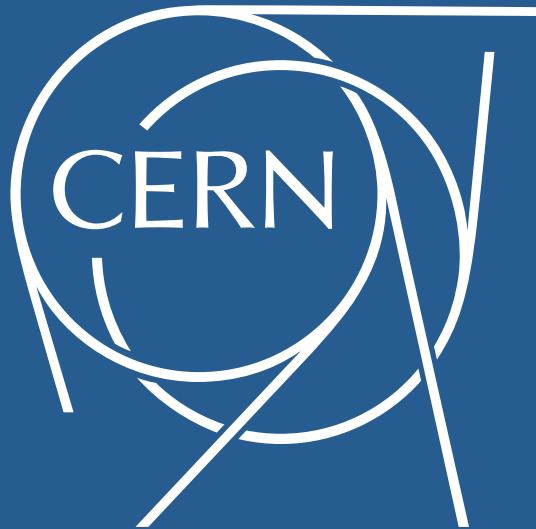


Outside the article

Tracking other research outputs (in particle physics)



September 26th, 2014

I AM 2014 London

Salvatore.Mele@CERN.ch

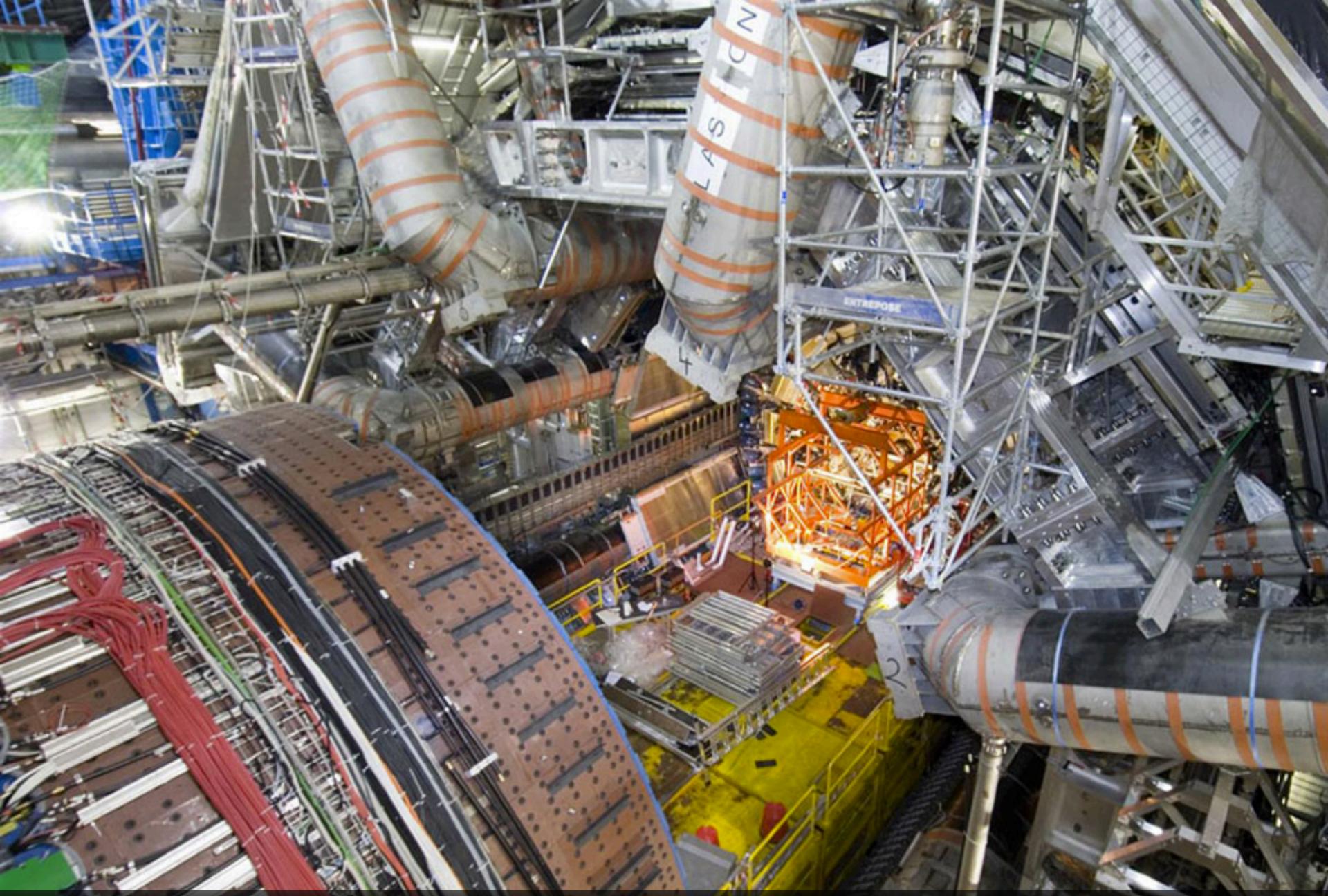
Credits: Sünje Dallmeier-Tiessen, Patricia Herterich, Laura Rueda (and our users!)



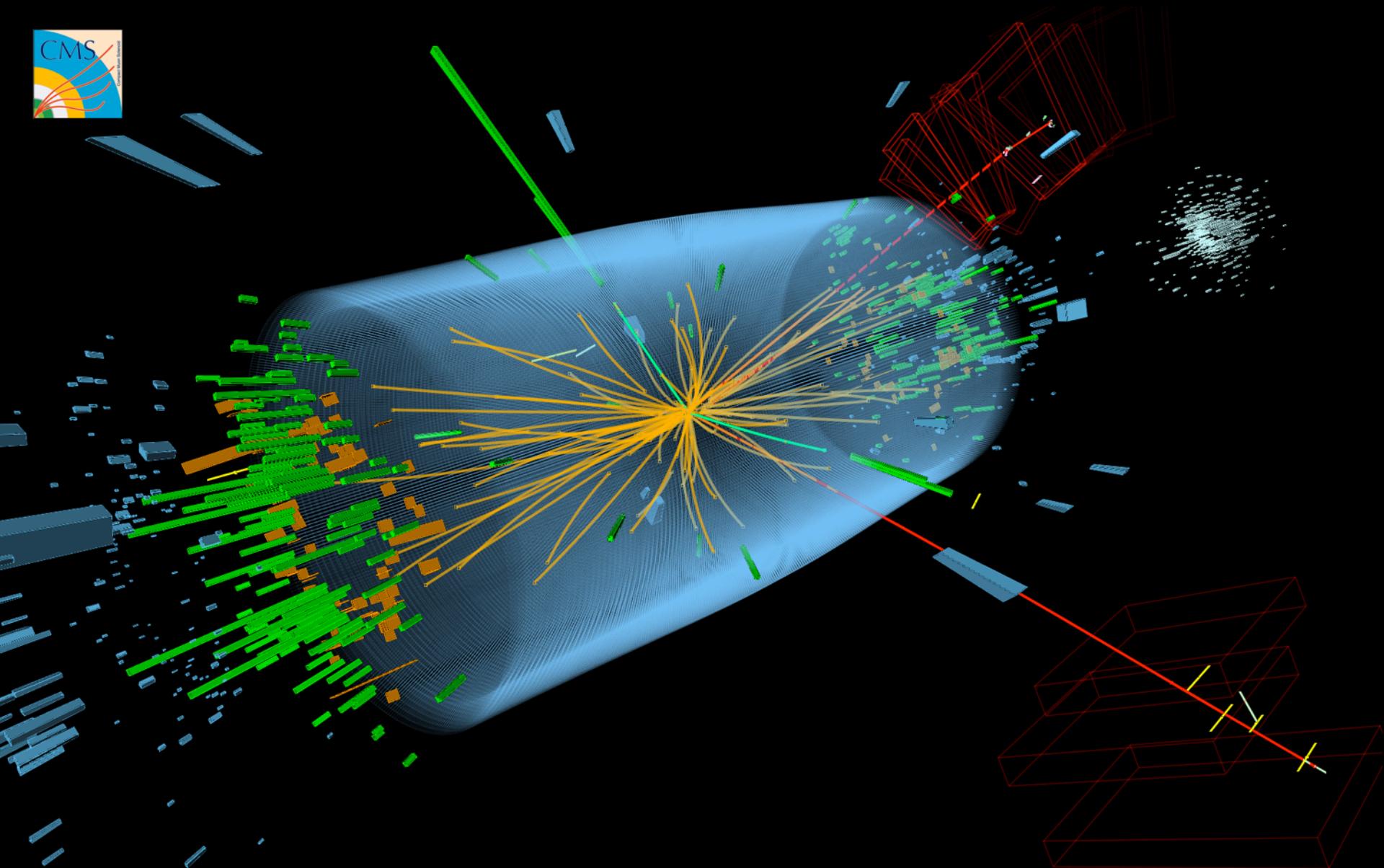
LHC 10'000+ scientists+engineers, 85 countries, 20+ years



27 Km, -271.25°C, 99.999999% of speed of light



Four “detectors”: big “digital cameras”



Discovery of the Higgs boson



Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC[☆]

ATLAS Collaboration*

This paper is dedicated to the memory of our ATLAS colleagues who did not live to see the full impact and significance of their contributions to the experiment.

ARTICLE INFO

Article history:
Received 31 July 2012
Received in revised form 8 August 2012
Accepted 11 August 2012
Available online 14 August 2012
Editor: W.-D. Schlatter

ABSTRACT

A search for the Standard Model Higgs boson in proton–proton collisions with the ATLAS detector at the LHC is presented. The datasets used correspond to integrated luminosities of approximately 4.8 fb^{-1} collected at $\sqrt{s} = 7 \text{ TeV}$ in 2011 and 5.8 fb^{-1} at $\sqrt{s} = 8 \text{ TeV}$ in 2012. Individual searches in the channels $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$, $H \rightarrow \gamma\gamma$ and $H \rightarrow WW^{(*)} \rightarrow e\nu\mu\nu$ in the 8 TeV data are combined with previously published results of searches for $H \rightarrow ZZ^{(*)}$, $WW^{(*)}$, $b\bar{b}$ and t^+t^- in the 7 TeV data and results from improved analyses of the $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$ and $H \rightarrow \gamma\gamma$ channels in the 7 TeV data. Clear evidence for the production of a neutral boson with a measured mass of $126.0 \pm 0.4 \text{ (stat)} \pm 0.4 \text{ (sys)}$ GeV is presented. This observation, which has a significance of 5.9 standard deviations, corresponding to a background fluctuation probability of 1.7×10^{-9} , is compatible with the production and decay of the Standard Model Higgs boson.

© 2012 CERN. Published by Elsevier B.V. All rights reserved.

1. Introduction

The Standard Model (SM) of particle physics [1–4] has been tested by many experiments over the last four decades and has been shown to successfully describe high energy particle interactions. However, the mechanism that breaks electroweak symmetry in the SM has not been verified experimentally. This mechanism [5–10], which gives mass to massive elementary particles, implies the existence of a scalar particle, the SM Higgs boson. The search for the Higgs boson, the only elementary particle in the SM that has not yet been observed, is one of the highlights of the Large Hadron Collider [11] (LHC) physics programme.

Indirect limits on the SM Higgs boson mass of $m_H < 158 \text{ GeV}$ at 95% confidence level (CL) have been set using global fits to precision electroweak results [12]. Direct searches at LEP [13], the Tevatron [14–16] and the LHC [17,18] have previously excluded, at 95% CL, a SM Higgs boson with mass below 600 GeV, apart from some mass regions between 116 GeV and 127 GeV.

Both the ATLAS and CMS Collaborations reported excesses of events in their 2011 datasets of proton–proton (pp) collisions at centre-of-mass energy $\sqrt{s} = 7 \text{ TeV}$ at the LHC, which were comparable with SM Higgs boson production and decay in the mass region 124–126 GeV, with significances of 2.9 and 3.1 standard deviations (σ), respectively [17,18]. The CDF and DØ experiments at the Tevatron have also recently reported a broad excess in the mass region

120–135 GeV; using the existing LHC constraints, the observed local significances for $m_H = 125 \text{ GeV}$ are 2.7σ for CDF [14], 1.1σ for DØ [15] and 2.8σ for their combination [16].

The previous ATLAS searches in $4.6\text{--}4.8 \text{ fb}^{-1}$ of data at $\sqrt{s} = 7 \text{ TeV}$ are combined here with new searches for $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$, $H \rightarrow \gamma\gamma$ and $H \rightarrow WW^{(*)} \rightarrow e\nu\mu\nu$ in the $5.8\text{--}5.9 \text{ fb}^{-1}$ of pp collision data taken at $\sqrt{s} = 8 \text{ TeV}$ between April and June 2012.

The data were recorded with instantaneous luminosities up to $6.8 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$; they are therefore affected by multiple pp collisions occurring in the same or neighbouring bunch crossings (pile-up). In the 7 TeV data, the average number of interactions per bunch crossing was approximately 10; the average increased to approximately 20 in the 8 TeV data. The reconstruction, identification and isolation criteria used for electrons and photons in the 8 TeV data are improved, making the $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$ and $H \rightarrow \gamma\gamma$ searches more robust against the increased pile-up. These analyses were re-optimised with simulation and frozen before looking at the 8 TeV data.

In the $H \rightarrow WW^{(*)} \rightarrow e\nu\mu\nu$ channel, the increased pile-up degrades the event missing transverse momentum, E_T^{miss} , resolution, which results in significantly larger Drell–Yan background in the same-flavour final states. Since the $e\mu$ channel provides most of the sensitivity of the search, only this final state is used in the analysis of the 8 TeV data. The kinematic region in which a SM Higgs boson with a mass between 110 GeV and 140 GeV is

* © CERN for the benefit of the ATLAS Collaboration.
† E-mail address: atlas.publications@cern.ch.



Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC[☆]

CMS Collaboration*

CERN, Switzerland

This paper is dedicated to the memory of our colleagues who worked on CMS but have since passed away. In recognition of their many contributions to the achievement of this observation.

