HepData status and future

Mike Whalley - IPPP Durham UK

PDG Collaboration Meeting
CERN - 6th October 2012

Outline of talk

- HepData & PDG
- The 'old' HepData
- The 'new' HepData
- Beyond the standard record type - discovery data
- Data entry
- Inspire & Hepdata
- Data Reviews
- Hepdata usage figures
- Conculsions

HepData & PDG

- Particle Physics Data

☆ Particle properties - PDG

* a, b, c ... (mass, b ratios, spin...)
* particle centred

☆ Scattering data - HepData

* a b --> c .....(cross sections, polarizations...)
* publication centred (too diverse with different cuts & conditions to be 'reaction' centred)

HepData & PDG

- HepData compiles reaction/scattering data
- HepData is STFC funded
  - database manager/physicist + assistant (based at Durham Univ., UK)
  - ~ 30 years, with funding just renewed for further 3(+2) years
- Common origins with PDG in 1970s
  - PPDS, PPDL written ~ 1975 (Fox, Rittenberg, Read)
  - used BerkeleyDatabaseManagementSystem as original computing system
  - many of the original records came from Berkeley and CIT compilations
- Hosts the UK mirror of the PDG RPP web page

The old HepData (i)

HepData continued for many years compiling scattering data from experiments world-wide and making them available using the old BDMS system from its web page.

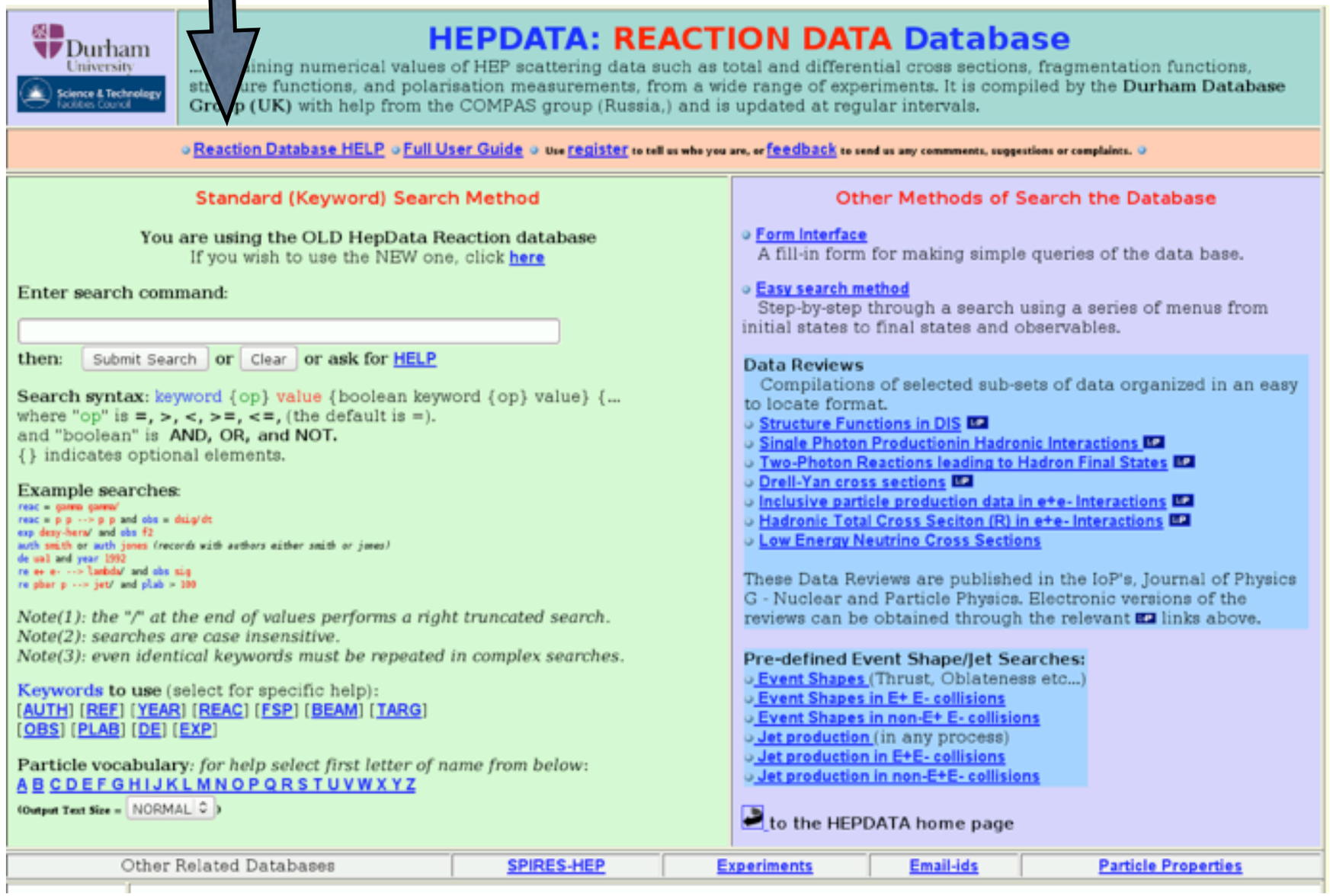
implies new one!

Contents:

Final/Published data from ~7000 papers

Cross sections, Polarizations etc....

Searchable via:
reac
obs
exp
de



Durham University
Science & Technology Facilities Council

HEPDATA: REACTION DATA Database

...ining numerical values of HEP scattering data such as total and differential cross sections, fragmentation functions, st...ure functions, and polarisation measurements, from a wide range of experiments. It is compiled by the **Durham Database Gr...p (UK)** with help from the COMPAS group (Russia,) and is updated at regular intervals.

