

CMS Outreach and Education



IPPOG meeting #2
5th November 2011

New DRUPAL-based web site

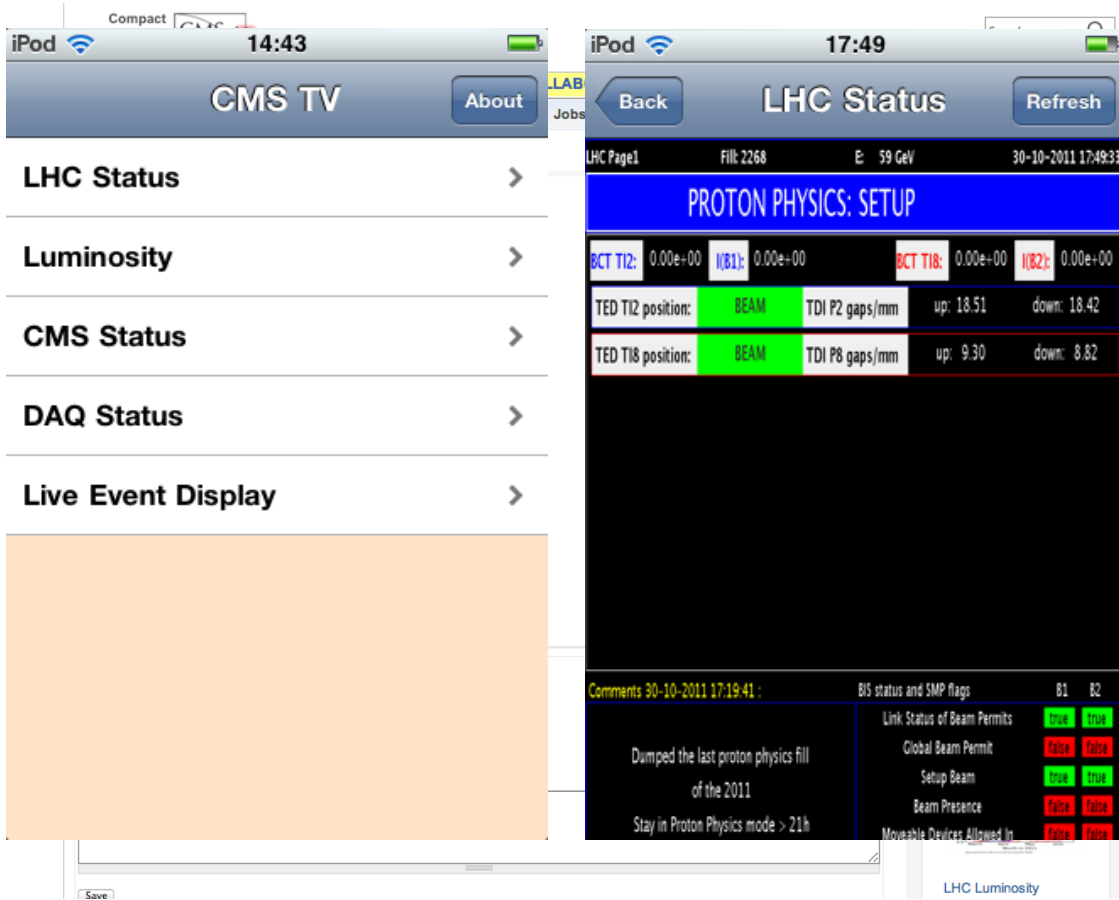
cms.web.cern.ch

The screenshot shows the CMS website homepage with the following elements:

- Header:** CMS logo, navigation tabs for "PUBLIC WEBSITE" and "COLLABORATION WEBSITE", and a search bar.
- Main Banner:** "Using one of the most complex and precise scientific instruments ever constructed" with a background image of the LHC tunnel.
- Navigation:** "Collaboration", "Detector", "Physics", "News", "Resources", "Jobs", "Help", and "Contact CMS".
- Articles:**
 - CMS Public News:** "Summary of 2011 p-p running" (2011-10-31, by barneyd).
 - Background articles:** "Higgs Boson Search at CMS" (2011-10-13, by lucas).
 - General News:** "LHC delivers 5 inverse femtobarns" (2011-10-14, by achintya).
 - Physics News:** "Lepton fizz - search for excited leptons" (2011-10-14, by achintya).
 - In the Media:** "Nobel physics prize honours accelerating Universe find" (2011-10-04, BBC World News) and "After Report on Speed, a Rush of Scrutiny" (2011-09-23, Dennis Quirey, New York Times).
- Figure:** "LHC 2011 RUN (3.5 TeV/beam)" showing delivered integrated luminosity (fb⁻¹) vs fill number. The graph includes data for ATLAS (5.583 fb⁻¹), CMS (5.727 fb⁻¹), LHCb (1.196 fb⁻¹), and ALICE (4.891 pb⁻¹). A "PRELIMINARY" label is present.
- Right Sidebar:** "Links CMS Live", "Multimedia" with a QR code, "CMS Status Page 1", "LHC Status Page 1", "Luminosity", "LHC Luminosity", and "Data Acquisition".