ARTICLE INFO

Article history:
Received 31 July 2012
Received in revised form 9 August 2012
Accepted 11 August 2012
Available online 18 August 2012
Editor: W.-D. Schlatter

Keywords:
CMS
Physics
Higgs

1. Introduction

The standard model (SM) of elementary particles provides a remarkably accurate description of results from many accelerator and non-accelerator based experiments. The SM comprises quarks and leptons as the building blocks of matter, and describes their interactions through the exchange of force carriers: the photon for electromagnetic interactions, the W and Z bosons for weak interactions, and the gluons for strong interactions. The electromagnetic and weak interactions are unified in the electroweak theory. Although the predictions of the SM have been extensively confirmed, the question of how the W and Z gauge bosons acquire mass whilst the photon remains massless is still open.

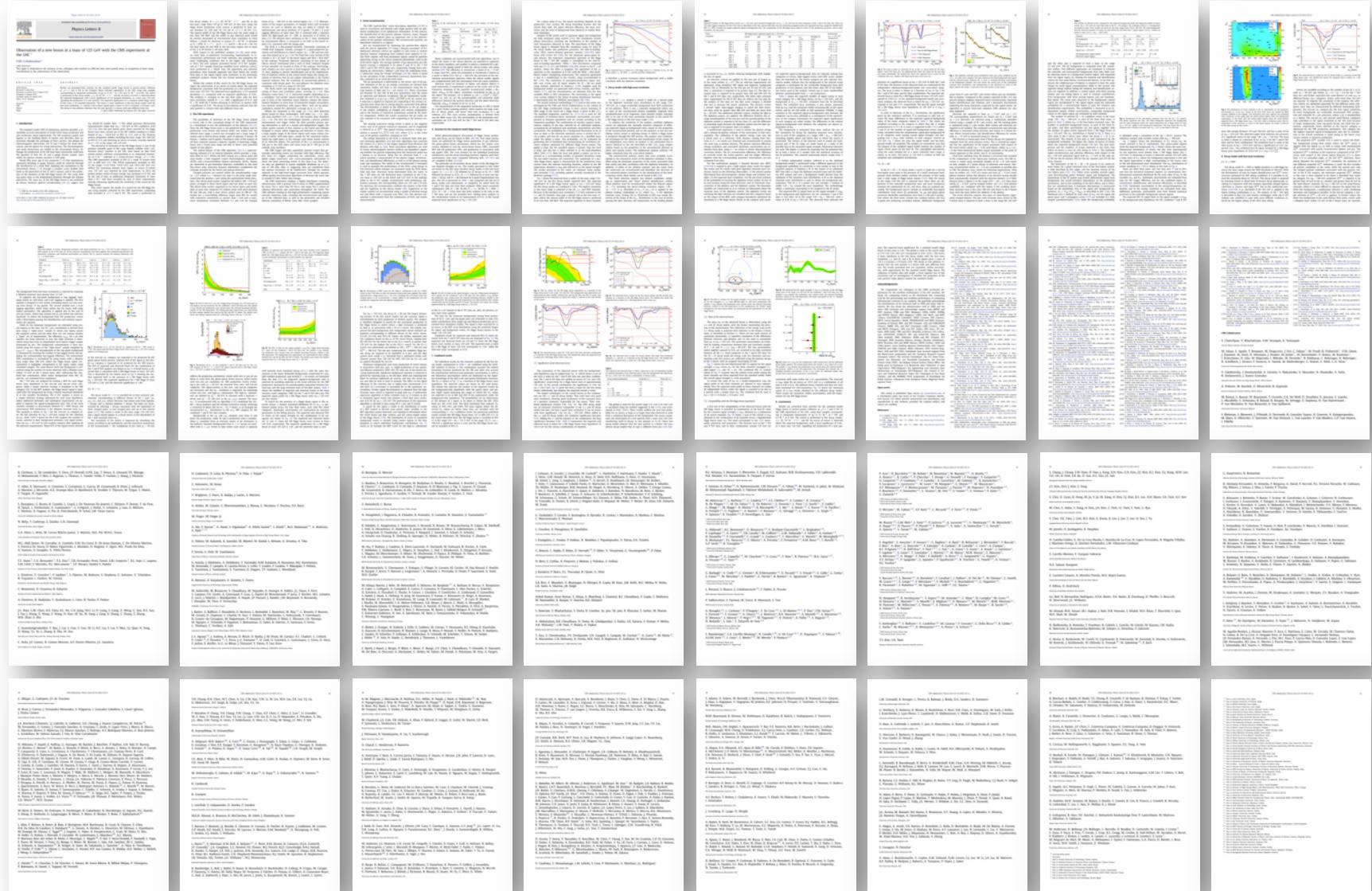
Nearly fifty years ago it was proposed [1–6] that spontaneous symmetry breaking in gauge theories could be achieved through the introduction of a scalar field. Applying this mechanism to the electroweak theory [7–9] through a complex scalar doublet field leads to the generation of the W and Z masses, and to the prediction of the existence of the SM Higgs boson (H). The scalar field also gives mass to the fundamental fermions through the Yukawa interaction. The mass m_H of the SM Higgs boson is not predicted by theory. However, general considerations [10–13] suggest that

* © CERN for the benefit of the CMS Collaboration.
† E-mail address: cms-publication-committee-chair@cern.ch.

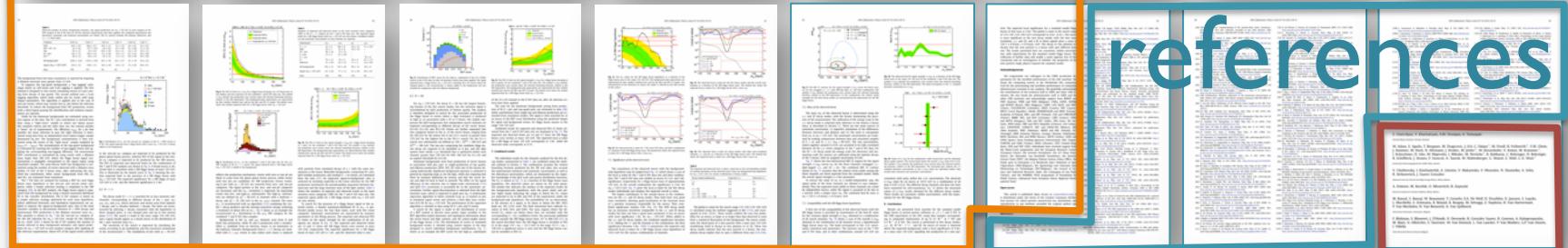
m_H should be smaller than $\sim 1 \text{ TeV}$, while precision electroweak measurements imply that $m_H < 152 \text{ GeV}$ at 95% confidence level (CL) [14]. Over the past twenty years, direct searches for the Higgs boson have been carried out at the LEP collider, leading to a lower bound of $m_H > 114.4 \text{ GeV}$ at 95% CL [15], and at the Tevatron proton–antiproton collider, excluding the mass range 162–166 GeV at 95% CL [16] and detecting an excess of events, recently reported in [17–19], in the range 120–135 GeV.

The discovery or exclusion of the SM Higgs boson is one of the primary scientific goals of the Large Hadron Collider (LHC) [20]. Previous direct searches at the LHC were based on data from proton–proton collisions corresponding to an integrated luminosity of 5 fb^{-1} collected at a centre-of-mass energy $\sqrt{s} = 7 \text{ TeV}$. The CMS experiment excluded at 95% CL a range of masses from 127 to 600 GeV [21]. The ATLAS experiment excluded at 95% CL the ranges 111.4–116.6, 119.4–122.1 and 129.2–151 GeV [22]. Within the remaining allowed mass region, an excess of events near 125 GeV was reported by both experiments. In 2012 the proton–proton centre-of-mass energy was increased to 8 TeV and by the end of June an additional integrated luminosity of more than 5 fb^{-1} had been recorded by each of these experiments, thereby enhancing significantly the sensitivity of the search for the Higgs boson.

This letter reports the results of a search for the SM Higgs boson using samples collected by the CMS experiment, comprising data recorded at $\sqrt{s} = 7$ and 8 TeV. The search is performed in



article



references

2899 authors



The Nobel Prize in Physics 2013



Photo: A. Mahmoud

François Englert

Prize share: 1/2

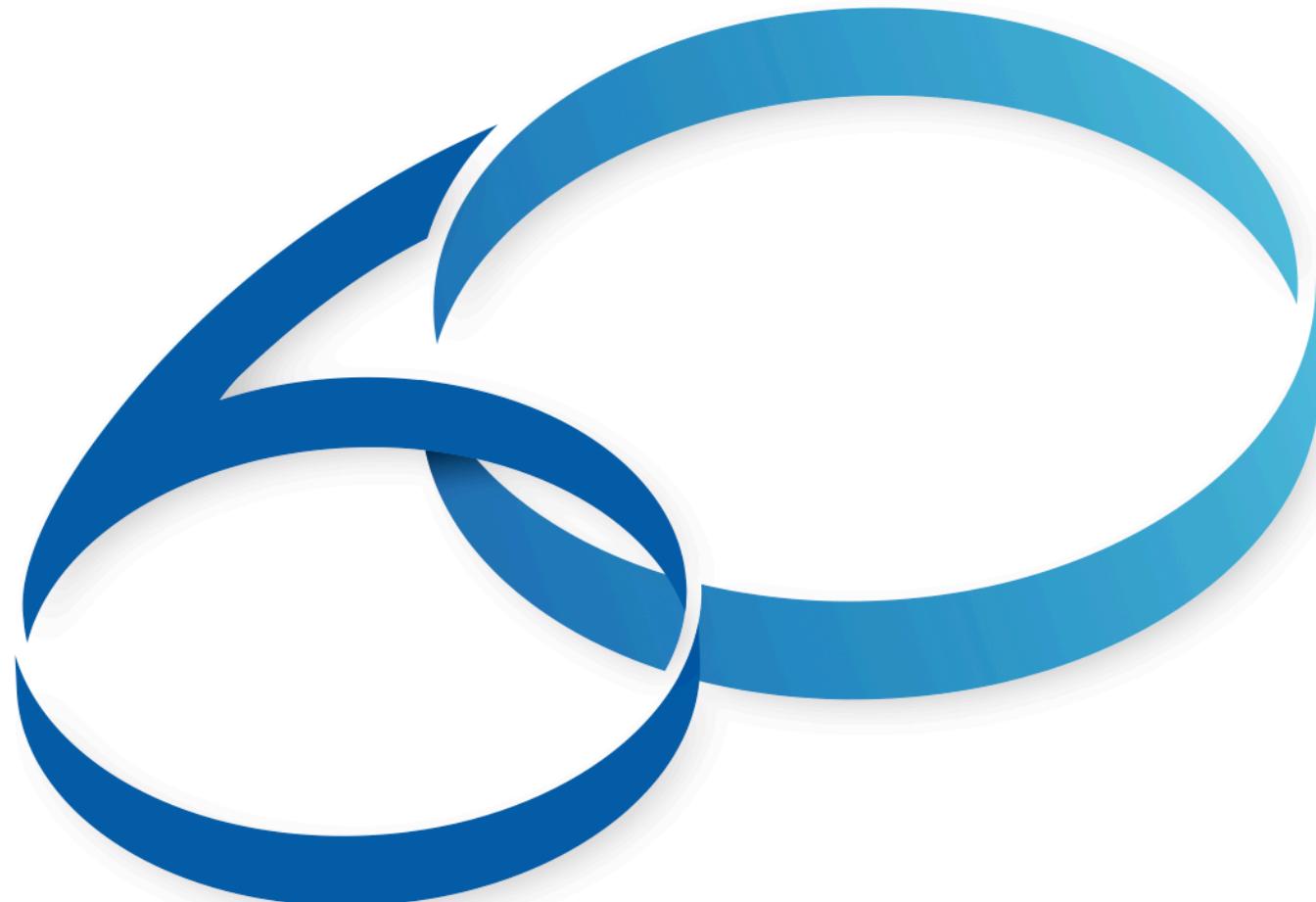


Photo: A. Mahmoud

Peter W. Higgs

Prize share: 1/2

The Nobel Prize in Physics 2013 was awarded jointly to François Englert and Peter W. Higgs *"for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider"*



YEARS/ANS **CERN**



*“... the results of its experimental and theoretical work
shall be published or otherwise made generally available”*