Reaction Database HELP | Full User Guide | Use register to tell us who you are, or feedback to send us any comments, suggestions or complaints.

Standard (Keyword) Search Method

You are using the OLD HepData Reaction database
If you wish to use the NEW one, click here

Enter search command:

then: Submit Search or Clear or ask for HELP

Search syntax: keyword {op} value {boolean keyword {op} value} {...
where "op" is =, >, <, >=, <=, (the default is =).
and "boolean" is AND, OR, and NOT.
{} indicates optional elements.

Example searches:
reac = gamma gamma/
reac = p p --> p p and obs = dsig/dt
exp desy-hera/ and obs f2
auth smith or auth jones (records with authors either smith or jones)
de uul and year 1992
re ee+ e- --> lambda/ and obs sig
re pbar p --> jet/ and plab > 100

Note(1): the "/" at the end of values performs a right truncated search.
Note(2): searches are case insensitive.
Note(3): even identical keywords must be repeated in complex searches.

Keywords to use (select for specific help):
[AUTH] [REF] [YEAR] [REAC] [FSP] [BEAM] [TARG]
[OBS] [PLAB] [DE] [EXP]

Particle vocabulary: *for help select first letter of name from below:*
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

(Output Text Size = NORMAL)

Other Methods of Search the Database

Form Interface
A fill-in form for making simple queries of the data base.

Easy search method
Step-by-step through a search using a series of menus from initial states to final states and observables.

Data Reviews
Compilations of selected sub-sets of data organized in an easy to locate format.
- Structure Functions in DIS
- Single Photon Productionin Hadronic Interactions
- Two-Photon Reactions leading to Hadron Final States
- Drell-Yan cross sections
- Inclusive particle production data in e+e- Interactions
- Hadronic Total Cross Seciton (R) in e+e- Interactions
- Low Energy Neutrino Cross Sections

These Data Reviews are published in the IoP's, Journal of Physics G - Nuclear and Particle Physics. Electronic versions of the reviews can be obtained through the relevant links above.

Pre-defined Event Shape/Jet Searches:
- Event Shapes (Thrust, Oblateness etc...)
- Event Shapes in E+ E- collisions
- Event Shapes in non-E+ E- collisions
- Jet production (in any process)
- Jet production in E+E- collisions
- Jet production in non-E+E- collisions

to the HEPDATA home page

Other Related Databases | SPIRES-HEP | Experiments | Email-ids | Particle Properties

The old Hepdata (ii)

Typical record from the old HepData set up.

1) AALTONEN 09 - 9 0 Experiment FNAL-0830 - Detector/Collaboration: **CDF**
Preprinted as **FERMILAB-PUB-09-507-E** (OCT 2009)

Display the Full Data Record **Display the Table Index** Show SLAC/HEP Entry

Fermilab-Tevatron. Measurement of the inclusive isolated photon cross section in pbar-p collisions at centre-of-mass energy of 1.96 TeV. The measurement covers the photon pseudorapidity range -1.0 to 1.0 and transverse energy > 30 GeV based on a data sample with total integrated luminosity of 2.5 fb-1.
(RED 4792) (all kumacs) (all numbers)

Systematic Errors and Corrections

For the measurement of DSIG/DET/DETARAP
the quoted systematic error is 6 PCT
Additional uncertainty from the luminosity measurement.

Table 1 - T 1,F 3 (in paper/preprint)

Measured inclusive isolated photon cross section.

REAC: PBAR P --> GAMMA X
OBS: DSIG/DET/DETARAP
PLAB: 2047761.000 GeV/c

	PBAR P --> GAMMA X
	ETARAP(P=3) = -1.0 TO 1.0
	SQRT(S) = 1960 GEV
ET(P=3) (GEV)	D(SIG)/DET(P=3)/DETARAP(P=3) (PB/GEV)
30 TO 34	123 +- 1 (DSYS=+15.5 PCT,-14.5 PCT)
34 TO 39	62.1 +- 0.3 (DSYS=+10.8 PCT,-9.8 PCT)
39 TO 44	31.0 +- 0.2 (DSYS=+9.8 PCT,-8.4 PCT)
44 TO 50	17.2 +- 0.2 (DSYS=+10.2 PCT,-8.1 PCT)
50 TO 60	7.93 +- 0.08 (DSYS=+10.1 PCT,-8.4 PCT)
60 TO 70	3.54 +- 0.05 (DSYS=+9.8 PCT,-8.5 PCT)
70 TO 80	1.76 +- 0.03 (DSYS=+10.0 PCT,-9.1 PCT)
80 TO 90	0.908 +- 0.014 (DSYS=+9.3 PCT,-7.9 PCT)
90 TO 110	0.441 +- 0.005 (DSYS=+8.8 PCT,-8.7 PCT)

The new HepData & CEDAR

In 2005, in preparation for the LHC, HepData joined forces with the JetWeb project (UCL) in a 3 year collaboration - CEDAR (e-science STFC funded)

JetWeb ==> Rivet

(Andy Buckley - Durham-> Edinburgh/ATLAS)

