

14th Open LHCtopWG Meeting

Nov 20-21, 2018

Introduction

Mark Owen (Glasgow)
Michelangelo Mangano (CERN)
Martijn Mulders (CERN)



LHCtopWG : Introduction

- 14th open session of the LHC Top Working Group
 - Forum for public discussions (ATLAS+CMS+LHCb+TH) on combination and interpretation of top physics measurements at the LHC
 - Open sessions (twice per year) – aim always to allow time for discussion
- Documentation and coordinates
 - Integrated in the LPCC structure at CERN:
<http://lpcc.web.cern.ch/lhc-working-groups>
 - Agendas available at <https://indico.cern.ch/categoryDisplay.py?categoryId=4463>
 - Public summary plots at
<https://twiki.cern.ch/twiki/bin/view/LHCPhysics/LHCTopWGSummaryPlots>
 - Subscribe to main open mailing list lhc-toplhcwg@cern.ch
- Welcome to the second open session of 2018!

LHCtopWG Contacts

- **Theory:** Michelangelo Mangano
- **ATLAS:** Mark Owen
- **CMS:** Martijn Mulders
- **LHCb:** Steve Farry

Contacts for combinations / working groups:

- **Top pair cross section:** Veronique Boisvert (ATLAS), Jan Kieseler (CMS)
- **Single top cross sections:** Carlos Escobar (ATLAS), Jeremy Andrea (CMS)
- **Top mass:** Mark Owen (ATLAS), Steve Wimpenny (CMS)
- **Charge asymmetry:** Frederic Deliot (ATLAS), Thorsten Chwalek (CMS)
- **Top pair differential cross sec. 8 TeV:** Francesco Spanò (ATLAS), Maria Aldaya (CMS)
- **Top pair differential cross sec. 13 TeV:** James Howarth (ATLAS), Otto Hindrichs (CMS)
- **W helicity:** Mohammad Kareem (ATLAS), Mara Senghi (CMS)
- **EFT:** Nuno Castro and Johannes Erdmann (ATLAS), Nadjieh Jafari and Alexander Groshjean (CMS)

Also contacts for dedicated topics as needed (JES, b-tagging, generators, pseudo-top definitions, etc)

Ongoing Combinations

Ongoing combinations under review within the collaborations:

- **Single top cross-section 7 & 8 TeV + Vtb extraction**
- **Top quark pair cross-section 7 & 8 TeV + extraction top pole mass & alpha_s**

Planned combinations that are a bit further away:

- **W helicity measurement**
- **Top mass:** preparatory discussions and studies ongoing → *more this afternoon*
- **Differential ttbar distributions** (started with comparisons)