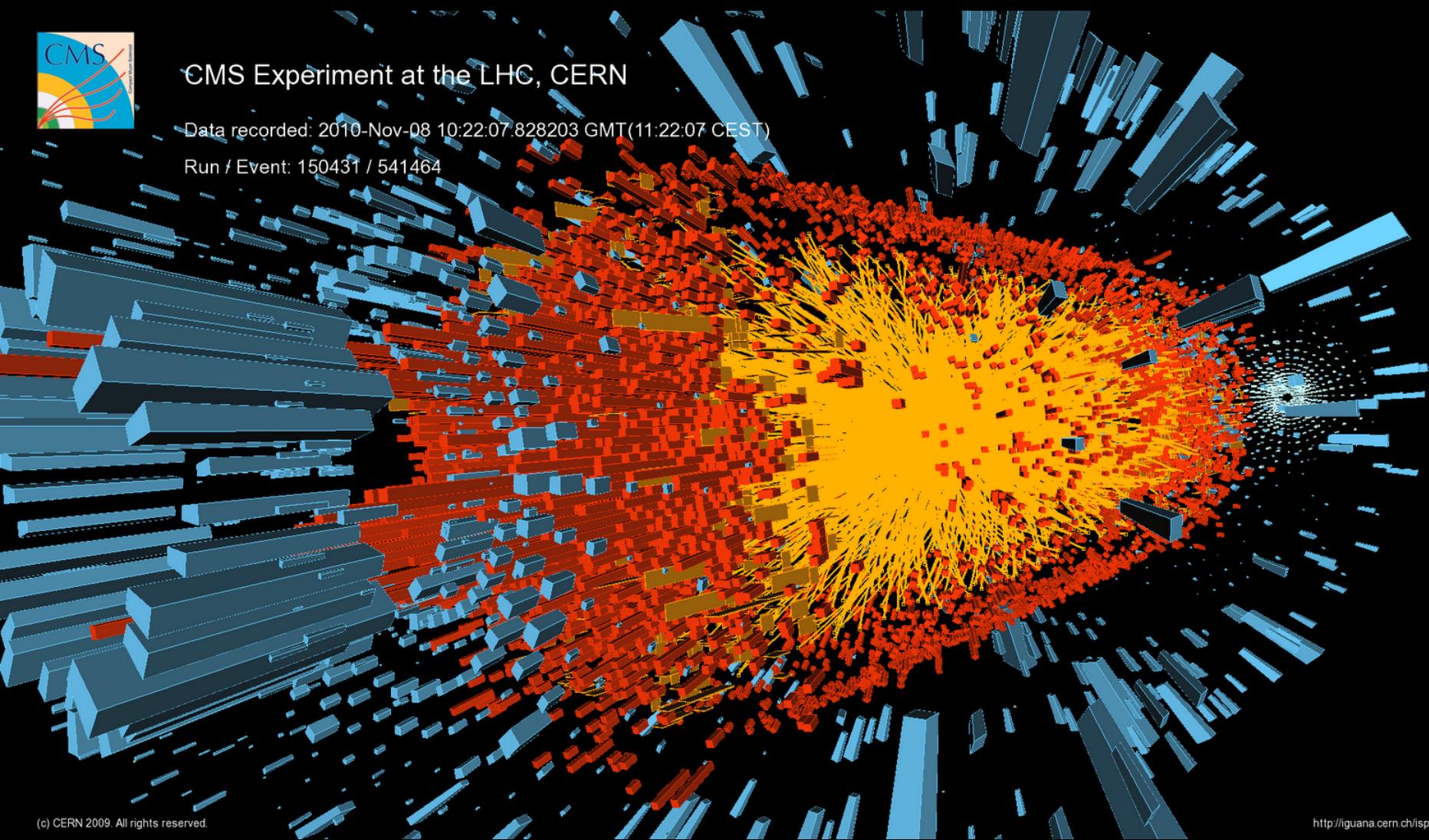
CERN Convention, 1953



CMS Experiment at the LHC, CERN

Data recorded: 2010-Nov-08 10:22:07.828203 GMT(11:22:07 CEST)

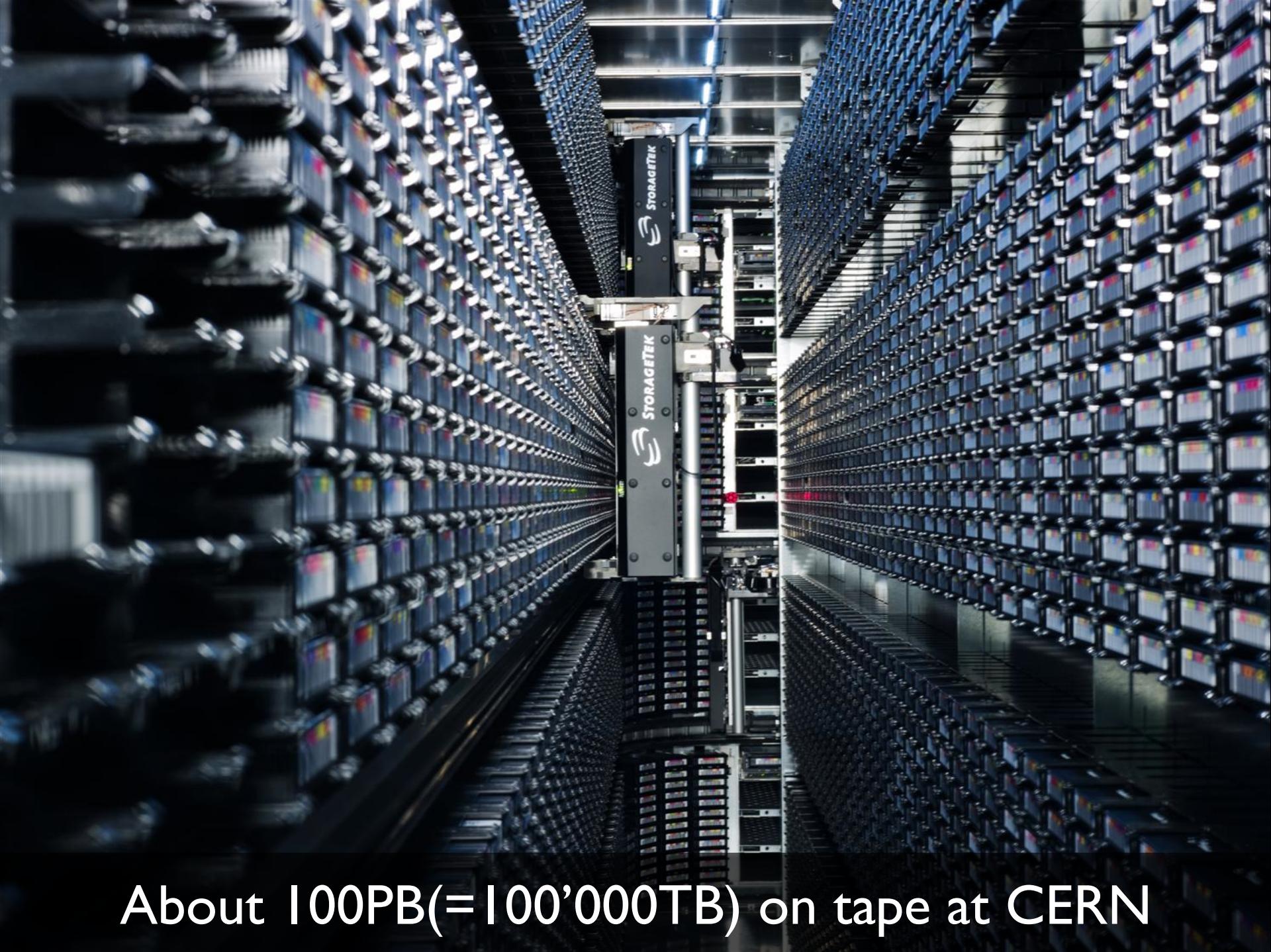
Run / Event: 150431 / 541464



(c) CERN 2009. All rights reserved.

<http://iguana.cern.ch/ispv>

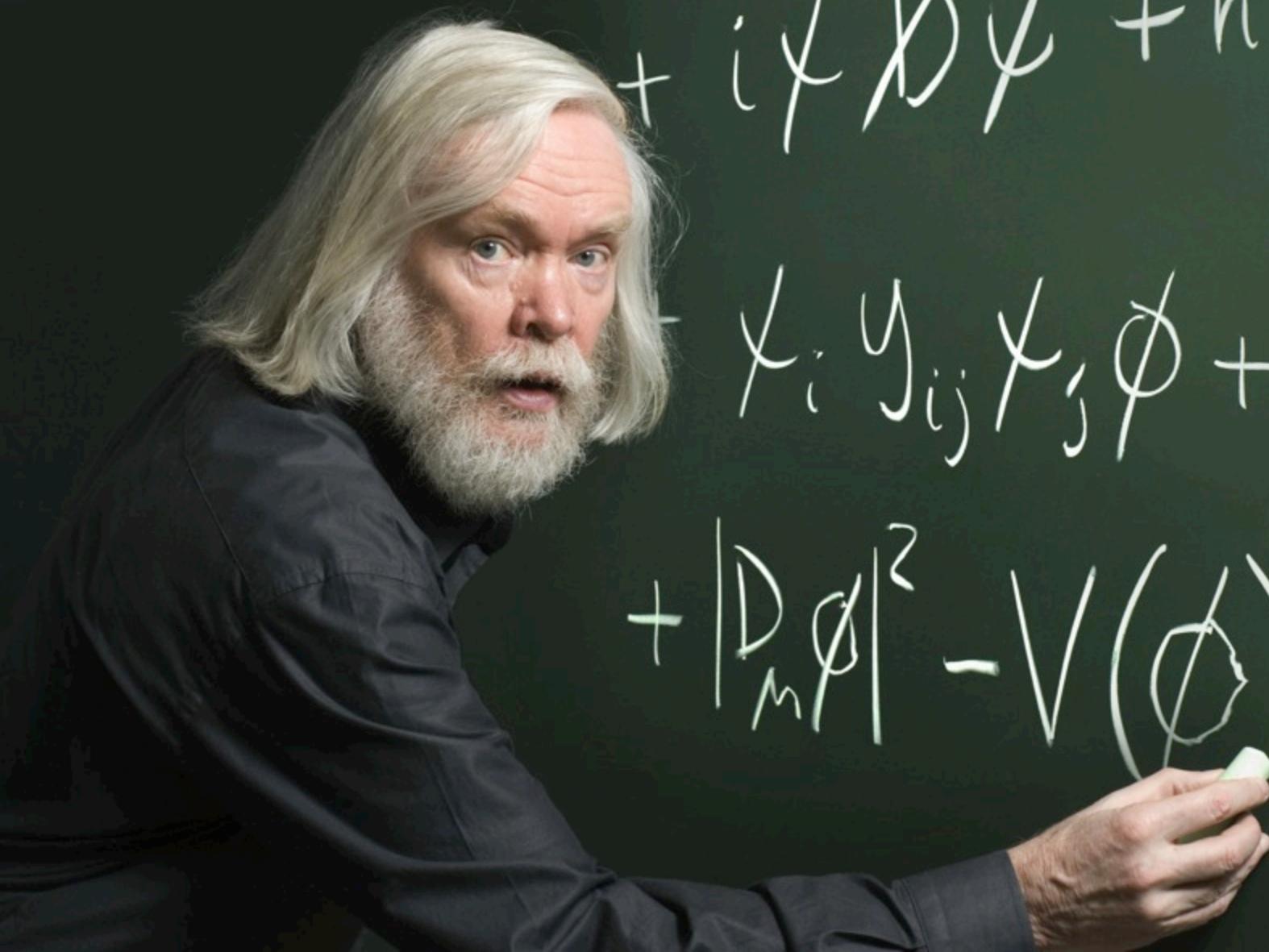
Typical LHC event (keep \sim 100 events/second)



About 100PB(=100'000TB) on tape at CERN

What does a theorist need?

$$\begin{aligned} & + i \mathcal{F} \mathcal{D} \psi + h.c. \\ & - \chi_i U_{ij} \chi_j \phi + h.c. \\ & + |D_m \phi|^2 - V(\phi) \end{aligned}$$



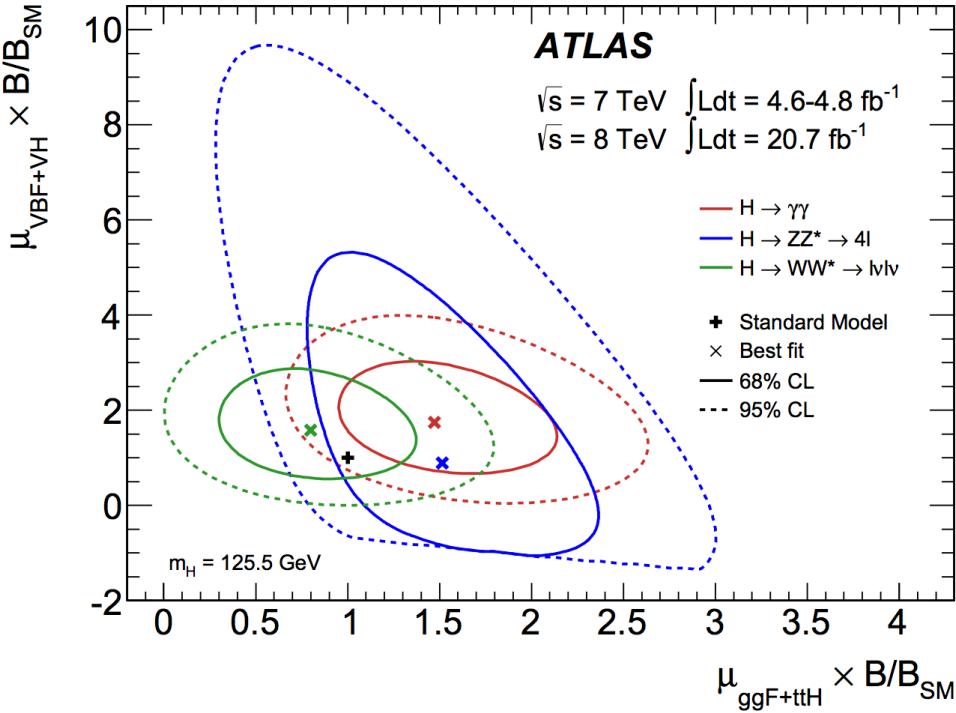


Figure 7: Likelihood contours for the $H \rightarrow \gamma\gamma$, $H \rightarrow ZZ^* \rightarrow 4\ell$ and $H \rightarrow WW^* \rightarrow \ell\nu\ell\nu$ channels in the $(\mu_{ggF+ttH} \times B/B_{SM}, \mu_{VBF+VH} \times B/B_{SM})$ plane for a Higgs boson mass $m_H = 125.5 \text{ GeV}$. The branching-ratio scale factors B/B_{SM} can *a priori* be different for the different final states. The sharp lower edge of the $H \rightarrow ZZ^* \rightarrow 4\ell$ contours is due to the small number of events in this channel and the requirement of a positive pdf. The best fits to the data (\times) and the 68% (full) and 95% (dashed) CL contours are indicated, as well as the SM expectation ($+$).

atlas_prodModes_ggFttH_VBFVH_4l.hep.dat

Path:HepData/ggFttH_VBFVH_4l
profiled Likelihood
x: #mu^f_{ggF+ttH}
y: #mu^f_{VBF+VH}
z: -2 ln (#Lambda)

x	y	z
1.3200000e-01	-1.48562500e+00	3.35528857e+01
1.9600000e-01	-1.48562500e+00	3.35528857e+01
2.6000000e-01	-1.48562500e+00	3.35528857e+01
3.2400000e-01	-1.48562500e+00	3.35528857e+01
3.8800000e-01	-1.48562500e+00	3.35528857e+01
4.5200000e-01	-1.48562500e+00	3.35528857e+01
5.1600000e-01	-1.48562500e+00	3.35528857e+01
5.8000000e-01	-1.48562500e+00	3.35528857e+01
6.4400000e-01	-1.48562500e+00	3.35528857e+01
7.0800000e-01	-1.48562500e+00	3.35528857e+01
7.7200000e-01	-1.48562500e+00	3.35528857e+01
8.3600000e-01	-1.48562500e+00	3.35528857e+01
9.0000000e-01	-1.48562500e+00	3.35528857e+01
9.6400000e-01	-1.48562500e+00	3.35528857e+01
1.0280000e+00	-1.48562500e+00	3.35528857e+01
1.0920000e+00	-1.48562500e+00	3.35528857e+01
1.1560000e+00	-1.48562500e+00	3.35528857e+01
1.2200000e+00	-1.48562500e+00	3.35528857e+01
1.2840000e+00	-1.48562500e+00	3.35528857e+01
1.3480000e+00	-1.48562500e+00	3.35528857e+01
1.4120000e+00	-1.48562500e+00	3.35528857e+01
1.4760000e+00	-1.48562500e+00	3.35528857e+01
1.5400000e+00	-1.48562500e+00	3.35528857e+01
1.6040000e+00	-1.48562500e+00	3.35528857e+01
1.6680000e+00	-1.48562500e+00	3.35528857e+01
1.7320000e+00	-1.48562500e+00	3.35528857e+01
1.7960000e+00	-1.48562500e+00	3.35528857e+01

-(DOS)--- atlas_prodModes_ggFttH_VBFVH_4l.hep.dat Top L1 (Fundamental)



Ask your friends?