- Built within the new CERN-wide context of DRUPAL
- Coherence between “Public” and “Collaboration” pages
- Big focus on “News”
 - Easy submission, editing, commenting etc.
 - Still determining best announcement strategy (inc. incorporation of social media)
- Easy monitoring of what is being accessed
- Ease of re-use of materials

New DRUPAL-based web site + mobile “app”




“QR” code is recognized by free apps on mobile phones etc. Links to simple application for viewing CMS/LHC status

Simple Summaries of Scientific Papers

- Every new CMS paper will now have an accompanying short (<300 words) plain-English summary
- Written by Achintya Rao (CMS E&O) after perusing the paper
 - Takes between ½ → 1 day per paper
- Texts approved by conveners of the physics group involved
- Are published on our web site

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Compact Muon Solenoid
experiment at
CERN's LHC

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PUBLIC WEBSITE
COLLABORATION WEBSITE

Collaboration Detectors Coordination Tasks Physics Meetings Documents Tools Help Safety

CERN > CMS Experiment > Measurement of the tt-bar Production Cross Section in pp Collisions at 7 TeV in Lepton + Jets Events Using b-quark Jet Identification




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Measurement of the tt-bar Production Cross Section in pp Collisions at 7 TeV in Lepton + Jets Events Using b-quark Jet Identification

Read the paper: [TOP-11-003](#)

The measured production rates of top quark pairs is observed in the presence of a bottom quark in the final state. Studying the production of Top quark pairs, important, as it may be a background for the production of a W boson and a Bottom (b) quark, which can decay into jets of hadronic particles, or into quark-pairs that can decay into a neutrino.

In this paper, CMS studied Top quark pairs produced leptonically and the other hadronically from the b-quarks and two from the missing transverse energy (MET).

Group: Top Quark Physics (TOP)
Collisions: pp
Centre-of-mass energy: 7 TeV
Data sample: 36 pb⁻¹
Dates of data collection: April 2011-2012
Measurement/Limit: Top-quark production cross-section combined with di-lepton result = 1.0 ± 0.10 ± 0.05 fb⁻¹
Submitted to: Physical Review Letters

2011-08-18, by achintya
Tags / keywords: top quark production cross-section w b quark

[Comment](#)

Search for Supersymmetry at the LHC in Events with Jets and Missing Transverse Energy

Read the paper: [SUS-11-003](#)

The analysis shows no excess of events over the Standard Model expectations. As a result, exclusion limits were placed on searches for squarks and gluinos in the Constrained Minimal Supersymmetric extension of the Standard Model (CMSSM).

The Standard Model is thought to be superseded at higher energies by a more complete theory, such as CMSSM. If supersymmetric (SUSY) particles such as squarks or gluinos are produced in collisions at the LHC, we expect them to decay rapidly into stable particles known as lightest supersymmetric particles (LSP). The LSP, which is predicted to be neutral and weakly interacting, will leave no signature in the detector, and its presence has to be inferred from missing transverse energy (MET).

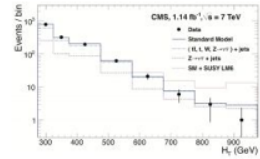
In this paper, CMS searched for signatures of supersymmetry (SUSY) in events with two or more energetic particle jets and missing transverse energy.

Group: Supersymmetric Physics (SUS)
Collisions: pp
Centre-of-mass energy: 7 TeV
Data sample: 1.14 ± 0.05 fb⁻¹
Measurement/Limit: CMSSM squark masses are excluded below 1.1 TeV at 95% confidence level (CL). CMSSM gluino masses are excluded below 1.1 TeV at 95% CL, when the universal scalar mass parameter, m₀, has a value of less than 500 GeV.
Submitted to: Physical Review Letters

2011-09-11, by achintya
Tags / keywords: SUSY Supersymmetry CMSSM squark gluino LSP lightest supersymmetric particle missing energy missing transverse energy MET particle jet jet QCD 7 TeV pp

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[Comment](#)



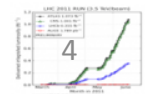
CMS Live [Multimedia](#)

Mobile CMS status

CMS Status Page 1

LHC Status Page 1

Luminosity



Use of Google earth to show collaborative efforts in CMS (detectors, analysis etc.)



Example: use of the Worldwide Computing Grid

“How physics is done” movie – in progress



Permission granted by management to film important meetings in order to produce short movies demonstrating the scientific process

e.g. how, from the CMS perspective, the combined CMS+ATLAS Higgs result is being produced etc.



1:1 ultra-high resolution CMS image



1st printed version installed in bat 40. <http://cdsweb.cern.ch/record/1377842>
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Visits to P5

- See presentation by Achintya in IPPOG#1
- Can always take visitors underground at P5 – to the “service cavern” – even when LHC is operating
- Can also take visitors to experiment cavern during shutdowns (winter stops; long shutdowns)
- Trying to improve infrastructure for visits at P5

Visits to P5 (cont.)

- Systematic (professional!) approach
 - Key messages developed
 - Target audiences understood and objectives for each defined
 - Non-expert public
 - Public with scientific background
 - VIPs & media
 - Significant interaction with local community
 - And build synergy with Roman remains in the area....
- Some items already defined/produced
 - E.g. 1:1 scale CMS image in the surface construction hall
 - Poster banners in place underground to help guides etc.
 - Photos of previous VIP visitors

Graffiti mural outside CMS Control Room



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