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LHCTopWG - LHC Top Physics Working Group

This is the public home page of the LHC working group on Top Quark physics. The mandate of the group can be found here: [Mandatev8.pdf](#), and the agreement of the four experiments on how to proceed in general for Tevatron/LHC combinations is found here:

https://twiki.cern.ch/twiki/pub/LHCPhysics/LHCTopWG/Tevatron_LHC_Combos_Final-2.pdf

Structure and organization of the group

The activity of the working group is coordinated by one contact person per experiment, who maintain close contact with the four top group conveners of ATLAS and CMS, and one contact person for the theory community. The LHCTopWG is fully integrated in the activity of the LPCC.

- **Contact person for CMS:** Maria Aldaya
- **Contact person for ATLAS:** Wolfgang Wagner
- **Contact person for LHCb:** Steve Farry
- **Contact person for TH:** Fabio Maltoni
- **Current CMS top conveners:** Andreas Jung, Kai-Feng (Jack) Chen, Jan Kieseler
- **Current ATLAS top conveners:** Marcel Vos, Johannes Erdmann, Andrea Knue

Former coordinators of the group: Roberto Chierici (CMS), Markus Cristinziani (ATLAS), Maria Costa (ATLAS), Alison Lister (ATLAS), Mark Owen (ATLAS), Martijn Mulders (CMS), Reinhard Schwienhorst (ATLAS), Michelangelo Mangano (Theory)

The LHCTopWG is organised in subgroups, each corresponding to the combination effort for a certain measurement. Each subgroup has a contact person per experiment (obviously member of the group), responsible for providing the combination and the relevant documentation. The complete mandate of the subgroup contact person can be found here.

The current structure is as follows:

Working groups

Active:

- **Top pair cross section:** Veronique Boisvert (ATLAS), Jan Kieseler (CMS)
- **Top mass:** Mark Owen (ATLAS), Steve Wimpenny, Martijn Mulders, and Matteo Defranchis (CMS)
- **Differential distributions:** Marino Romano (ATLAS), Olaf Behnke (CMS)
- **Delta Phi Spin Correlation:** Miriam Watson and James Howarth (ATLAS), Giulia Negro and Afiq Anuar (CMS)
- **Effective field theory (EFT):** Peter Berta, Baptiste Ravina, and Laura Barranco Navarro (ATLAS), Kirill Skovpen and Jon Wilson (CMS)
- **LHC EFT WG contacts:** Nuno Castro (ATLAS), Nadjieh Jafari (CMS), Eleni Vryonidou (theory)

Not currently active:

- **W helicity:** Mohammad Kareem (ATLAS), Mara Senghi, Maria Aldaya, Martijn Mulders (CMS)
- **Single top cross section:** Carlos Escobar Ibanez (ATLAS), Nadjieh Jafari, Jeremy Andrea (CMS)
- **Charge asymmetry:** Frederic Deliot (ATLAS), Thorsten Chwalek (CMS)
- **Top quark pair production in association with Z or W:** Markus Cristinziani (ATLAS), Andrew Brinkerhoff (CMS)

While the work of the working group remains experimental in nature, close contact with the theory community is mandatory. Theory members of the group can be invited to attend closed meetings.

With the working groups, task forces with persons representing both experiments are often formed to attack a particular issue of relevance for the combination activities of the working group. The task forces that have been active to date in the LHCtopWG are:

- **Common MC:** compare simulation settings and produce MC samples with common settings. Contributing persons: Mike Fenton (ATLAS), Dominic Hirschbuehl, Reinhard Schwienhorst (ATLAS), Giulia Negro (CMS)
 - ◆ **NEW PUB note on common MC:** [ATL-PHYS-PUB-2021-016](#) and [CMS Note 2021/005](#)
- **Harmonization of systematic uncertainties:** Andrea Knue, Dominic Hirschbuehl (ATLAS), Efe Yazgan, Enrique Palencia (CMS)
- **Jet/MET:** for a proper grouping of the systematic sources related to JES uncertainties. Contributing persons: Steven Schramm and Dimitris Varouchas (ATLAS), Anastasia Karavdina, Henning Kirschenmann and Mikko Voutilainen (CMS)
- **Common acceptance and pseudo-tops:** for defining common conventions for a pseudo-top definition and acceptance where both experiments should quote fiducial cross sections. Contributing persons: Kevin Finelli and Dominic Hirschbuehl (ATLAS), Junghwan Goh, Orso Iorio (CMS).
- **Radiation and generators:** for comparing the definition of systematic sources coming from the modelling of radiation in the MC, and in general for generator settings in the two experiments. Contributing persons: James Ferrando and Dominic Hirschbuehl (ATLAS), Benedikt Maier and Markus Seidel (CMS)
- **b-tagging:** for a proper grouping of the systematic sources related to b-tagging. Contributing persons: Martin zur Nedden and Liza Mijovic (ATLAS), Luca Scodellaro (CMS)

Useful links and mailing lists

- Overview of LHCtopWG Summary Plots at this Twiki page
- Open mailing list for public announcement: [lhctopwg@cernNOSPAMPLEASE.ch](mailto:lhctopwg@cern.ch)
- Full list of members of the WG (EXP+TH): [toplhcg-all@cernNOSPAMPLEASE.ch](mailto:toplhcg-all@cern.ch)
- Experimental members: [toplhcg-members@cernNOSPAMPLEASE.ch](mailto:toplhcg-members@cern.ch)
- GIT repository: <https://gitlab.cern.ch/lhctopwg>
- Internal page (for members only): LHCtopWGInternal

Reference cross sections

- Reference NNLO+NNLL top quark pair predictions, numbers and plots
- Reference NLO predictions for Single Top production in t-, tW- and s-channel
- Reference NNLO predictions for Single top-quark production in t- tW- and s-channel

Hot Topics

Here there is a collection of links to very useful Twiki pages where all recommendations by the working group are documented and discussed. Please refer to those for preparing your analyses !

- Unfolding at particle level and definition of pseudo tops

- How to deal with systematic errors due to theory and modelling
- Distributions to constrain radiation related systematics and others
- Recommendation for splitting of systematic sources due to JES uncertainties at 7 TeV: ATLAS PUB note 2014-020 [↗](#) CMS PAS note JME-14-003 [↗](#)
- Recommendation for splitting of systematic sources due to JES uncertainties at 8 TeV: ATLAS PUB note 2015-049 [↗](#) CMS PAS note JME-15-001 [↗](#)
- Recommendation for splitting of systematic sources due to b-tagging

The following are instead links documenting studies performed by the WG and that are of general interest

Resources

- GIT repository: <https://gitlab.cern.ch/lhctopwg> [↗](#)
- Mandate of the LHCTopWG: Mandatev8.pdf
- Review and Submission Procedures for Joint ATLAS/CDF/CMS/DZero Preliminary Results: Tevatron_LHC_Combos_Final-2.pdf

This topic: LHCPHysics > LHCTopWG

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