Work together...



...to help sharing

HEP - INSPIRE-HEP

inspirehep.net

INSPIRE

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

HEP Search

High-Energy Physics Literature Database

Use "find " for SPIRES-style search ([other tips](#))

[Brief format](#) [Search](#) [Easy Search](#) [Advanced Search](#)

[find j "Phys.Rev.Lett.,105"](#) :: [more](#)

How to Search

SPIRES syntax is (mostly) supported (requires "find")

- find a richter, b and t quark and date > 1984
- find j phys.rev.,D50,1140 or j jhep,0903,112
- find eprint arxiv:1007.5048 (Note the plots available on the detailed record)
- find fulltext "quark-gluon plasma" (Note new "fulltext" operator)
- find a ellis and refersto a witten (Note "refersto")
- find a kane and citedby title SUSY and topcite 200+ (Note "citedby")

New techniques:

- 1985 richter quark multiplicity
- arXiv:1007.5048
- citedby:author:ellis -refersto:author:witten
- author:randall | author:sundrum cited:450->1350

Additional Help:

- [More search tips](#) and [full help](#)

INSPIRE UPDATES

See our blog at [blog.inspirehep.net](#) for updates on new features and other news. You can also follow us at [@inspirehep](#) on twitter. To send us feedback use feedback@inspirehep.net. The data in INSPIRE is updated daily and should be the same as what is available from SPIRES, or better. To correct data in INSPIRE (or SPIRES), let us know at help@inspirehep.net.

HEP

- [Additions](#)
- [Corrections](#)
- [Search Tips](#)
- [FAQ](#)
- [Topcites: annual](#) | [recent](#)
- [Reviews](#)
- [HEP Citessummary](#)
- [Tools](#)

INSPIRE

- [About INSPIRE](#)
- [INSPIRE Help Central](#)
- [Blog](#)
- [Twitter](#)
- feedback@inspirehep.net

RESOURCES

- [ADS](#)
- [arXiv](#)
- [HepData](#)
- [PDG](#)
- [PDG review of online resources](#)

INSPIRE NEWS

- 2013-08-12 Discover popular papers or a new job! Check our blog for our latest improvements on INSPIRE:
<http://t.co/DgoNXvmtoT>
- 2013-08-05 Dates and full-text search now explained! Check our blog: <http://t.co/4RZaR2qRgf>
- 2013-07-29 Author search is easier than you think! Check our blog

1m records, half a century of HEP

500k Open Access papers

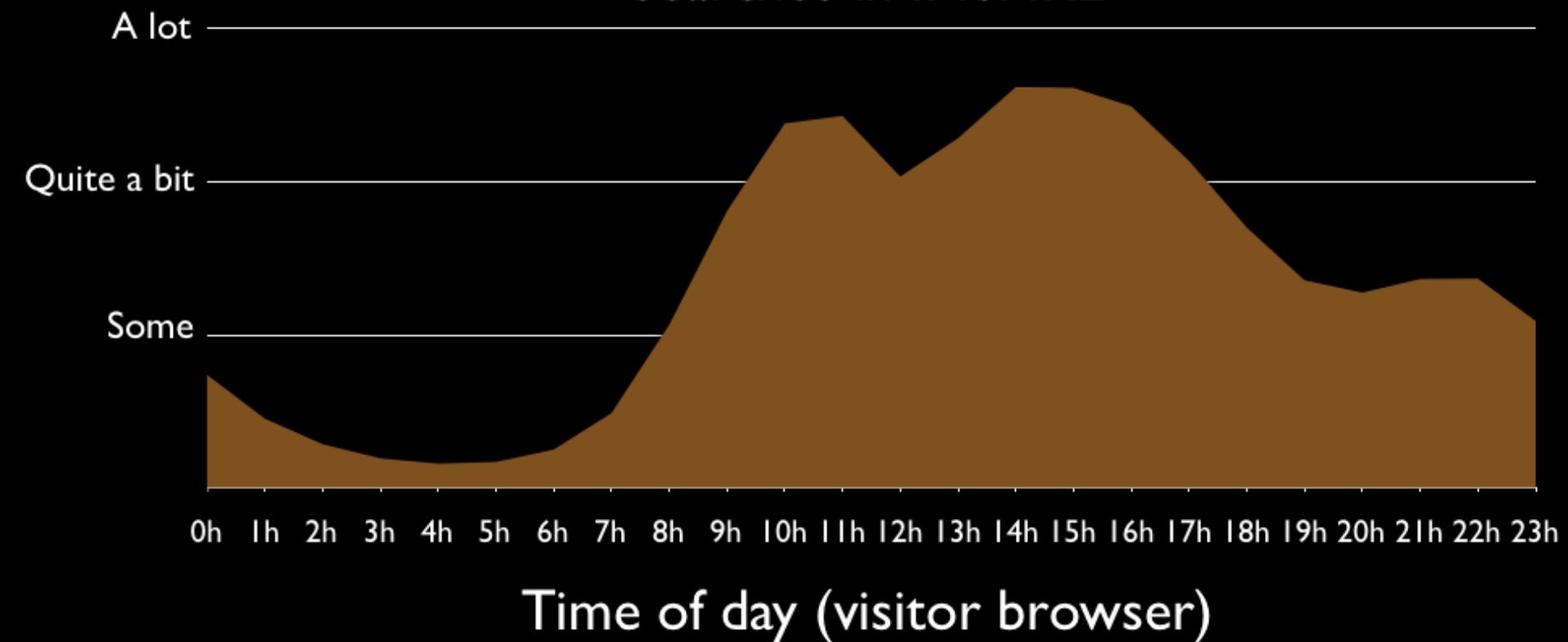
20m citation triples

>20k disambiguated authors

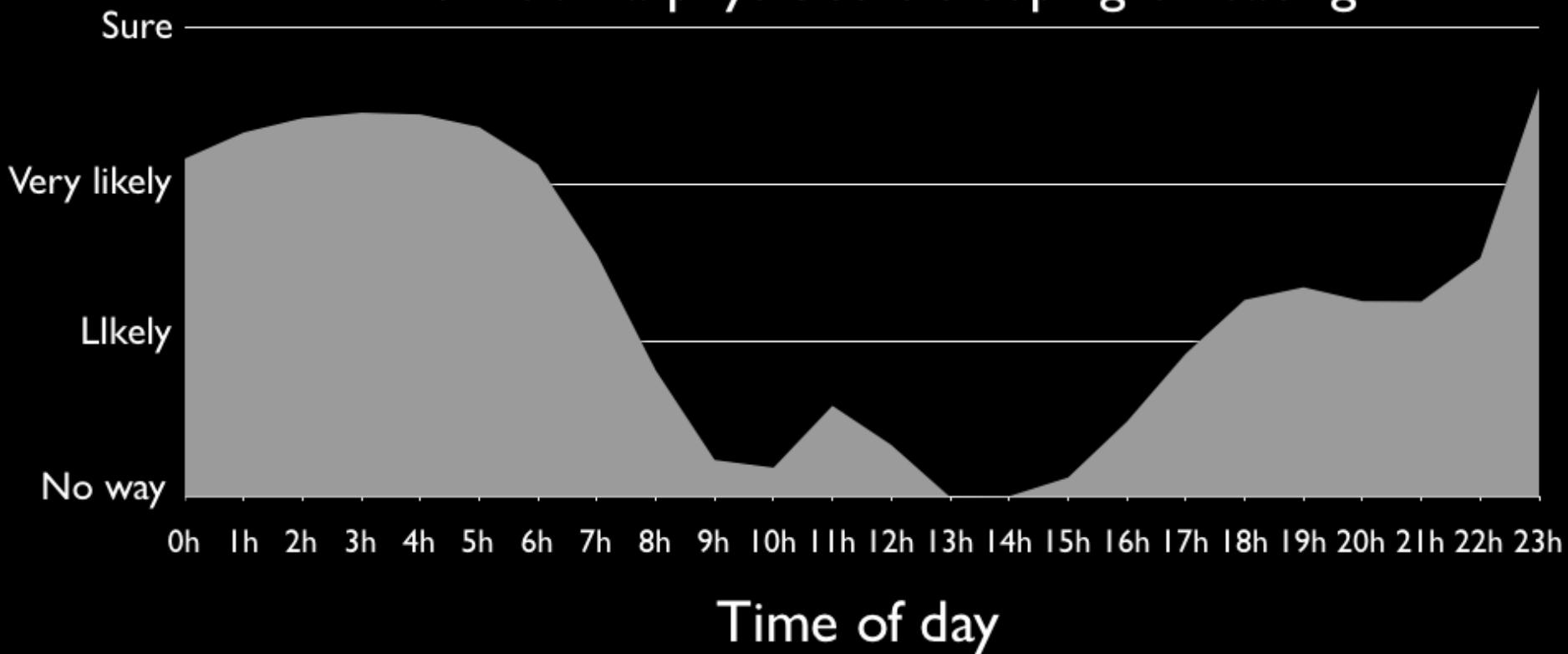
>50k users (all HEP folks)

>2 searches/second

Searches in INSPIRE



Likelihood a physicist is sleeping or eating



Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

ATLAS Collaboration (Georges Aad (Freiburg U.) et al.) [Show all 2923 authors](#)

Jul 4, 2013 - 32 pages

Phys.Lett. B726 (2013) 88-119
(2013)
DOI: [10.1016/j.physletb.2013.08.010](https://doi.org/10.1016/j.physletb.2013.08.010)
CERN-PH-EP-2013-103
e-Print: [arXiv:1307.1427 \[hep-ex\]](https://arxiv.org/abs/1307.1427) | [PDF](#)
Experiment: [CERN-LHC-ATLAS](#)

Abstract (arXiv)
Measurements are presented of production properties and couplings of the recently discovered Higgs boson using the decays into boson pairs, $H \rightarrow \gamma\gamma$, $H \rightarrow ZZ^* \rightarrow 4\ell$ leptons and $H \rightarrow WW \rightarrow 2\ell + 2\nu$. The results are based on the complete pp collision data sample recorded by the ATLAS experiment at the CERN Large Hadron Collider at centre-of-mass energies of 7 TeV and 8 TeV, corresponding to an integrated luminosity of about 25/fb. Evidence for Higgs boson production through vector-boson fusion is reported. Results of combined fits probing Higgs boson couplings to fermions and bosons, as well as anomalous contributions to loop-induced production and decay modes, are presented. All measurements are consistent with expectations for the Standard Model Higgs boson.