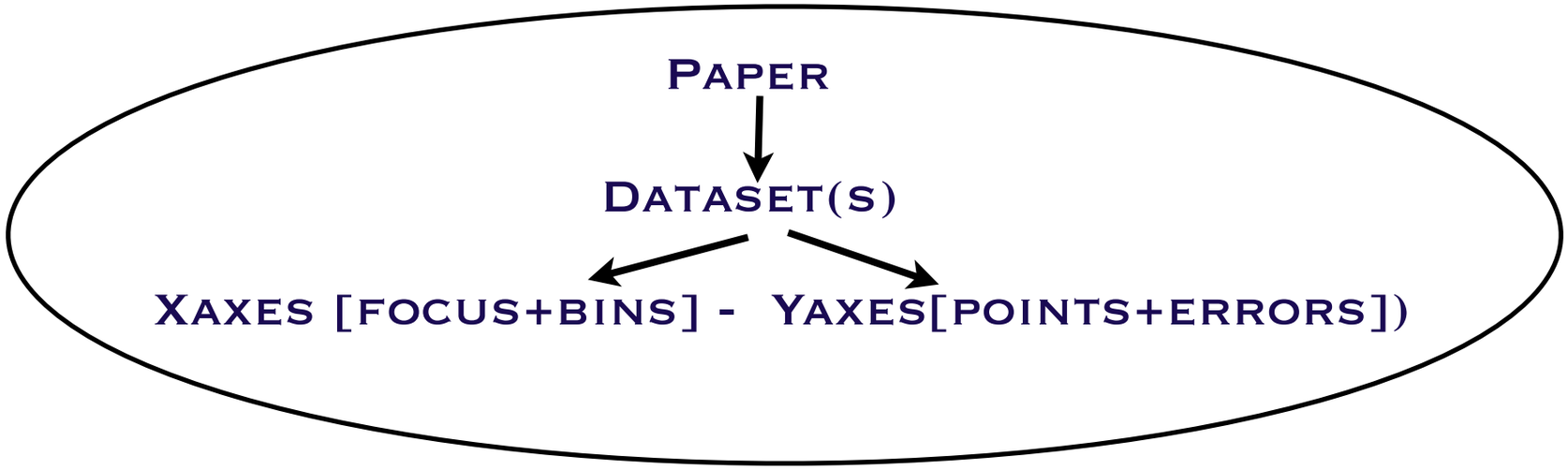
HepData ==> new HepData

The old HepData - in the long-term was unmaintainable
- had poor direct data access

The new HepData - to use a standard software (Java) framework
- to provide data for Rivet analyses

HepData - new software

- MySQL database + JAVA coded OO data model.



- Hibernate for Model-Database persistence.
- Tapestry for Model-Web interface.
- Standard software = long term maintainability.

OLD → NEW

HEPDATA: REACTION DATA Database

...containing numerical values of HEP scattering data such as total and differential cross sections, fragmentation functions, structure functions, and polarisation measurements, from a wide range of experiments. It is compiled by the **Durham Database Group (UK)** with help from the COMPAS group (Russia,) and is updated at regular intervals.

Reaction Database HELP · Full User Guide · Use register to tell us who you are, or feedback to send us any comments, suggestions or complaints.

Standard (Keyword) Search Method

You are using the OLD HepData Reaction database
If you wish to use the NEW one, click here

Enter search command:

then: Submit Search or Clear or ask for HELP

Search syntax: keyword {op} value {boolean keyword {op} value} {...
where "op" is =, >, <, >=, <=, (the default is =).
and "boolean" is **AND, OR, and NOT.**
{} indicates optional elements.

Example searches:

Note(1): the "/" at the end of values performs a right truncated search.
Note(2): searches are case insensitive.
Note(3): even identical keywords must be repeated in complex searches.

Keywords to use (select for specific help):
[AUTH] [REF] [YEAR] [REAC] [FSP] [BEAM] [TARG]
[OBS] [PLAB] [DE] [EXP]

Particle vocabulary: *for help select first letter of name from below:*
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Other Methods of Search the Database

- Form Interface
  A fill-in form for making simple queries of the data base.
- Easy search method
  Step-by-step through a search using a series of menus from initial states to final states and observables.

Data Reviews
Compilations of selected sub-sets of data organized in an easy to locate format.
- Structure Functions in DIS
- Single Photon Production in Hadronic Interactions
- Two-Photon Reactions leading to Hadron Final States
- Drell-Yan cross sections
- Inclusive particle production data in e+e- Interactions
- Hadronic Total Cross Section (R) in e+e- Interactions
- Low Energy Neutrino Cross Sections

These Data Reviews are published in the IoP's, Journal of Physics G - Nuclear and Particle Physics. Electronic versions of the reviews can be obtained through the relevant links above.

Pre-defined Event Shape/Jet Searches:
- Event Shapes (Thrust, Oblateness etc...)
- Event Shapes in E+ E- collisions
- Event Shapes in non-E+ E- collisions
- Jet production (in any process)
- Jet production in E+E- collisions
- Jet production in non-E+E- collisions

to the HEPDATA home page

Other Related Databases | SPIRES-HEP | Experiments | Email-ids | Particle Properties

1) AALTONEN 09 - 9 0 Experiment FNAL-0830 - Detector/Collaboration: CDF
Preprinted as **FERMILAB-PUB-09-507-E** (OCT 2009)

Display the Full Data Record **Display the Table Index** Show SLAC/HEP Entry

Fermilab-Tevatron. Measurement of the inclusive isolated photon cross section in pbar-p collisions at centre-of-mass energy of 1.96 TeV. The measurement covers the photon pseudorapidity range -1.0 to 1.0 and transverse energy > 30 GeV based on a data sample with total integrated luminosity of 2.5 fb-1.
(RED 4792) (all kumacs) (all numbers)

Systematic Errors and Corrections

For the measurement of DSIG/DET/DETARAP
the quoted systematic error is 6 PCT
Additional uncertainty from the luminosity measurement.

Table 1 - T 1,F 3 (in paper/preprint)

Measured inclusive isolated photon cross section.

