generally agree well with the normalised differential cross-section results. Additionally, the relative charge asymmetry of $t\bar{t}W^+$ and $t\bar{t}W^-$ is measured inclusively to be $A_C^{rel} = 0.33 \pm 0.05$, in very good agreement with the theoretical prediction of 0.322 ± 0.003 (scale) ± 0.007 (PDF), as well as differentially.

JHEP05(2024)131

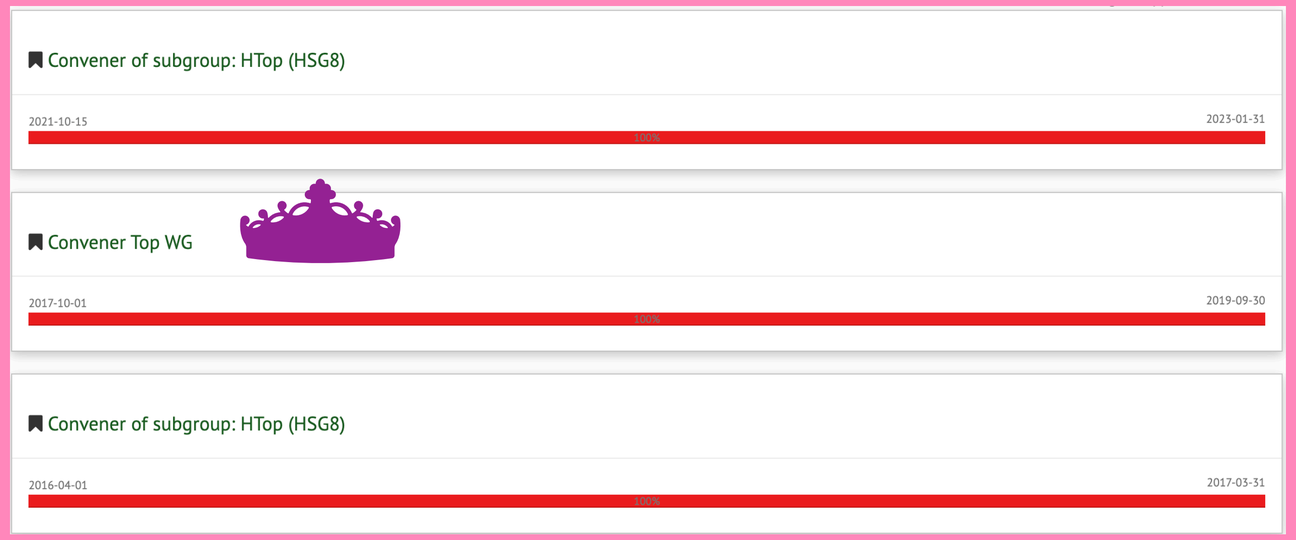
TOP TOP TOP TOP TOP TOP TOP HIGGS TOP TOP TOP TOP TOP

POSTDOCTORAL TIMES

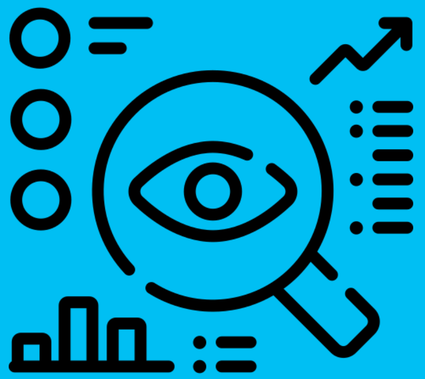
In love with CERN, I managed to stay my full postdoctoral time there

Lisa was there in every step of the way ❤

She was HTop convener, **Top convener**, then back again HTop convener to step in when it was needed!



OBSERVATION OF TTH



Physics Letters B 784 (2018) 173–191

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www.elsevier.com/locate/physletb

Observation of Higgs boson production in association with a top quark pair at the LHC with the ATLAS detector

The ATLAS Collaboration *

ARTICLE INFO

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Received 4 June 2018
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Available online 24 July 2018
Editor: W.-D. Schlatter

ABSTRACT

The observation of Higgs boson production in association with a top quark pair ($t\bar{t}H$), based on the analysis of proton–proton collision data at a centre-of-mass energy of 13 TeV recorded with the ATLAS detector at the Large Hadron Collider, is presented. Using data corresponding to integrated luminosities of up to 79.8 fb^{-1}, and considering Higgs boson decays into $b\bar{b}$, WW^*, $\tau^+\tau^-$, $\gamma\gamma$, and ZZ^*, the observed significance is 5.8 standard deviations, compared to an expectation of 4.9 standard deviations. Combined with the $t\bar{t}H$ searches using a dataset corresponding to integrated luminosities of 4.5 fb^{-1} at 7 TeV and 20.3 fb^{-1} at 8 TeV, the observed (expected) significance is 6.3 (5.1) standard deviations. Assuming Standard Model branching fractions, the total $t\bar{t}H$ production cross section at 13 TeV is measured to be 670 ± 90 (stat.) $^{+110}_{-100}$ (syst.) fb, in agreement with the Standard Model prediction.