Note: *Temporary entry*

Note: 23 pages plus author list (38 pages total), 13 figures, 10 tables, submitted to Physics Letters B
All figures including auxiliary figures are available at
<http://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/HIGG-2013-02/>

Keyword(s): INSPIRE: [Higgs particle: hadroproduction](#) | [Higgs particle: coupling](#) | [vector boson: fusion](#) | [p p: scattering](#) | [CERN LHC Coll](#) | [ATLAS](#) | [Higgs particle: decay modes](#) | [vector boson: pair production](#) | [vector boson: leptonic decay](#) | [mass spectrum: two-photon](#) | [mass spectrum: \(4lepton\)](#) | [dilepton: mass spectrum](#) | [transverse energy: missing-energy](#) | [Higgs particle: mass](#) | [experimental results](#) | [7000: 8000 GeV-cms](#)

Measurements of Higgs bo

inspirehep.net/record/1241574#

INSPIRE HEP

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information References (121) Citations (239) Files Plots Data

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

ATLAS Collaboration ([Georges Aad](#) (Freiburg U.) , [Tatevik Abajyan](#) (Bonn U.) , [Brad Abbott](#) (Oklahoma U.) , [Jalal Abdallah](#) (Barcelona, IFAE) , [Samah Abdel Khalek](#) (Orsay, LAL) , [Ovsat Abdinov](#) (Baku, Inst. Phys.) , [Rosemarie Aben](#) (FOM, Amsterdam) , [Babak Abi](#) (Oklahoma State U.) , [Maris Abolins](#) (Michigan State U.) , [Ossama AbouZeid](#) (Toronto U.) , [Halina Abramowicz](#) (Tel Aviv U.) , [Henso Abreu](#) (IRFU, Saclay) , [Yiming Abulaiti](#) (Stockholm U., OKC & Stockholm U.) , [Bobby Samir Acharya](#) (King's Coll. London & ICTP, Trieste & INFN, Udine) , [Leszek Adamczyk](#) (AGH-UST, Cracow) , [David Adams](#) (Brookhaven) , [Tetteh Addy](#) (Hampton U.) , [Jahred Adelman](#) (Yale U.) , [Stefanie Adomeit](#) (Munich U.) , [Tim Adye](#) (Rutherford) , [Scott Aefsky](#) (Brandeis U.) , [Juan Antonio Aguilar-Saavedra](#) (LIP, Lisbon & CAFPE, Granada) , [Marco Agustoni](#) (Bern U., LHEP) , [Steven Ahlen](#) (Boston U.) , [Ashfaq Ahmad](#) (SUNY, Stony Brook) , [Mahsana Ahsan](#) (Southern Methodist U.) , [Giulio Aielli](#) (Rome U., Tor Vergata & INFN, Rome) , [Torsten Paul Ake Åkesson](#) (Lund U.) , [Ginga Akimoto](#) (ICTP, Trieste) , [Andrei Akimov](#) (Lebedev Inst.) , [Muhammad Aftab Alam](#) (Royal Holloway, U. of London) , [Justin Albert](#) (Victoria U.) , [Solveig Albrand](#) (LPSC, Grenoble) , [Maria Josefina Alconada Verzini](#) (La Plata U.) , [Martin Alekса](#) (CERN) , [Igor Aleksandrov](#) (Dubna, JINR) , [Franco Alessandria](#) (INFN, Milan) , [Calin Alexa](#) (Bucharest, IFIN-HH) , [Gideon Alexander](#) (Tel Aviv U.) , [Gauthier Alexandre](#) (Geneva U.) , [Theodoros Alexopoulos](#) (Natl. Tech. U., Athens) , [Muhammad Alhroob](#) (Udine U. & INFN, Udine) , [Malik Aliev](#) (Humboldt U., Berlin) , [Gianluca Alimonti](#) (INFN, Milan) , [Lion Alio](#) (Marseille, CPPM) , [John Alison](#) (Chicago U., EFI) , [Benedict Allbrooke](#) (Birmingham U.) , [Lee John Allison](#) (Lancaster U.) , [Phillip Allport](#) (Liverpool U.) , [Sarah Allwood-Spiers](#) (Glasgow U.) , [John Almond](#) (Manchester U.) , [Alberto Aloisio](#) (Naples U. & INFN, Naples) , [Raz Alon](#) (Weizmann Inst.) , [Alejandro Alonso](#) (Bohr Inst.) , [Francisco Alonso](#) (La Plata U.) , [Andrew David Altheimer](#) (Nevis Labs, Columbia U.) , [Barbara Alvarez Gonzalez](#) (Michigan State U.) , [Mariagrazia Alviggi](#) (Naples U. & INFN, Naples) , [Katsuya Amako](#) (KEK, Tsukuba) , [Yara Amaral Coutinho](#) (Rio de Janeiro Federal U.) , [Christoph Ameling](#) (Brandeis U.) , [Vladimir Ammosov](#) (Serpukhov, IHEP) , [Susana Patricia Amor Dos Santos](#) (LIP, Lisbon) , [Antonio Amorim](#) (Lisbon U., CFNUL & LIP, Lisbon) , [Simone Amoroso](#) (Freiburg U.) , [Nir Amram](#) (Tel Aviv U.) , [Christos Anastopoulos](#) (CERN) , [Lucian Stefan Ancu](#) (Bern U., LHEP) , [Nansi Andari](#) (CERN) , [Timothy Andeen](#) (Nevis Labs, Columbia U.) , [Christoph Falk Anders](#) (Heidelberg U.) , [Gabriel Anders](#) (Kirchhoff Inst. Phys.) , [Kelby Anderson](#) (Chicago U., EFI) , [Attilio Andreazza](#) (Milan U. & INFN, Milan) , [George Victor Andrei](#) (Kirchhoff Inst. Phys.) , [Xabier Anduaga](#) (La Plata U.) , [Stylianos Angelidakis](#) (Athens U.) , [Philipp Anger](#) (Dresden, Tech. U.) , [Aaron Angerami](#) (Nevis Labs, Columbia U.) , [Francis Anghinolfi](#) (CERN) , [Alexey Anisenkov](#) (Novosibirsk, IYF) , [Nuno Anjos](#) (LIP, Lisbon) , [Alberto Annovi](#) (Frascati) , [Ariadni Antonaki](#) (Athens U.) , [Mario Antonelli](#) (Frascati) , [Alexey Antonov](#) (Moscow Phys. Eng. Inst.) , [Jaroslav Antos](#) (Kosice, IEF) , [Fabio Anulli](#) (INFN, Rome) , [Masato Aoki](#) (Nagoya U.) , [Ludovica Aperio Bella](#) (Birmingham U.) , [Rudi Apolle](#) (Rutherford & Oxford U.) , [Giorgi Arabidze](#) (Michigan State U.) , [Ignacio Aracena](#) (SLAC) , [Yasuo Arai](#) (KEK, Tsukuba) , [Ayana Arce](#) (Duke U.) , [Samir Arfaoui](#) (SUNY, Stony Brook) , [Jean-Francois Arguin](#) (Montreal U.) , [Spyridon Argyropoulos](#) (DESY) , [Engin Arik](#) , [Metin Arik](#) (Bogazici U.) , [Aaron James Armbruster](#) (Michigan U.) , [Olivier Arnaez](#) (Mainz U.) , [Vanessa Arnal](#) (Madrid, Autonoma U.) , [Ozan Arslan](#) (Bonn U.) , [Andrei Artamonov](#) (Moscow, ITEP) , [Giacomo Artoni](#) (Rome U. & INFN, Rome) , [Shoji Asai](#) (ICTP, Trieste) , [Nedaa Asbah](#) (Montreal U.) , [Stefan Ask](#) (Cambridge U.) , [Barbro Åsman](#) (Stockholm U., OKC & Stockholm U.) , [Lily Asquith](#) (Argonne) , [Ketevi Assamagan](#) (Brookhaven) , [Robert Astalos](#) (Comenius U.) , [Alan Astbury](#) (Victoria U.) , [Markus Atkinson](#) (Illinois U., Urbana) , [Naim Bora Atlay](#)

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC - ATLAS Collaboration (Aad, Georges et al.) Phys.Lett. B726 (2013) 88-119 arXiv:1307.1427 [hep-ex] CERN-PH-EP-2013-103

Cited by: 239 records

(104) [Measurement of the properties of a Higgs boson in the four-lepton final state](#) - CMS Collaboration (Chatrchyan, Serguei et al.) Phys.Rev. D89 (2014) 092007 arXiv:1312.5353 [hep-ex] CMS-HIG-13-002, CERN-PH-EP-2013-220

(75) [Working Group Report: Higgs Boson](#) - Dawson, Sally et al. arXiv:1310.8361 [hep-ex] FERMILAB-CONF-13-671-T

(71) [Search for the bb decay of the Standard Model Higgs boson in associated W/ZH production with the ATLAS detector](#) - The ATLAS collaboration ATLAS-CONF-2013-079, ATLAS-COM-CONF-2013-080

(61) [Projected Performance of an Upgraded CMS Detector at the LHC and HL-LHC: Contribution to the Snowmass Process](#) - CMS Collaboration arXiv:1307.7135 CMS-NOTE-13-002

(60) [Measurement of Higgs boson production and properties in the WW decay channel with leptonic final states](#) - CMS Collaboration (Chatrchyan, Serguei et al.) JHEP 1401 (2014) 096 arXiv:1312.1129 [hep-ex] CMS-HIG-13-023, CERN-PH-EP-2013-221

[more](#)

.. of which self-citations: 15 records

(46) [Physics at a High-Luminosity LHC with ATLAS](#) - ATLAS Collaboration arXiv:1307.7292 [hep-ex] ATL-PHYS-PUB-2013-007

(41) [Measurement of the Higgs boson mass from the \\$H \rightarrow \gamma\gamma\\$ and \\$H \rightarrow ZZ^{\ast} \rightarrow 4\ell\\$ channels with the ATLAS detector using 25 fb\\$^{-1}\\$ of \\$pp\\$ collision data](#) - ATLAS Collaboration (Aad, Georges et al.) Phys.Rev. D90 (2014) 052004 arXiv:1406.3827 [hep-ex] CERN-PH-EP-2014-122

(34) [Search for Invisible Decays of a Higgs Boson Produced in Association with a Z Boson in ATLAS](#) - ATLAS Collaboration (Aad, Georges et al.) Phys.Rev.Lett. 112 (2014) 201802 arXiv:1402.3244 [hep-ex] CERN-PH-EP-2013-210

(15) [Search for Higgs boson decays to a photon and a Z boson in pp collisions at \\$\sqrt{s}=7\\$ and 8 TeV with the ATLAS detector](#) - ATLAS Collaboration (Aad, Georges et al.) Phys.Lett. B732 (2014) 8-27 arXiv:1402.3051 [hep-ex] CERN-PH-EP-2014-006

(13) [Search for top quark decays \\$t \rightarrow qH\\$ with \\$H \rightarrow \gamma\gamma\\$ using the ATLAS detector](#) - ATLAS Collaboration (Aad, Georges et al.) JHEP 1406 (2014) 008 arXiv:1403.6293 [hep-ex] CERN-PH-EP-2014-036

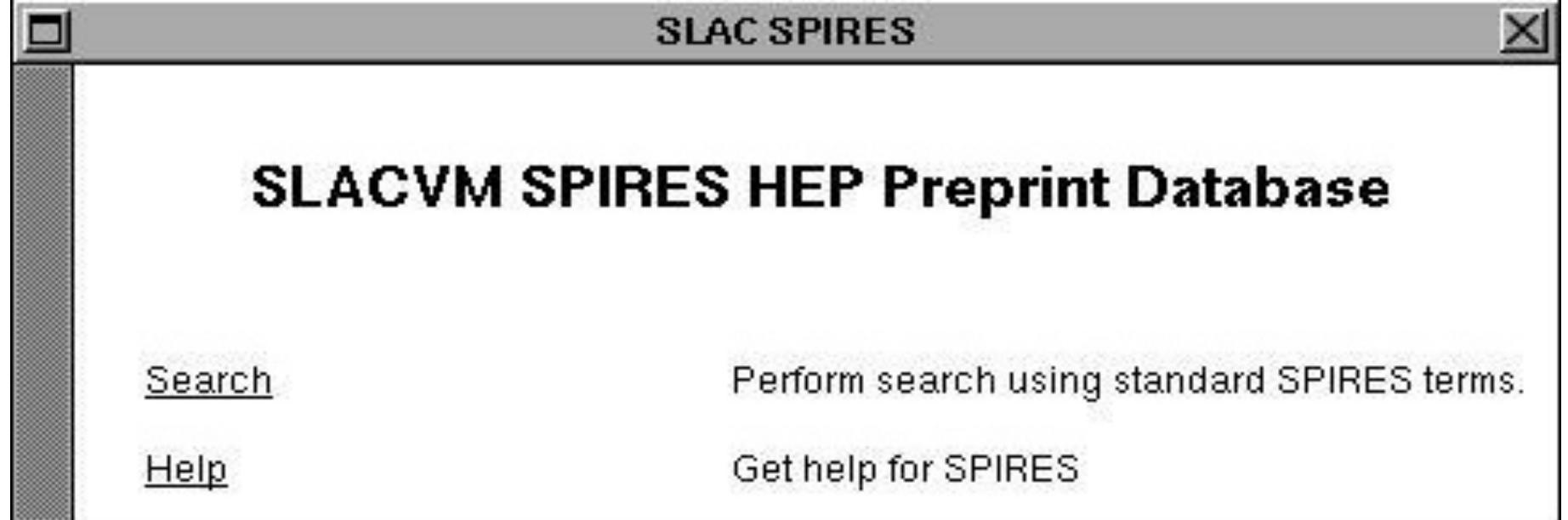
Co-cited with: 7374 records

(197) [Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC](#) - ATLAS Collaboration (Aad, Georges et al.) Phys.Lett. B716 (2012) 1-29 arXiv:1207.7214 [hep-ex] CERN-PH-EP-2012-218

(194) [Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC](#) - CMS Collaboration (Chatrchyan, Serguei et al.) Phys.Lett. B716 (2012) 30-61 arXiv:1207.7235 [hep-ex] CMS-HIG-12-028, CERN-PH-EP-2012-220

(105) [Evidence for the spin-0 nature of the Higgs boson using ATLAS data](#) - ATLAS Collaboration (Aad, Georges et al.) Phys.Lett. B726 (2013) 120-144 arXiv:1307.1432 [hep-ex] CERN-PH-EP-2013-102

(84) [Combination of standard model Higgs boson searches and measurements of the properties of the new boson with a mass near 125 GeV](#) - CMS Collaboration CMS-PAS-HIG-13-005



SLAC SPIRES

SLACVM SPIRES HEP Preprint Database

[Search](#)

Perform search using standard SPIRES terms.

[Help](#)

Get help for SPIRES

INSPIRE predecessor: first web site in the U.S.
(and first database on the web)

DATE: FRI, 13 DEC 91 17:55:53 GMT+0100
FROM: TIMBL@NXOC01.CERN.CH (TIM BERNERS-LEE)
SUBJECT: WWW TO SPIRES ON SLACUM - EXPERIMENTAL
TO: WWW-INTEREST@CERNVAX.CERN.CH, WWW-TALK@CERNVAX.CERN.CH

THERE IS AN EXPERIMENTAL W3 SERVER FOR THE SPIRES **HIGH ENERGY PHYSICS PREPRINT DATABASE**, THANKS TO TERRY HUNG, PAUL KUNZ AND LOUISE ADDIS OF SLAC. IT'S ONLY JUST BEEN PUT UP, SO DON'T EXPECT PERFECTION. WITH THE W3 LINE MODE BROWSER, FOLLOW A LINK TO IT FROM OUR HOME PAGE,

- TIM

PAUL KUNZ WROTE A FEW DAYS AGO:-

"THE SLAC LIBRARY MAINTAINER OF SPIRES DATABASES, LOUISE ADDIS, IS ABSOLUTELY DELIGHTED. SHE WILL ASK FOR A PERMANENT VM SERVICE MACHINE AND FINISH OFF THE POLISHING. THINGS ARE REALLY MOVING NOW."