REAC: PBAR P --> GAMMA X
OBS: DSIG/DET/DETARAP
PLAB: 2047761.000 GeV/c

	PBAR P --> GAMMA X
	ETARAP(P=3) = -1.0 TO 1.0
	SQRT(S) = 1960 GEV
ET(P=3) (GEV)	D(SIG)/DET(P=3)/DETARAP(P=3) (PB/GEV)
30 TO 34	123 +- 1 (DSYS=+15.5 PCT,-14.5 PCT)
34 TO 39	62.1 +- 0.3 (DSYS=+10.8 PCT,-9.8 PCT)
39 TO 44	31.0 +- 0.2 (DSYS=+9.8 PCT,-8.4 PCT)
44 TO 50	17.2 +- 0.2 (DSYS=+10.2 PCT,-8.1 PCT)
50 TO 60	7.93 +- 0.08 (DSYS=+10.1 PCT,-8.4 PCT)
60 TO 70	3.54 +- 0.05 (DSYS=+9.8 PCT,-8.5 PCT)
70 TO 80	1.76 +- 0.03 (DSYS=+10.0 PCT,-9.1 PCT)
80 TO 90	0.908 +- 0.014 (DSYS=+9.3 PCT,-7.9 PCT)
90 TO 110	0.441 +- 0.005 (DSYS=+8.8 PCT,-8.7 PCT)

The Durham HepData Project

Durham University

Reaction Database · Data Reviews · Parton Distribution Function Server · Other HEP Resources

Reaction Database Standard Search Interface

Database of Numerical HEP scattering cross sections

Enter query: Search
examples: re gamma gamma, re p p --> p p and obs sig, exp cern

Search Help — Output Help — Form Search — Browse Keywords — Latest LHC DATA

To search the database: Enter your query command comprising keyword-value pairs joined with Boolean ANDs. A null entry will retrieve all records.
The basic keywords are:
reac - the reaction (eg. p p --> charged x) also **beam** and **fsp**.
obs - the observable (eg. SIG, DSIG/DX, DN/DPT).
sqrts - lower bound of the centre-of-mass energy in GeV.
exp - the experiment/laboratory name (eg. ZEUS, CERN, LHC).
date - the year of the publication/preprint.
auth - the first author name on the paper.
ref - the publication/preprint reference.
Use % as the right or left trunction character to search for values beginning or ending with the value. All searches are **case-insensitive**. More details are in the Search Help

Quick link to HepData data reviews
- Quarkonia data in Hadronic Interactions
- Structure functions in DIS
- Single photon production in hadronic interactions
- Two-photon reactions leading to hadron final states
- Drell-Yan cross-sections
- Inclusive particle production data in e+ e- interactions
- Hadronic total cross-sections (R) in e+e- interactions
- Low-energy neutrino cross-sections
- Event shapes in lepton-lepton and lepton-nucleon interactions

Predefined event shape / jet searches
- Event shapes (thrust, etc...)
- Event shapes in e+e- collisions
- Event shapes in non-e+e- collisions
- Jet production (in any process)
- Jet production in e+e- collisions
- Jet production in non-e+e- collisions

About HepData — Submitting your data to HepData

HepData also maintains the UK mirror of the PDG | Contact Us

HepData is funded by the UK STFC and hosted at the Durham IPPP
Please send questions and comments to hepdata@projects.hepforge.org

Science & Technology Facilities Council

Reaction Database Full Record Display

View short record or as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

AALTONEN 2009 — Measurement of the Inclusive Isolated Prompt Photon Cross Section in ppbar Collisions at sqrt{s} = 1.96 TeV using the CDF Detector

Experiment: FNAL-0830 (CDF)
Published in **PR D80,111106** (DOI:10.1103/PhysRevD.80.111106)
Preprinted as **FERMILAB-PUB-09-507-E**
Record in: INSPIRE
Rivet Analysis: CDF_2009_S8436959

Fermilab-Tevatron. Measurement of the inclusive isolated photon cross section in pbar-p collisions at centre-of-mass energy of 1.96 TeV. The measurement covers the photon pseudorapidity range -1.0 to 1.0 and transverse energy > 30 GeV based on a data sample with total integrated luminosity of 2.5 fb-1..

View list of currently selected plots

Table 1 (T 1,F 3.) or as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork
Measured inclusive isolated photon cross section..

	ETARAP(P=3) : -1.0 TO 1.0
	RE : PBAR P --> GAMMA X
	SQRT(S) : 1960.0 GeV
ET(P=3) IN GEV	D(SIG)/DET(P=3)/DETARAP(P=3) IN PB/GEV
30.0 - 34.0	123 ± 1 (stat) +15.5%,-14.5% (sys)
34.0 - 39.0	62.1 ± 0.3 (stat) +10.8%,-9.8% (sys)
39.0 - 44.0	31.0 ± 0.2 (stat) +9.8%,-8.4% (sys)
44.0 - 50.0	17.2 ± 0.2 (stat) +10.2%,-8.1% (sys)
50.0 - 60.0	7.93 ± 0.08 (stat) +10.1%,-8.4% (sys)
60.0 - 70.0	3.54 ± 0.05 (stat) +9.8%,-8.5% (sys)
70.0 - 80.0	1.76 ± 0.03 (stat) +10.0%,-9.1% (sys)
80.0 - 90.0	0.908 ± 0.014 (stat) +9.3%,-7.9% (sys)

HepData – 'standard' record type

Reaction Database Full Record Display

View short record or as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

AAD 2011 — Measurement of inclusive jet and dijet production in pp collisions at sqrt(s) = 7 TeV using the ATLAS detector