EFT Follow Up

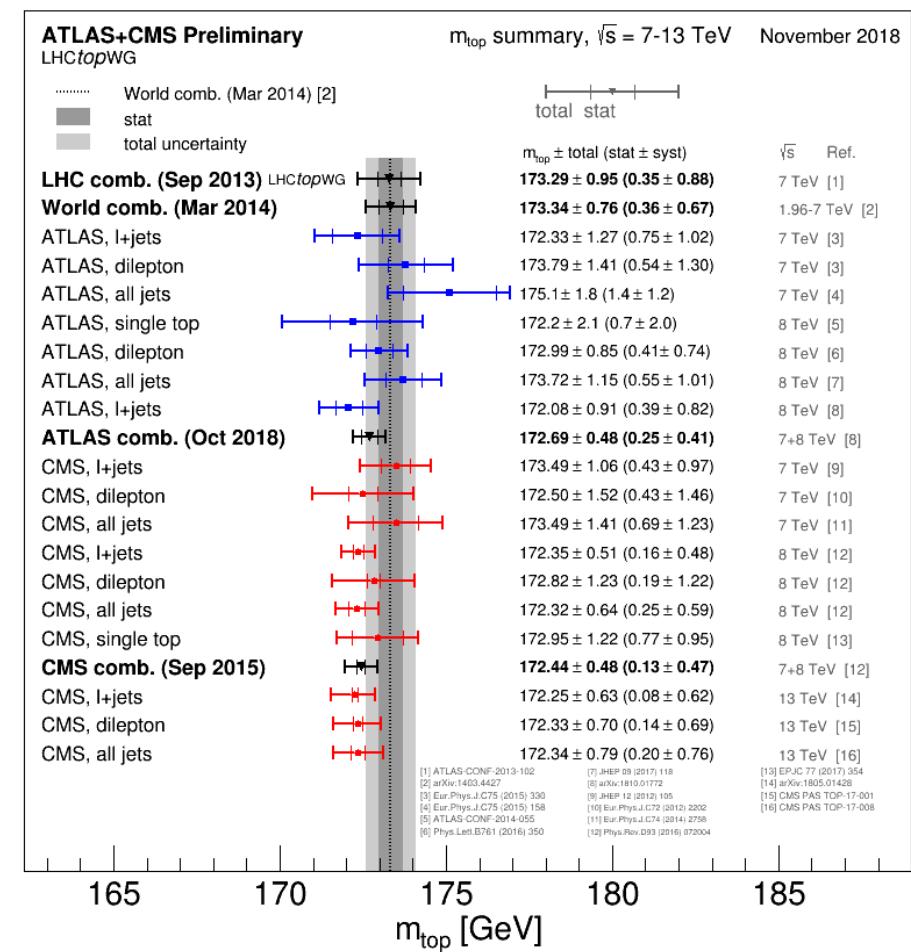
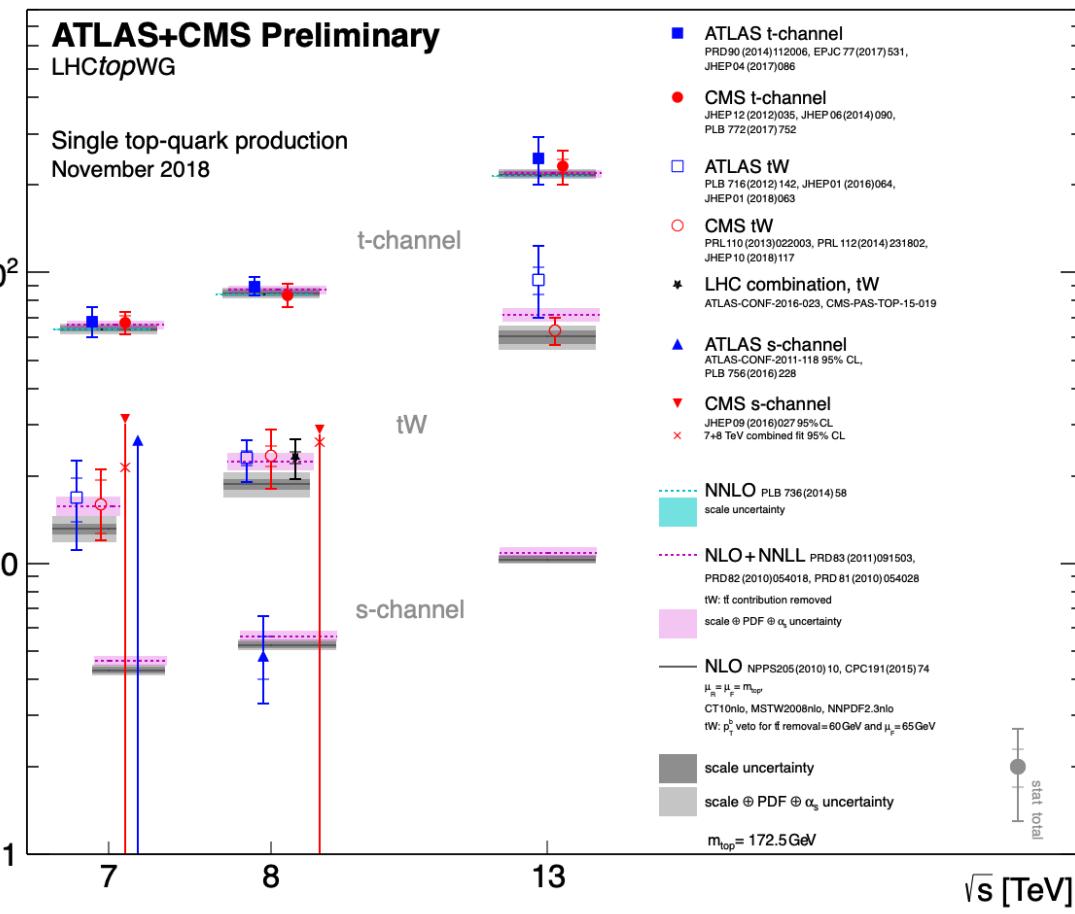
- The EFT document released earlier this year is a useful guide
<https://arxiv.org/abs/1802.07237> (CERN-LPCC-2018-01)
- Various experimental analyses are following the spirit of the document; each analysis has their own challenges, however
- This is a long-term project ; communication between analysts and theorists clearly essential !
- Further discussions today