Measurements Measurements Model_CGaCGI Measurements Data from Figu Data from Figu

inspirehep.net/record/1241574

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information References (121) Citations (239) Files Plots Data

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

ATLAS Collaboration (Georges Aad (Freiburg U.) et al.) [Show all 2923 authors](#)

Jul 4, 2013 - 32 pages

Phys.Lett. B726 (2013) 88-119
(2013)
DOI: [10.1016/j.physletb.2013.08.010](https://doi.org/10.1016/j.physletb.2013.08.010)
CERN-PH-EP-2013-103
e-Print: [arXiv:1307.1427 \[hep-ex\]](https://arxiv.org/abs/1307.1427) | PDF
Experiment: [CERN-LHC-ATLAS](#)

Abstract (arXiv)

Measurements are presented of production properties and couplings of the recently discovered Higgs boson using the decays into boson pairs, $H \rightarrow \gamma\gamma$, $H \rightarrow ZZ^* \rightarrow 4\text{ leptons}$ and $H \rightarrow WW \rightarrow 2\text{ leptons} + 2\text{ neutrinos}$. The results are based on the complete pp collision data sample recorded by the ATLAS experiment at the CERN Large Hadron Collider at centre-of-mass energies of 7 TeV and 8 TeV, corresponding to an integrated luminosity of about 25/fb. Evidence for Higgs boson production through vector-boson fusion is reported. Results of combined fits probing Higgs boson couplings to fermions and bosons, as well as anomalous contributions to loop-induced production and decay modes, are presented. All measurements are consistent with expectations for the Standard Model Higgs boson.

Note: *Temporary entry*

Note: 23 pages plus author list (38 pages total), 13 figures, 10 tables, submitted to Physics Letters B
All figures including auxiliary figures are available at
<http://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/HIGG-2013-02/>

Keyword(s): INSPIRE: [Higgs particle: hadroproduction](#) | [Higgs particle: coupling](#) | [vector boson: fusion](#) | [p p: scattering](#) | [CERN LHC Coll](#) | [ATLAS](#) | [Higgs particle: decay modes](#) | [vector boson: pair production](#) | [vector boson: leptonic decay](#) | [mass spectrum: two-photon](#) | [mass spectrum: \(4lepton\)](#) | [dilepton: mass spectrum](#) | [transverse energy: missing-energy](#) | [Higgs particle: mass](#) | [experimental results](#) | [7000: 8000 GeV-cms](#)

Measurements Measurements Model_CGaCGI Measurements Data from Figu Data from Figu

inspirehep.net/record/1241574/data

INSPIRE HEP

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information References Citations Files Plots Data

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC - ATLAS Collaboration (Aad, Georges et al.) Phys.Lett. B726 (2013) 88-119
arXiv:1307.1427 [hep-ex] CERN-PH-EP-2013-103

THIS DATA COMES FROM DURHAM HEPDATA PROJECT

SUMMARY:

CERN-LHC. Measurements of the cross-section times branching ratio for a standard model-like Higgs boson. The results are based on the complete pp collision data sample recorded by the ATLAS experiment at the CERN Large Hadron Collider at centre-of-mass energies of 7 TeV and 8 TeV, corresponding to an integrated luminosity of about 25 fb⁻¹. The following table gives links to the -2ln(likelihood) values for the three channels in the ($\mu_{\text{ggF}} + \text{tth}^* \text{B}/\text{BSM}$, $\mu_{\text{VBF}} + \text{VH}^* \text{B}/\text{BSM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV. The display link shows the data as a 2-D grid and the files are the originals from the ATLAS collaboration.

DATASETS:

Description: -2 log Likelihood for the $H \rightarrow \gamma\gamma$ channel in the ($\mu_{\text{ggF}} + \text{tth}^* \text{B}/\text{BSM}$, $\mu_{\text{VBF}} + \text{VH}^* \text{B}/\text{BSM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV.
[Go to the record](#)

Description: -2 log Likelihood for the $H \rightarrow ZZ^* \rightarrow 4l$ channel in the ($\mu_{\text{ggF}} + \text{tth}^* \text{B}/\text{BSM}$, $\mu_{\text{VBF}} + \text{VH}^* \text{B}/\text{BSM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV.
[Go to the record](#)

Description: -2 log Likelihood for the $H \rightarrow WW^* \rightarrow llvv$ channel in the ($\mu_{\text{ggF}} + \text{tth}^* \text{B}/\text{BSM}$, $\mu_{\text{VBF}} + \text{VH}^* \text{B}/\text{BSM}$) plane for a Higgs boson mass $m_H = 125.5$ GeV.

Measurements Measurements Model_CGaCGI Measurements Data from Figu Data from Figu

inspirehep.net/record/1253647

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information Citations (5) Files

Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

ATLAS Collaboration (Aad, Georges (Freiburg U.) [...] [Show all 2923 authors](#)

Cite as: ATLAS Collaboration (2013) HepData, <http://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K>

Description: -2 log Likelihood for the $H \rightarrow ZZ^* \rightarrow 4l$ channel in the ($\mu_{ggF+ttH} * B/BSM$, $\mu_{VBF+VH} * B/BSM$) plane for a Higgs boson mass $m_H = 125.5$ GeV.

Preview not available

Note: * Temporary entry *

This dataset complements the following publication:
[Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC](#)

Record added 2013-09-11, last modified 2013-12-16

Export
[BibTeX](#), [EndNote](#), [LaTeX\(US\)](#), [LaTeX\(EU\)](#),
[Harvmac](#), [MARC](#), [MARCXML](#), [NLM](#), [DC](#)

atlas_prodModes_ggFttH_VBFVH_4l.hep.dat

Path:HepData/ggFttH_VBFVH_4l
profiled Likelihood
x: #mu^f_{ggF+ttH}
y: #mu^f_{VBF+VH}
z: -2 ln (#Lambda)

x	y	z
1.3200000e-01	-1.48562500e+00	3.35528857e+01
1.9600000e-01	-1.48562500e+00	3.35528857e+01
2.6000000e-01	-1.48562500e+00	3.35528857e+01
3.2400000e-01	-1.48562500e+00	3.35528857e+01
3.8800000e-01	-1.48562500e+00	3.35528857e+01
4.5200000e-01	-1.48562500e+00	3.35528857e+01
5.1600000e-01	-1.48562500e+00	3.35528857e+01
5.8000000e-01	-1.48562500e+00	3.35528857e+01
6.4400000e-01	-1.48562500e+00	3.35528857e+01
7.0800000e-01	-1.48562500e+00	3.35528857e+01
7.7200000e-01	-1.48562500e+00	3.35528857e+01
8.3600000e-01	-1.48562500e+00	3.35528857e+01
9.0000000e-01	-1.48562500e+00	3.35528857e+01
9.6400000e-01	-1.48562500e+00	3.35528857e+01
1.0280000e+00	-1.48562500e+00	3.35528857e+01
1.0920000e+00	-1.48562500e+00	3.35528857e+01
1.1560000e+00	-1.48562500e+00	3.35528857e+01
1.2200000e+00	-1.48562500e+00	3.35528857e+01
1.2840000e+00	-1.48562500e+00	3.35528857e+01
1.3480000e+00	-1.48562500e+00	3.35528857e+01
1.4120000e+00	-1.48562500e+00	3.35528857e+01
1.4760000e+00	-1.48562500e+00	3.35528857e+01
1.5400000e+00	-1.48562500e+00	3.35528857e+01
1.6040000e+00	-1.48562500e+00	3.35528857e+01
1.6680000e+00	-1.48562500e+00	3.35528857e+01
1.7320000e+00	-1.48562500e+00	3.35528857e+01
1.7960000e+00	-1.48562500e+00	3.35528857e+01

-(DOS)--- atlas_prodModes_ggFttH_VBFVH_4l.hep.dat Top L1 (Fundamental)



| September 17 at 10:42am ·  

Higgs likelihoods from ATLAS! For theorists, this is kind of like...wistfully asking for maybe a pony, and having someone give you a unicorn. Awesome.



[On the presentation of the LHC Higgs Results –
INSPIRE-HEP](#)

inspirehep.net
We put forth conclusions and suggestions regarding
the presentation of the LHC Higgs results that may

Measurements Measurements Model_CGaCGI Measurements Data from Figu Data from Figu

inspirehep.net/record/1253647/citations

INSPIRE HEP

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information Citations (5) Files

Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC - ATLAS Collaboration (for the collaboration)

Cited by: 5 records

(18) [On the presentation of the LHC Higgs Results](#) - Boudjema, F. et al. arXiv:1307.5865 [hep-ph]
(8) [Les Houches 2013: Physics at TeV Colliders: New Physics Working Group Report](#) - Brooijmans, G. et al. arXiv:1405.1617 [hep-ph]
(6) [A Novel Approach to Higgs Coupling Measurements](#) - Cranmer, Kyle et al. arXiv:1401.0080 [hep-ph]
(3) [Status of Higgs couplings after Run-1 of the LHC using Liliith 1.0](#) - Bernon, Jeremy et al. arXiv:1409.1588 [hep-ph]
(1) [Constraints on Higgs Couplings and Physics Beyond the Standard Model](#) - Belusca-Maito, Hermes et al. arXiv:1311.1113 [hep-ph]

[more](#)

.. of which self-citations: 0 records

Co-cited with: 620 records

(5) [Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC - ATLAS Collaboration \(Aad, Georges et al.\)](#) Phys.Lett. B726 (2013) 88-119 arXiv:1307.1427 [hep-ex] CERN-PH-EP-2013-103
(5) [Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC - ATLAS Collaboration \(Aad, Georges et al.\)](#) Phys.Lett. B716 (2012) 1-29 arXiv:1207.7214 [hep-ex] CERN-PH-EP-2012-218
(5) [Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC - CMS Collaboration \(Chatrchyan, Serguei et al.\)](#) Phys.Lett. B716 (2012) 30-61 arXiv:1207.7235 [hep-ex] CMS-HIG-12-028, CERN-PH-EP-2012-220
(4) [Combined coupling measurements of the Higgs-like boson with the ATLAS detector using up to \$25 \text{ fb}^{-1}\$ of proton-proton collision data - ATLAS Collaboration](#) ATLAS-CONF-2013-034, ATLAS-COM-CONF-2013-035
(3) [Higgs at last - Falkowski, Adam et al.](#) JHEP 1311 (2013) 111 arXiv:1303.1812 [hep-ph]

[more](#)

Citation Log:

[show](#)

HEP :: Search :: Help :: Terms of use :: Privacy policy
Powered by Invenio v1.1.2+
Problems/Questions to feedback@inspirehep.net

This site is also available in the following languages:
Български Català Deutsch Ελληνικά English Español Français Hrvatski Italiano 日本語 Norsk/Bokmål Polski Português Русский Slovensky Svenska 中文(简) 中文(繁)

References

1. G. Aad *et al.* [ATLAS Collaboration], Phys. Lett. B **716**, 1 (2012) [arXiv:1207.7214 [hep-ex]]. S. Chatrchyan *et al.* [CMS Collaboration], Phys. Lett. B **716**, 30 (2012) [arXiv:1207.7235 [hep-ex]].
2. B. Grzadkowski *et al.* , JHEP **1010**, 085 (2010) [arXiv:1008.4884 [hep-ph]],
3. R. Contino *et al.* JHEP **1307** (2013) 035 [arXiv:1303.3876 [hep-ph]].
4. A. Falkowski, F. Riva and A. Urbano, arXiv:1303.1812 [hep-ph].
5. G. Aad *et al.* [ATLAS Collaboration], Phys. Lett. B **726** (2013) 88 [arXiv:1307.1427 [hep-ex]].
6. ATLAS Collaboration, “Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC: $H \rightarrow \gamma\gamma$,” <http://doi.org/10.7484/INSPIREHEP.DATA.A78C.HK44>
7. ATLAS Collaboration, “Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC: $H \rightarrow ZZ^* \rightarrow 4\ell$,” <http://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K>
8. ATLAS Collaboration, “Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC: $H \rightarrow WW^* \rightarrow \ell\nu\ell\nu$,” <http://doi.org/10.7484/INSPIREHEP.DATA.26B4.TY5F>

Code as a Research Object x

mozillascience.github.io/code-research-object/

Code as a Research Object

Mozilla Science Lab

Get credit for your code!

Archive your GitHub code repository to figshare and receive a citable DOI.

[Start Now](#)

 **GitHub**
Edit, share and improve your code in a collaborative environment.

 **Mozilla Science Lab**
Tools to get your research on the web.

 **figshare**
Persistent, citable, long-term archiving for your research outputs.

Firefox

- 1 Install [the browser extension](#).
[Get a DOI](#)
- 2 While viewing a GitHub repository, press the "Get a DOI" button.

Or simply enter the URL of your GitHub repository here:

[fetch repository](#)

Other web browsers

- 1 Drag this button to your browser's bookmarks toolbar:
[Get a DOI](#)
- 2 In a GitHub repository, press your "Get a DOI" button.

svenkreiss/decouple · GitHub

GitHub, Inc. [US] https://github.com/svenkreiss/decouple

GitHub This repository Search Explore Features Enterprise Blog Sign up Sign in

svenkreiss / decouple

Star 2 Fork 2

Decouple and recouple.

44 commits 4 branches 9 releases 1 contributor

branch: master ↗ decouple / +

Add Attribution and License section.

 svenkreiss authored on Mar 6 latest commit 17acb0fd87

File	Description	Time Ago
Decouple	Pull the 'scripts' out of the Decouple module and in separate 'script...'	7 months ago
ModelGenerators	Pull the 'scripts' out of the Decouple module and in separate 'script...'	7 months ago
Plot	Update to work with latest version of PyROOTUtils (mostly the new way...)	7 months ago
output	Init public repo.	9 months ago
plots	Init public repo.	9 months ago
plotsForPaper	Finer scan of robustness. Larger font size for eta arrow plots.	8 months ago
scripts	Pull the 'scripts' out of the Decouple module and in separate 'script...'	7 months ago
.gitignore	Remove local LHCXSHiggsCouplings submodule and replace with dependenc...	8 months ago
LICENSE	First version to work with pip.	8 months ago
Makefile	Pull the 'scripts' out of the Decouple module and in separate 'script...'	7 months ago
README.md	Add Attribution and License section.	7 months ago
requirements.txt	New PyROOTUtils version with importlib dependency.	7 months ago

Code Issues 0 Pull Requests 0 Pulse Graphs

HTTPS clone URL <https://github.com/>

You can clone with [HTTPS](#) or [Subversion](#).

decouple software associat x

https://zenodo.org/record/8475?ln=en#.VCSPmymSybE

zenodo

Research. Shared.