Experiment: CERN-LHC-ATLAS (ATLAS)
Preprinted as CERN-PH-EP-2011-192
Archived as: ARXIV:1112.6297
Record in: INSPIRE

CERN-LHC. Measurements of the inclusive jet and di-jet cross sections in proton-proton collisions at a centre-of-mass energy of 7 TeV. The analysis is based on the 2010 data sample with a total integrated luminosity of 37 pb-1. The anti-KT algorithm is used for jet clustering with data given using both the parameters R=0.4 and R=0.6. Double-differential cross sections are given as a function of the inclusive jet PT in rapidity (y) bins and of the di-jet invariant mass in bins of half of the rapidity separation of the two jets (y*). Details of the systematic errors and their correlations are given in the link below. In the tables the first (sys) error is the correlated (in PT) systematic error and the second is the uncorrelated systematic error, both produced by combining the relevant errors in quadrature.

Details of systematic errors and their correlations

View list of currently selected plots

Total number of tables: **32**. Displaying: **1** to **10**. First | Previous | Next | Last

Table 1
as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

Inclusive jet PT distribution for the |y| range 0.0-0.3 and R=0.4.
Location: T 5,F 9
Additional systematic error: ± 3.4% (luminosity uncertainty)

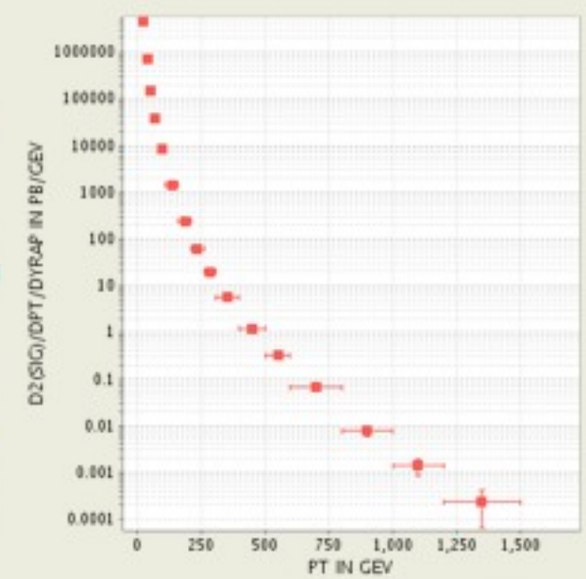
	ABS(YRAP) : 0.0-0.3
	R : 0.4
	RE : P P –> JET X
	SQRT(S) : 7000.0 GeV
PT IN GEV	D2(SIG)/DPT/DYRAP IN PB/GEV
20. – 30.	4700000 ± 0.86% (stat) +20.1%,-20.3% (sys) ± 1.3% (sys)
30. – 45.	717000 ± 1.33% (stat) +17.0%,-16.3% (sys) ± 1.1% (sys)
45. – 60.	148000 ± 3.03% (stat) +12.8%,-11.5% (sys) ± 1.1% (sys)
60. – 80.	38100 ± 1.1% (stat) +10.4%,-10.1% (sys) ± 1.0% (sys)
80. – 110.	8520 ± 0.68% (stat) +10.5%,-11.5% (sys) ± 1.1% (sys)
110. – 160.	1480 ± 0.62% (stat) +9.9%,-9.3% (sys) ± 1.1% (sys)

Output formats:

- html
- plain text
- AIDA - for RIVET
- PyRoot
- YODA
- mpl
- jhepwork
- plot (simple & advanced)

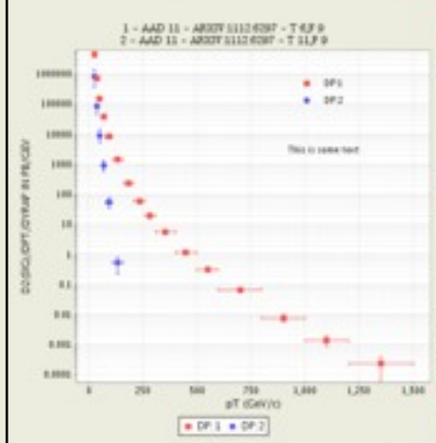
Reaction Database Single Dataset Plot

First Author: AAD11
Published as: Not Published
Preprinted as: ARXIV:1112.6297



Reaction Database Composite Plot (Advanced)

This page displays the combined data plot with options to 'Replot' the data changing various features of the plot.



Re - Submit the Plot | Back to Simple Plot

Xscale lin | Yscale log | Syst... yes | png/pdf png
Xmin | Xmax | Ymin | Ymax
Xsize 500 | Ysize 500 | PDF file
Xkey 0.7 | Ykey 0.9 | Xtext 0.6 | Ytext 0.8

Reset Above to Default Settings

X-label pT (GeV/c)
Y-label
Text: This is some text
Options(1):
Options(2):