"ZPW2020 - The Higgs boson and the Top quark", Zürich, Jan 2020

TOP 2019, BEIJING

ATLAS EXPERIMENT

ATLAS CONF Note

ATLAS-CONF-2019-045

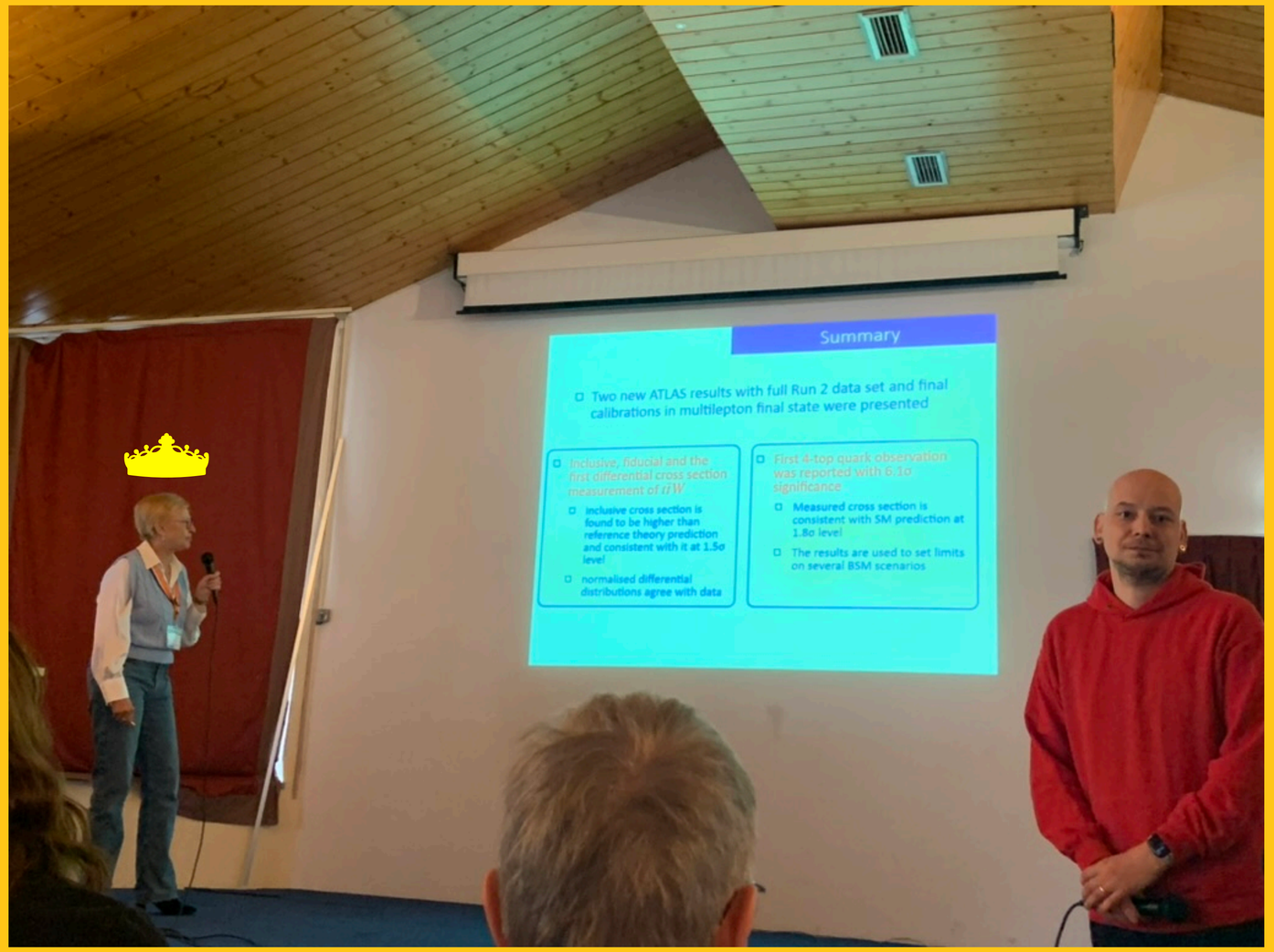
16th October 2019
Minor revision: 24th August 2020

CERN

Analysis of $t\bar{t}H$ and $t\bar{t}W$ production in multilepton final states with the ATLAS detector

Exploring top physics ... now in Beijing!

MORIOND EW 2023: TIME TO SHINE!



ATLAS ambassador at Moriond:

Lisa presented two brand-new high-profile ATLAS results at Moriond EW 2023:

- **First differential cross-section measurement of $t\bar{t}W$ *ever***
- **First observation of 4-top quark process *ever***

THE BIG DAY: NO COVID WILL STOP THIS!

Satigny, July 2020

AND COZY CELEBRATION BY THE LAKE

PHYSICS AND LIFE GO TOGETHER

Opera Eugene Onegin
Barcelona, October 2023

Somewhere in the south of France,
September 2023

THANKS LISA FOR BEING

AMAZING SUPERVISOR REALISTIC DREAMER STRONG WOMAN

A NON-STOP CELEBRATOR OF LIFE & BEAUTY FEARLESS

THE IMAGE OF ENDURANCE WITTY KIND

ROLE MODEL OF WHAT A SCIENTIST CAN ACHIEVE

A UNIQUE FRIEND