Search Communities Browse ▾ Upload Get started ▾ Sign In Sign Up

07 March 2014 Software Open access

decouple software associated to arXiv:1401.0080

Cranmer, Kyle ; Kreiss, Sven
(show affiliations)

This repository contains the software implementation for our paper **A Novel Approach to Higgs Coupling Measurements** (Cranmer, Kreiss, Lopez-Val, Plehn), arXiv:1401.0080 [hep-ph]. It contains tools to apply the discussed methods to new models and contains a Makefile to recreate the plots in the paper.

A demo for the recoupling stage where the effective likelihood and template parametrization are readily provided is at [decoupledDemo](#).

Files		
Name	Date	Size
decouple-v1.2.5.zip	08 Mar 2014	266.6 kB

[Download](#)

Comments

Related content

1 Tweeted by 1
1 reader on Mendeley
0 readers on CiteULike

See more details

Available in

GitHub

Available in

INSPIRE HEP

Publication date:
07 March 2014
DOI:

decouple software associat x

inspirehep.net/record/1285408

Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Information Citations (0) Files

decouple software associated to arXiv:1401.0080

Cranmer, Kyle; Kreiss, Sven (New York University)

Cite as: (2013) Zenodo, <http://doi.org/10.5281/zenodo.8475>

Description:

This repository contains the software implementation for our paper **A Novel Approach to Higgs Coupling Measurements** (Cranmer, Kreiss, Lopez-Val, Piehn), arXiv:1401.0080 [hep-ph]. It contains tools to apply the discussed methods to new models and contains a Makefile to recreate the plots in the paper.

A demo for the recoupling stage where the effective likelihood and template parametrization are readily provided is at decoupledDemo.

This dataset complements the following publication:
[A Novel Approach to Higgs Coupling Measurements](#)

Record added 2014-03-12, last modified 2014-03-12

[Link to Zenodo](#)
[Link to GitHub](#)

Export
BibTeX, EndNote, LaTeX(US), LaTeX(EU), Harvmac, MARC, MARCXML, NLM, DC

HEP :: Search :: Help :: Terms of use :: Privacy policy
Powered by Invenio v1.1.2+
Problems/Questions to feedback@inspirehep.net

This site is also available in the following languages:
Български Català Deutsch Ελληνικά English Español Français Hrvatski Italiano 日本語 Norsk/Bokmål Polski Português Русский Slovenščina Svenska 中文(简) 中文(繁)



Who is an author?



Meet Kyle Cranmer

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

ATLAS Collaboration (Georges Aad (Freiburg U.) et al.) [Show all 2923 authors](#)

Jul 4, 2013 - 38 pages

Phys.Lett. B (2013)
DOI: [10.1016/j.physletb.2013.08.010](https://doi.org/10.1016/j.physletb.2013.08.010)
CERN-PH-EP-2013-103
e-Print: [arXiv:1307.1427 \[hep-ex\]](https://arxiv.org/abs/1307.1427) | [PDF](#)
Experiment: [CERN-LHC-ATLAS](#)

Abstract: Measurements are presented of production properties and couplings of the recently discovered Higgs boson using the decays into boson pairs, $H \rightarrow \gamma\gamma$, $H \rightarrow ZZ^* \rightarrow 4l$ and $H \rightarrow WW^* \rightarrow ll\nu\nu$. The results are based on the complete pp collision data sample recorded by the ATLAS experiment at the CERN Large Hadron Collider at centre-of-mass energies of $\sqrt{s}=7$ and $\sqrt{s}=8$ TeV, corresponding to an integrated luminosity of about 25 fb^{-1} . Evidence for Higgs boson production through vector-boson fusion is reported. Results of combined fits probing Higgs boson couplings to fermions and bosons, as well as anomalous contributions to loop-induced production and decay modes, are presented. All measurements are consistent with expectations for the Standard Model Higgs boson.

Note: 23 pages plus author list (38 pages total), 13 figures, 10 tables, submitted to Physics Letters B All figures including auxiliary figures are available at <http://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/HIGG-2013-02/>

Keyword(s): INSPIRE: * Automatic Keywords * | Higgs particle: production | Higgs particle: coupling | vector boson: fusion | p.p: scattering | CERN LHC Coll | ATLAS | photon photon | decay modes | CERN Lab | lepton+ | lepton

○ ○ ○ Data from Figure 7 from: [X](#)

inspirehep.net/record/1253647#

U.); Chekanov, Sergei (Argonne); Chekulaev, Sergey (TRIUMF); Chelkov, Gueorgui (Dubna, JINR); Chelstowska, Magda Anna (Michigan U.); Chen, Chunhui (Iowa State U.); Chen, Hucheng (Brookhaven); Chen, Shenjian (Nanjing U.); Chen, Xin (Wisconsin U., Madison); Chen, Yujiao (Nevis Labs, Columbia U.); Cheng, Yangyang (Chicago U., EFI); Cheplakov, Alexander (Dubna, JINR); Cherkaoui El Moursli, Rajaa (Mohammed V U., Agdal); Chernyatin, Valeriy (Brookhaven); Cheu, Elliott (Arizona U.); Chevalier, Laurent (IRFU, Saclay); Chiarella, Vitaliano (Frascati); Chiefari, Giovanni (INFN, Naples ; Naples U.); Childers, John Taylor (CERN); Chilingarov, Alexandre (Lancaster U.); Chiodini, Gabriele (INFN, Lecce); Chisholm, Andrew (Birmingham U.); Chislett, Rebecca Thalatta (University Coll. London); Chitan, Adrian (Bucharest, IFIN-HH); Chizhov, Mihail (Dubna, JINR); Choudalakis, Georgios (Chicago U., EFI); Chouridou, Sofia (Athens U.); Chow, Bonnie Kar Bo (Munich U.); Christidi, Ilektra-Athanasia (University Coll. London); Christov, Asen (Freiburg U.); Chromek-Burckhart, Doris (CERN); Chu, Ming-Lee (Taiwan, Inst. Phys.); Chudoba, Jiri (Prague, Inst. Phys.); Ciapetti, Guido (INFN, Rome ; Rome U.); Ciftci, Abbas Kenan; Ciftci, Rena (Ankara U.); Cinca, Diana (Iowa U.); Cindro, Vladimir (Stefan Inst., Ljubljana); Ciocio, Alessandra (LBL, Berkeley); Cirilli, Manuela (Michigan U.); Cirkovic, Predrag (VINCA Inst. Nucl. Sci., Belgrade); Citron, Zvi Hirsh (Weizmann Inst.); Citterio, Mauro (INFN, Milan); Ciubancan, Mihai (Bucharest, IFIN-HH); Clark, Allan G (Geneva U.); Clark, Philip James (Edinburgh U.); Clarke, Robert (LBL, Berkeley); Clemens, Jean-Claude (Marseille, CPPM); Clement, Benoit (LPSC, Grenoble); Clement, Christophe (Stockholm U. ; Stockholm U., OKC); Coadou, Yann (Marseille, CPPM); Cobal, Marina (INFN, Udine ; Udine U.); Coccaro, Andrea (Washington U., Seattle); Cochran, James H (Iowa State U.); Coelli, Simone (INFN, Milan); Coffey, Laurel (Brandeis U.); Cogan, Joshua Godfrey (SLAC); Coggeshall, James (Illinois U., Urbana); Colas, Jacques (Annecy, LAPP); Cole, Brian (Nevis Labs, Columbia U.); Cole, Stephen (Northern Illinois U.); Colijn, Auke-Pieter (FOM, Amsterdam); Collins-Tooth, Christopher (Glasgow U.); Collot, Johann (LPSC, Grenoble); Colombo, Tommaso (Heidelberg U.); Colon, German (Massachusetts U., Amherst); Compostella, Gabriele (Munich, Max Planck Inst.); Conde Muñoz, Patricia (LIP, Lisbon); Coniavitis, Elias (Uppsala U., Inst. Theor. Phys.); Conidi, Maria Chiara (Barcelona, IFAE); Consonni, Sofia Maria (INFN, Milan ; Milan U.); Consorti, Valerio (Freiburg U.); Constantinescu, Serban (Bucharest, IFIN-HH); Conta, Claudio (INFN, Pavia ; Pavia U.); Conti, Geraldine (Harvard U., Phys. Dept.); Conventi, Francesco (INFN, Naples ; Parthenope U., Naples); Cooke, Mark (LBL, Berkeley); Cooper, Ben (University Coll. London); Cooper-Sarkar, Amanda (Oxford U.); Cooper-Smith, Neil (Royal Holloway, U. of London); Copic, Katherine (LBL, Berkeley); Cornelissen, Thijs (Wuppertal U.); Corradi, Massimo (INFN, Bologna); Corriveau, Francois (McGill U. ; IPP, Canada); Corso-Radu, Alina (UC, Irvine); Cortes-Gonzalez, Arely (Barcelona, IFAE); Cortiana, Giorgio (Munich, Max Planck Inst.); Costa, Giuseppe (INFN, Milan); Costa, María José (Valencia U., IFIC); Costanzo, Davide (Sheffield U.); Côté, David (Texas U., Arlington); Cottin, Giovanna (Valparaiso U., Catolica); Courneyea, Lorraine (Victoria U.); Cowan, Glen (Royal Holloway, U. of London); Cox, Brian (Manchester U.); Cranmer, Kyle (New York U.); Crépé-Renaudin, Sabine (LPSC, Grenoble); Crescioli, Francesco (Paris U., VI-VII); Cristinziani, Markus (Bonn U.); Crosetti, Giovanni (INFN, Cosenza ; Calabria U.); Cuciuc, Constantin-Mihai (Bucharest, IFIN-HH); Cuenca Almenar, Cristóbal (Yale U.); Cuhadar Donszelmann, Tulay (Sheffield U.); Cummings, Jane (Yale U.); Curatolo, Maria (Frascati); Cuthbert, Cameron (Sydney U.); Czirr, Hendrik (Siegen U.); Czodrowski, Patrick (Dresden, Tech. U.); Czyczula, Zofia (Yale U.); D'Auria, Saverio (Glasgow U.); D'Onofrio, Monica (Liverpool U.); D'Orazio, Alessia (INFN, Rome ; Rome U.); Da Cunha Sargedas De Sousa, Mario Jose (LIP, Lisbon); Da Via, Cinzia (Manchester U.); Dabrowski, Wladyslaw (AGH-UST, Cracow); Dafinca, Alexandra (Oxford U.); Dai, Tiesheng (Michigan U.); Dallaire, Frederick (Montreal U.); Dallapiccola, Carlo (Massachusetts U., Amherst); Dam, Mogens (Bohr Inst.); Damiani, Daniel (UC, Santa Cruz); Daniells, Andrew Christopher (Birmingham U.); Dao, Valerio (NIKHEF, Amsterdam); Darbo, Giovanni (INFN, Genoa); Darlea, Georgiana Lavinia (Bucharest, Polytechnic Inst.); Darmora, Smita (Texas U., Arlington); Dassoulas, James (DESY); Davey, Will (Bonn U.); David, Claire (Victoria U.); Davidek, Tomas (Charles U.); Davies, Eleanor (Oxford U. ; Rutherford); Davies, Merlin (Montreal U.); Davignon, Olivier (Paris U., VI-VII); Davison, Adam (University Coll. London); Davygora, Yurii (Kirchhoff Inst. Phys.); Dawe, Edmund (Simon Fraser U.); Dawson, Ian (Sheffield U.); Daya-Ishmukhametova, Rozmin (Brandeis U.); De, Kaushik (Texas U., Arlington); de Asmundis, Riccardo (INFN, Naples); De Castro, Stefano (INFN, Bologna U.); De Cecco, Sandro (Paris U., VI-VII); de Graat, Julien (Munich U.); De Groot, Nicolo (NIKHEF, Amsterdam); de Jong, Paul (FOM, Amsterdam); De La Taille, Christophe (Orsay, LAL); De la Torre, Hector (Madrid, Autonoma U.); De Lorenzi, Francesco (Iowa State U.); De Nooij, Lucie (FOM, Amsterdam); De Pedis, Daniele; De Salvo, Alessandro (INFN, Rome); De Sanctis, Umberto (INFN, Udine ; Udine U.); De Santo, Antonella (Sussex U.); De Vivie De Regie, Jean-Baptiste (Orsay, LAL); De Zorzi, Guido (INFN, Rome ; Rome U.); Dearnaley, William James (Lancaster U.); Debbe, Ramiro (Brookhaven); Debenedetti, Chiara (Edinburgh U.); Dechenaux, Benjamin (LPSC, Grenoble); Dedovich, Dmitri (Dubna, JINR); Degenhardt, James (Pennsylvania U.); Del Peso, Jose (Madrid, Autonoma U.); Del Prete, Tarcisio (INFN, Pisa ; Pisa U.); Dele montex, Thomas (LPSC, Grenoble); Deliyergiyev, Maksym (Stefan Inst., Ljubljana); Dell'Acqua, Andrea (CERN); Dell'asta, Lidia (Boston U.); Della Pietra, Massimo (INFN, Naples ; Parthenope U., Naples); della Volpe, Domenico (INFN, Naples ; Naples U.); Delmastro, Marco (Annecy, LAPP); Delsart, Pierre-Antoine (LPSC, Grenoble); Deluca, Carolina (FOM, Amsterdam); Demers, Sarah (Yale U.); Demichev, Mikhail (Dubna, JINR); Demilly, Aurelien (Paris U., VI-VII); Demirkoz, Bilge (Barcelona, IFAE ; Middle East Tech. U., Ankara); Denisov, Sergey (Serpukhov, IHEP); Derendarz, Dominik (Cracow, INP); Derkaoui, Jamal Eddine (Oujda U.); Derue, Frederic (Paris U., VI-VII); Dervan, Paul (Liverpool U.); Desch, Klaus Kurt (Bonn U.); Deviveiros, Pier-Olivier (FOM, Amsterdam); Dewhurst, Alastair (Rutherford); DeWilde, Burton (SUNY, Stony Brook); Dhaliwal, Saminder (FOM, Amsterdam); Dhullipudi, Ramasudhakar (Louisiana Tech. U. ; Louisiana Tech. U.); Di

Cranmer, Kyle S. - Profile

inspirehep.net/author/profile/K.S.Cranmer.1

 Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Cranmer, Kyle S.