Reset All to Default Settings

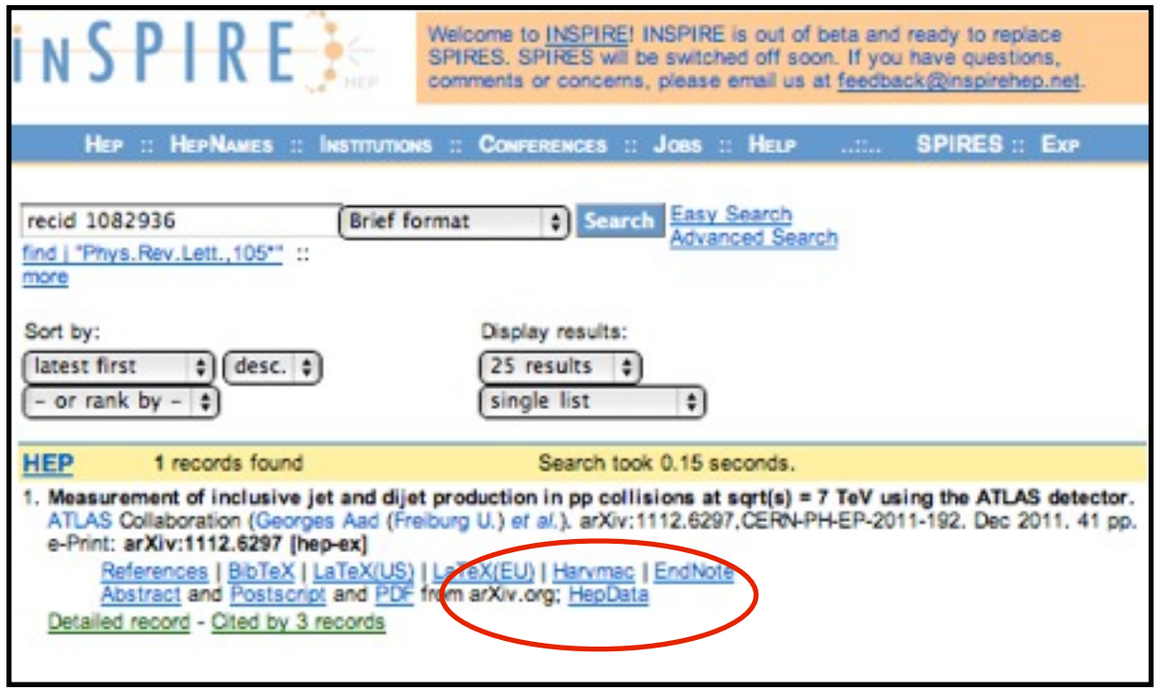
Back to the list of selected plots

Data plot: 1
AAD 11 - ARXIV:1112.6297
CERN-LHC-ATLAS/ATLAS
Location: T 6,F 9
RE : P P –> JET X
ABS(YRAP) : 0.3 - 0.8 num
R : 0.4 num
D2(SIG)/DPT/DYRAP IN PB/GEV <-> PT IN GEV

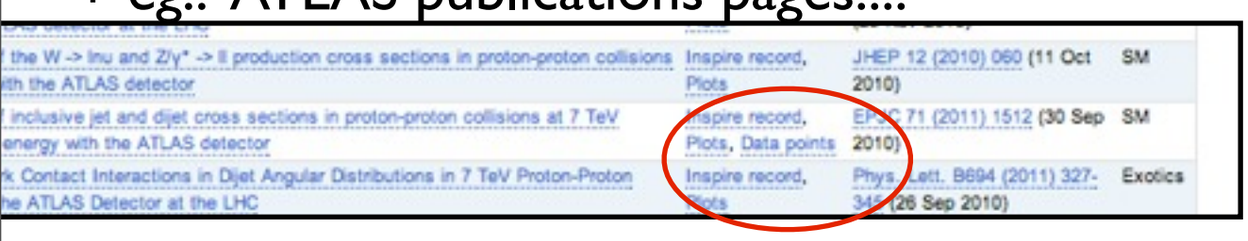
Data plot: 2
AAD 11 - ARXIV:1112.6297
CERN-LHC-ATLAS/ATLAS
Location: T 11,F 9
RE : P P –> JET X
ABS(YRAP) : 3.6 - 4.4 num
R : 0.4 num
D2(SIG)/DPT/DYRAP IN PB/GEV <-> PT IN GEV