Summary Plots

<https://twiki.cern.ch/twiki/bin/view/LHCPhysics/LHCTopWGSummaryPlots>

Updated **two** plots this time (updated references + new results):

Inclusive cross-section [pb]



Council Chamber

TUESDAY, 20 NOVEMBER

09:00 → 18:00 Tuesday Session

09:00 **Introduction** ⓘ 30m
Speakers: Mark Owen (University of Manchester), Martijn Mulders (CERN), Michelangelo Mangano (

09:30 **CMS Highlight** ⓘ 30m
Speakers: Oleksandr Zenaiev (DESY), Oleksandr Zenaiev

Highlight

10:00 **NLO off-shell ttbar lepton+jets** ⓘ 30m
Speaker: Mathieu Pellen (University of Cambridge)

10:30 **Coffee break**

11:00 **Global NLO SMEFT analysis of top quark production at the LHC** ⓘ 30m
Speaker: Dr Juan Rojo (VU Amsterdam and Nikhef)

11:30 **ATLAS and CMS ttV comparison** ⓘ 30m
Speakers: Didar Dobur (Ghent University (BE)), Kerim Suruliz (

12:00 **ATLAS and CMS 4-top comparison** ⓘ 30m
Speakers: Giovanni Zevi Della Porta (Univ. of California San Diego (US)), Romain Madar (Université Cler

12:30 **Lunch break**

14:00 **CMS inclusive ttbar cross-section and extraction m_top and alpha_s** ⓘ 30m
Speaker: Jan Kieseiter (CERN)

14:30 **Discussion on theory uncertainties for inclusive cross-sections σ ttbar** ⓘ 30m
Speakers: Michal Czakon (University of Wuerzburg), S. Moch (UH)

15:00 **Top quark mass and Renormalons** ⓘ 30m
Speakers: Paolo Nason (Universita & INFN, Milano-Bicocca (IT)), Paolo Nason (Unknown)

15:30 **Tea break**

16:00 **ATLAS top mass results** ⓘ 30m
Speaker: Ben Pearson (Max-Planck-Institut fur Physik (DE))

16:30 **CMS top mass results** ⓘ 30m
Speaker: Johannes Lange (Hamburg University (DE))

17:00 **Studies of the D0 b-jet calibration technique** ⓘ 30m
Speakers: Mikko Voutilainen (Helsinki Institute of Physics (FI)), Toni Makela (Helsinki Institute of Physics

17:30 **Preparing for LHC top mass combination** ⓘ 30m
Speaker: Steve Wimpenny (University of California Riverside (US))

Salle Curie (40-S2-C01)

WEDNESDAY, 21 NOVEMBER

09:00 → 13:00 Wednesday Session

09:00 **ATLAS ttbar spin correlations** ⓘ 30m
Speaker: James William Howarth (University of Manches

09:30 **NNLO predictions for ttbar spin correlations** ⓘ 30m
Speaker: Rene Poncelet (Cambridge University)

10:00 **BSM perspective on ttbar spin correlations** ⓘ 30m
Speakers: Juan Antonio Aguilar Saavedra (LIP Laboratorio de Instrumentacao e Fisica Experimental de Part), Juan (University of Granada)

10:30 **Anomalous Wtb couplings in single top quark production** ⓘ 20m
Speakers: Adil Jueid (Shanghai JiaoTong University/Shanghai Key Laboratory for Partic), Adil Jueid

11:00 **Coffee break**

11:30 **Including uncertainties on uncertainties** ⓘ 30m
Speakers: Glen Cowan (Royal Holloway, University of London), Glen Cowan (Royal Holloway)

12:00 **Comparison and discussion on multi-parameter fits** ⓘ 30m
Speakers: Markus Seidel (University of Maryland (US)), Dr Michele Pinamonti (INFN e Universita Roma Tor Vergata

EFT, comparisons

ttbar spin correlations

σ ttbar

Top mass

Single top Wtb

Coffee break

Next-to-leading-order Statistics