[View Profile](#) [Manage Profile](#) [Manage Publications](#) [Help](#)

Profile Name [Search](#)

2014-09-18 05:26:28

PERSONAL INFORMATION

Personal Details (HepNames)

Name	Kyle S. Cranmer	
Current Institution	New York U.	
E-mail	cranmer@cern.ch	
Links	http://physics.as.nyu.edu/obje... http://twitter.com/KyleCranmer... http://theoryandpractice.org/	
Fields	HEP-EX HEP-PH PHYSICS	
Experiments	FNAL-E-0830 CERN-LHC-ATLAS CERN-LEP-ALEPH FNAL-TEV-CDF	
Identifiers	BAI: K.S.Cranmer.1 INSPIRE: INSPIRE-00074922 ORCID: 0000-0002-5769-7094 ARXIV: cranmer_k_1	
Period	Rank	Institution
1995 – 1999	UG	Rice U.
1999 – 2005	PHD	Wisconsin U., Madison
2005 – 2007	PD	Brookhaven
2007	SENIOR	New York U.

[Update Details](#)

PUBLICATIONS AND OUTPUT

Publications Datasets External

- 1. Search for the $b\bar{b}$ decay of the Standard Model Higgs boson in associated ($W/Z/H$) production with the ATLAS detector
- 2. Search for resonant diboson production in the $\ell\ell q\bar{q}$ final state in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector
- 3. Search for neutral Higgs bosons of the minimal supersymmetric standard model in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector
- 4. Search for non-pointing and delayed photons in the diphoton and missing transverse momentum final state in 8 TeV pp collisions at the LHC using the ATLAS detector
- 5. Search for pair and single production of new heavy quarks that decay to a Z boson and a third-generation quark in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector
- 6. Measurement of distributions sensitive to the underlying event in inclusive Z -boson production in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector
- 7. Search for $H \rightarrow \gamma\gamma$ produced in association with top quarks and constraints on the Yukawa coupling between the top quark and the Higgs boson using data taken at 7 TeV and 8 TeV with the ATLAS detector
- 8. [Measurement of long-range pseudorapidity correlations and azimuthal harmonics in](#)

STATS

Citations Summary

514 papers found, 503 of them citeable (published or arXiv)

	Citeable papers	Published only
Number of papers analyzed:	503	399
Number of citations:	37499	35008
Citations per paper (average):	74.6	87.7
h_{HEP} index [?]	84	82

Breakdown of papers by citations:

	Citeable papers	Published only
Renowned papers (500+)	10	9
Famous papers (250-499)	8	8
Very well-known papers (100-249)	48	46
Well-known papers (50-99)	108	107
Known papers (10-49)	200	187
Less known papers (1-9)	97	39
Unknown papers (0)	32	3

[Click here to view statistics without self-citations or RPP](#)

Warning: The citations count should be interpreted with great care.
[Read the fine print](#)

Subject Categories

Frequent Keywords

Publication Graph

Cranmer, Kyle S. - Profile

inspirehep.net/author/profile/K.S.Cranmer.1

 Welcome to INSPIRE, the High Energy Physics information system. Please direct questions, comments or concerns to feedback@inspirehep.net.

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: JOURNALS :: HELP

Cranmer, Kyle S.

[View Profile](#) [Manage Profile](#) [Manage Publications](#) [Help](#)

PERSONAL INFORMATION

Personal Details (HepNames)

Name	Kyle S. Cranmer	
Current Institution	New York U.	
E-mail	cranmer@cern.ch	
Links	http://physics.as.nyu.edu/obje... http://twitter.com/KyleCranmer... http://theoryandpractice.org/	
Fields	HEP-EX HEP-PH PHYSICS	
Experiments	FNAL-E-0830 CERN-LHC-ATLAS CERN-LEP-ALEPH FNAL-TEV-CDF	
Identifiers	BAI: K.S.Cranmer.1 INSPIRE: INSPIRE-00074922 ORCID: 0000-0002-5769-7094 ARXIV: cranmer_k_1	
Period	Rank	Institution
1995 – 1999	UG	Rice U.
1999 – 2005	PHD	Wisconsin U., Madison
2005 – 2007	PD	Brookhaven
2007	SENIOR	New York U.

[Update Details](#)

PUBLICATIONS AND OUTPUT

[Publications](#) [Datasets](#) [External](#)

- 1. Additional data from: Search for strong production of supersymmetric particles in final states with missing transverse momentum and at least three b-jets at $\sqrt{s} = 8$ TeV proton-proton collisions with the ATLAS detector
- 2. Additional data from: Search for strong production of supersymmetric particles in final states with missing transverse momentum and at least three b-jets at $\sqrt{s} = 8$ TeV proton-proton collisions with the ATLAS detector
- 3. Additional data from: Search for strong production of supersymmetric particles in final states with missing transverse momentum and at least three b-jets at $\sqrt{s} = 8$ TeV proton-proton collisions with the ATLAS detector
- 4. Additional data from: Search for strong production of supersymmetric particles in final states with missing transverse momentum and at least three b-jets at $\sqrt{s} = 8$ TeV proton-proton collisions with the ATLAS detector
- 5. Additional data from: Search for strong production of supersymmetric particles in final states with missing transverse momentum and at least three b-jets at $\sqrt{s} = 8$ TeV proton-proton collisions with the ATLAS detector
- 6. Additional data from: Search for strong production of supersymmetric particles in final states with missing transverse momentum and at least three b-jets at $\sqrt{s} = 8$ TeV proton-proton collisions with the ATLAS detector

STATS

Citations Summary

514 papers found, 503 of them citeable (published or arXiv)

	Citeable papers	Published only
Number of papers analyzed:	503	399
Number of citations:	37499	35008
Citations per paper (average):	74.6	87.7
h_{HEP} index [?]	84	82

Breakdown of papers by citations:

	Citeable papers	Published only
Renowned papers (500+)	10	9
Famous papers (250-499)	8	8
Very well-known papers (100-249)	48	46
Well-known papers (50-99)	108	107
Known papers (10-49)	200	187
Less known papers (1-9)	97	39
Unknown papers (0)	32	3

[Click here to view statistics without self-citations or RPP](#)

Warning: The citations count should be interpreted with great care.
[Read the fine print](#)

Subject Categories

Frequent Keywords

Publication Graph

id ORCID

orcid.org/0000-0002-5769-7094

Search

FOR RESEARCHERS FOR ORGANIZATIONS ABOUT HELP SIGN IN

SIGN IN REGISTER FOR AN ORCID ID

280775 ORCID IDs and counting. See more...

Kyle Cranmer
<http://orcid.org/0000-0002-5769-7094>

Keywords: physics
Websites: theoryandpractice.org

Personal Information

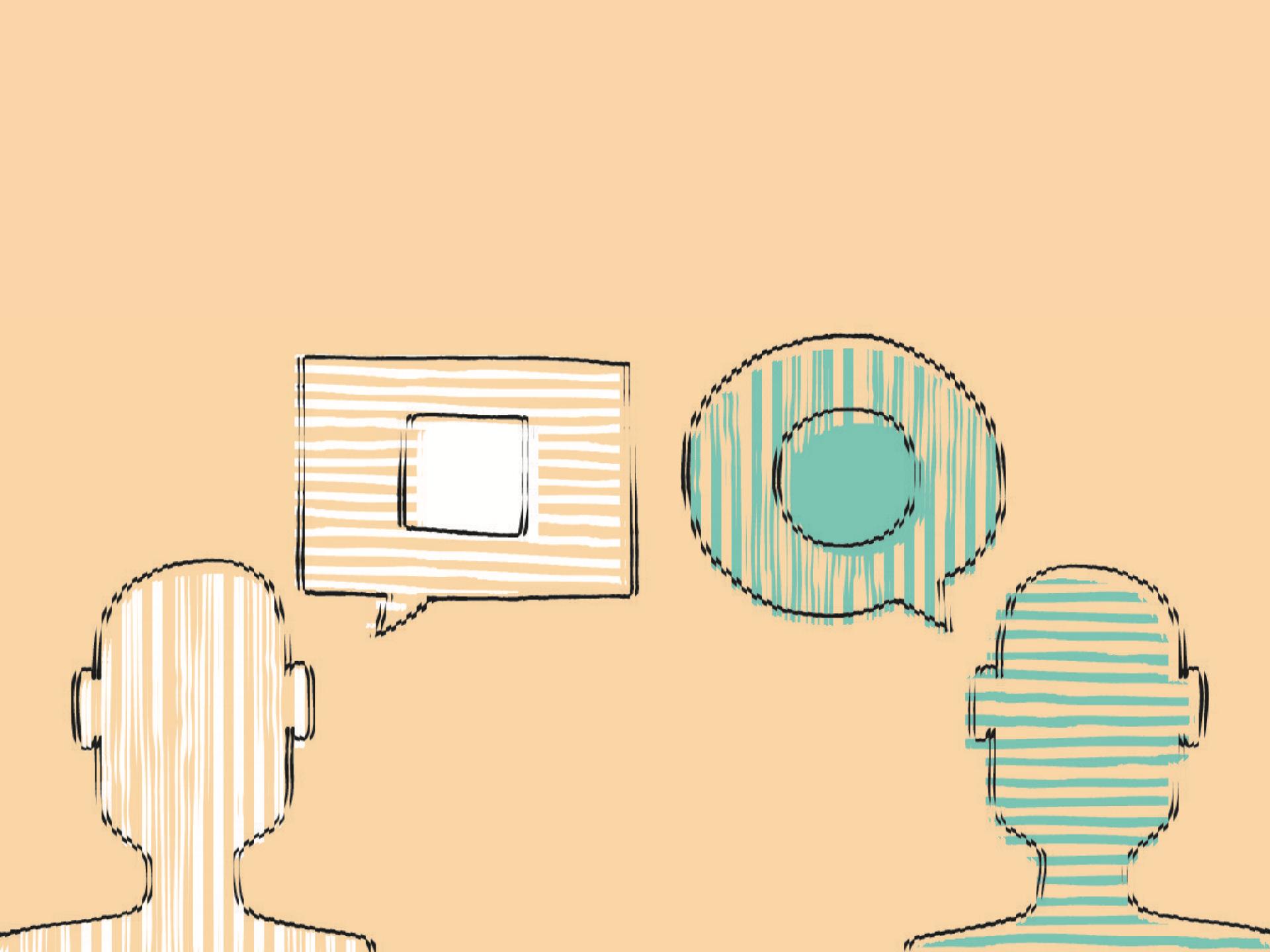
Biography
Kyle Cranmer is an Associate Professor of Physics at New York University and Affiliated Faculty member at NYU's Center for Data Science. He is an experimental particle physicists working, primarily, on the Large Hadron Collider, based in Geneva, Switzerland. Professor Cranmer obtained his Ph.D. in Physics from the University of Wisconsin-Madison in 2005 and his B.A. in Mathematics and Physics from Rice University. In 2007, he was awarded the Presidential Early Career Award for Science and Engineering from President George W. Bush via the Department of Energy's Office of Science and in 2009 he was awarded the National Science Foundation's Career Award. Professor Cranmer developed a framework that enables collaborative statistical modeling, which was used extensively for the discovery of the Higgs boson in July, 2012. Associate professor of physics at NYU.

Publications

Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC Sep-2013
DOI: [10.7484/INSPIREHEP.DATA.RF5P.6M3K](https://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K)
<http://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K>
-2 log Likelihood for the $H \rightarrow ZZ \rightarrow 4l$ channel in the $(\mu_{ggF+ttH} * B/BSM, \mu_{VBF+VH} * B/BSM)$ plane for a Higgs boson mass $m_H = 125.5$ GeV.

Data from Figure 7 from: Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC Sep-2013
DOI: [10.7484/INSPIREHEP.DATA.26B4.TY5F](https://doi.org/10.7484/INSPIREHEP.DATA.26B4.TY5F)

iDea for ORCID site?





Kyle Cranmer

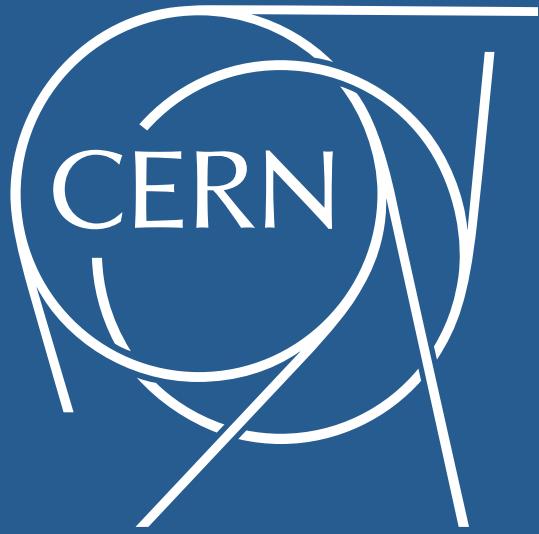
@KyleCranmer



Following

hacked @inspirehep API to generate
@altmetric widgets for my papers. Works for
any author in particle physics
theoryandpractice.org/2014/03/inspir...

Reply Retweet Favorite More



Salvatore.MELE@CERN.ch