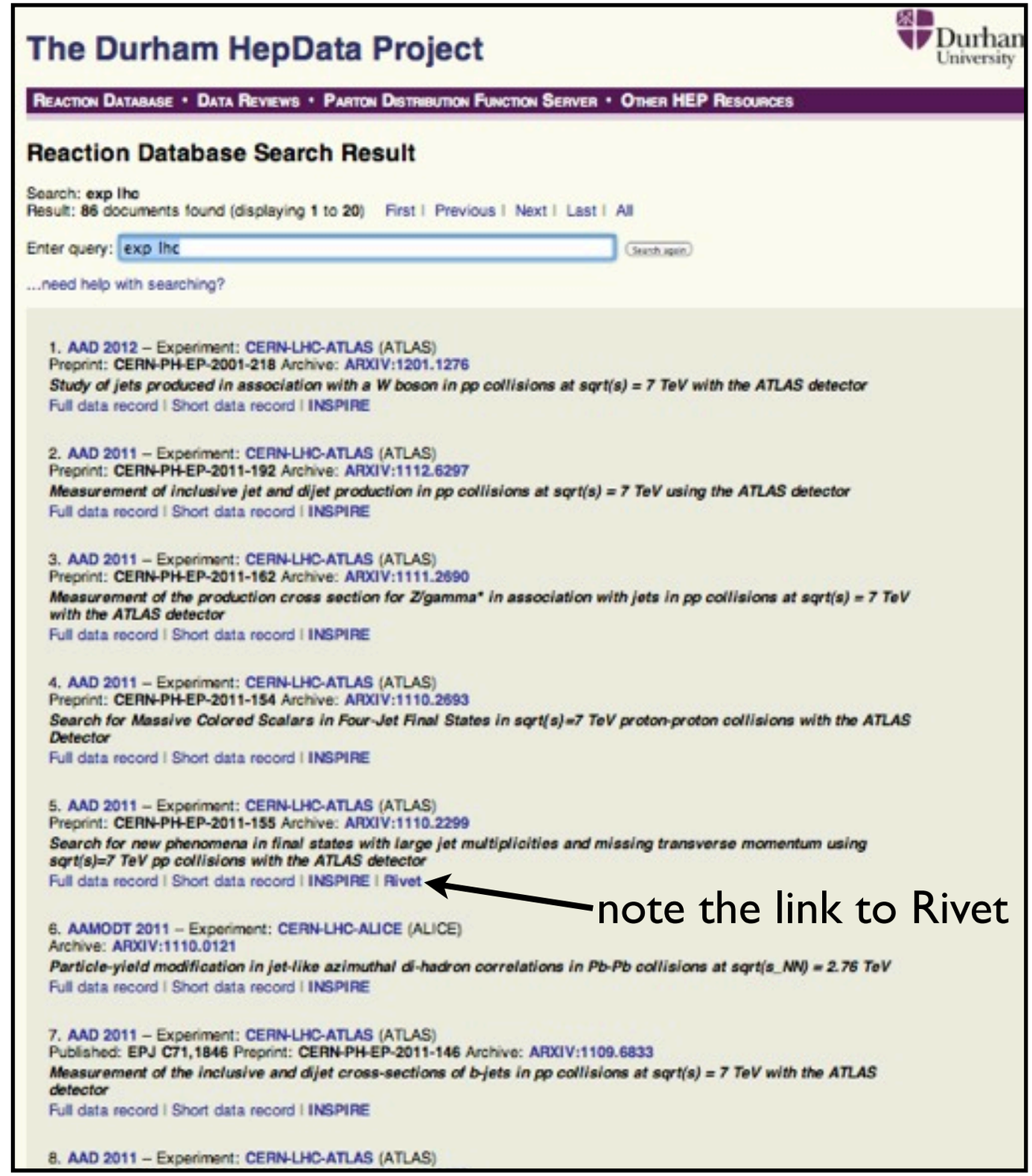
HepData - finding the record

HepData has basic search facilities
- EXP, RE, OBS, FSP, REF etc...
+ Inspire type searches (eg. title:xxx)
+ individual records linked from Inspire....



+ eg.. ATLAS publications pages....





note the link to Rivet

+ working with Elsevier to place banner flag on their web page when paper has HepData record.

Beyond the standard record type

Searches for New Physics: Les Houches Recommendations for the Presentation of LHC Results

S. Kraml[1], B.C. Allanach[2], M. Mangano[3], H.B. Prosper[4], S. Sekmen[3,4] (editors), C. Balazs[5], A. Barr[6], P. Bechtle[7], G. Belanger[8], A. Belyaev[9,10], K. Benslama[11], M. Campanelli[12], K. Cranmer[13], A. De Roeck[3], M.J. Dolan[14], T. Eifert[15], J.R. Ellis[16,3], M. Felcini[17], B. Fuks[18], D. Guadagnoli[8,19], J.F. Gunion[20], S. Heinemeyer[17], J. Hewett[15], A. Ismail[15], M. Kadastik[21], M. Krämer[22], J. Lykken[23] F. Mahmoudi[3,24], S.P. Martin[25,26,27], T. Rizzo[15], T. Robens[28], M. Tytgat[29], A. Weiler[30]

arXiv:1203.2489
EPJ C72(2012)1976

Recommendation 1a: *Provide a clear, explicit description of the analysis in publications. In particular, the most crucial information such as basic object definitions and event selection should be clearly displayed in the publications, preferably in tabular form, and kinematic variables utilised should be unambiguously defined. Further information necessary to reproduce the analysis should be provided, as soon as it becomes available for release, on a suitable common platform.*

We note that it is already common practice in the LHC experiments to provide useful auxiliary information for the longer papers[3], e.g., in `Rivet` [29], on `HEPdata` [30] and/or collaboration twiki pages [1,2]. The `inSPIRE` [31] project may help to build a coherent information system, with detailed searchable and citeable entries. The ultimate goal

Recommendation 1b: *The community should identify, develop and adopt a common platform to store analysis databases, collecting object definitions, cuts, and all other information, including well-encapsulated functions, necessary to reproduce or use the results of the analyses, and as required by other recommendations.*

As mentioned, `Rivet` and `HEPdata` provide examples of such a platform, possibl supported by the `inSPIRE` indexing and searching infrastructure. Their functionalit could be adapted to accommodate further needs, emerging from the discussions on th implementation of Recommendation 1b. The continued development of such tools shoul

Recommendation 2a: *Provide histograms or functional forms of efficiency maps wherever possible in the auxiliary information, along with precise definitions of the efficiencies, and preferably provide them in standard electronic forms that can easily be interfaced with simulation or analysis software.*

These standard electronic forms could rely on a platform similar to that discusse Recommendation 1b, for example `Rivet/HEPdata` data and routines.

HepData - beyond the standard record type

Problems:

- HepData's data model is fairly rigid
- Requires x and y axes with associated bins and errors
- What about error correlations?
- What about SUSY files?
- What about searches?

In response to this and earlier requests from ATLAS to store SLHA files and other associated information we have set up a 'resource area' on our main HepData server to 'curate' these and make them publicly available.

Linked to papers in the database

AAD 2011 — Search for supersymmetry using final states with one lepton, jets, and missing transverse momentum with the ATLAS detector in sqrt{s} = 7 TeV pp

Experiment: CERN-LHC-ATLAS (ATLAS)
Published in **PRL 106,131802**
Preprinted as **CERN-PH-EP-2011-013**
Archived as: ARXIV:1102.2357
Record in: INSPIRE

CERN-LHC. Search for SUSY in final states containing one isolated lepton (electron or muon), jets and missing transverse momentum in proton-proton collisions at a centre-of-mass energy of 7 TeV. The data sample, collected during 2010, has a total integrated luminosity of 35 pb-1. No excess above the standard model is found. This record contains the distributions in missin ET, the transverse mass (MT) between the lepton and the missing transvers momentum vector, and the effective mass defined as the scalar sum of the the three leading jets, the pT of the lepton and the missing ET. Also tabulated are the 95 PCT exclusion limits on m_0 and m_(1/2) for the MSUGRA/CMSSM model.

Link to the tables of MSUGRA/CMSSM SLHA parameters
Link to the combined 0 and 1 lepton analysis

View list of currently selected plots

ATLAS MSSM_sqgl Spring 2011 shla data files

MSSM_sqgl	g-mass															
s-mass	0050	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1200	1400	1600	1800	2000
0050	y	y	y	y	y	y	y	y	y	y						
0100	y	y	y	y	y	y	y	y	y	y						
0200	y	y	y	y	y	y	y	y	y	y						
0300	y	y	y	y	y	y	y	y	y	y						
0400	y	y	y	y	y	y	y	y	y	y						
0500	y	y	y	y	y	y	y	y	y	y						
0600	y	y	y	y	y	y	y	y	y	y						
0700	y	y	y	y	y	y	y	y	y	y						
0800	y	y	y	y	y	y	y	y	y	y						
0900	y	y	y	y	y	y	y	y	y	y						
1000	y	y	y	y	y	y	y	y	y	y						
1200		y	y	y	y		y		y							
1400	y	y	y	y	y		y									
1600		y	y	y	y		y		y							
1800		y	y	y	y		y		y							
2000	y	y	y	y	y		y									

efficiency*acceptance information: sqgl_0lgrid_HEPdata.txt
gzipped tar file of all data files: MSSM_sqgl.tar.gz
uuencoded version of above: MSSM_sqgl.uu

```
#  ISAJET SUSY parameters in SUSY Les Houches Accord 2 format
#  Created by ISALHA 2.0 Last revision: C. Balazs 21 Apr 2009
Block SPINFO   # Program information
     1   ISASUGRA from ISAJET          # Spectrum Calculator
     2   7.80   29-OCT-2009 12:50:36   # Version number
Block MODSEL   # Model selection
     1    13   # Non-universal supergravity model
Block SMINPUTS   # Standard Model inputs
     1      1.27836243E+02   # alpha_em^(-1)
     2      1.16570000E-05   # G_Fermi
     3      1.17200002E-01   # alpha_s(M_Z)
     4      9.11699982E+01   # m_(Z)(pole)
     5      4.19999981E+00   # m_(b)(m_(b))
     6      1.72500000E+02   # m_(top)(pole)
     7      1.77699995E+00   # m_(tau)(pole)
Block MINPAR   # SUSY breaking input parameters
     1      5.00000000E+03   # m_0
     2      5.00000000E+03   # m_(1/2)
     3      1.04999995E+00   # tan(beta)
     4      1.00[illegible]E+00   # sign(mu)
     5      0.00[illegible]E+00   # A_0
Block EXTPAR   # Non-universal SUSY breaking parameters
     0      1.00[illegible]E+00   # Input scale
    21     -1.21530960E+07   # Down type Higgs mass squared
    22     -1.21524730E+07   #  Up  type Higgs mass squared
     1      0.00000000E+00   #  U(1)_Y gaugino (Bino) mass
     2      5.00000000E+03   # SU(2)_L gaugino (Wino) mass
     3      5.00000000E+02   # SU(3)_C gaugino (gluino) mass
    34      5.00000000E+03   # Right scalar electron mass
    31      5.00000000E+03   # Left 1st gen. slepton mass
    47      5.00000000E+02   # Right scalar down mass
    44      5.00000000E+02   # Right scalar  up  mass
    41      5.00000000E+02   # Left 1st gen. squark mass
    36      5.00000000E+03   # Right scalar tau mass
    33      5.00000000E+03   # Left 3rd gen. slepton mass
    49      5.00000000E+03   # Right scalar bottom mass
    46      5.00000000E+03   # Right scalar top mass
    43      5.00000000E+03   # Left 3rd gen. squark mass
Block MASS   # Scalar and gaugino mass spectrum
#  PDG code   mass                 particle
        24      8.04229965E+01   #  W^+
        25      5.00000000e+03   #  h^0
        35      5.00000000e+03   #  H^0
        36      5.00000000e+03   #  A^0
```

SLHA file

Table 1

as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

Distribution of ET(C=MISSING) IN GEV for data and background MC calcu
Location: F 1

	. : DATA	. : BACKGROUND
	ABS(ETARAP(C=ELECTRON)) : < 2.47 - (1.37 TO 1.52)	
	ABS(ETARAP(C=JET)) : < 2.50	
	ABS(ETARAP(C=MUON)) : < 2.40	
	PT(C=JET) : > 30 GeV	
	PT(C=LEADING JET) : > 60 GeV	
	PT(C=LEPTON) : > 20 GeV	
	RE : P P --> LEPTON .GE.3JETS MM	
	SQRT(S) : 7000.0 GeV	
ET(C=MISSING) IN GEV	N	
0. – 10.	332 +19.1,-18.1 (stat)	238 ± 63.2 (stat) +39.9,-36.3 (sys)
10. – 20.	730 +27.9,-26.9 (stat)	712.9 ± 146.0 (stat) +156.2,-0.0 (sys)
20. – 30.	716.0 +27.6,-26.6 (stat)	878.7 ± 166.3 (stat) +0.0,-201.7 (sys)
30. – 40.	635.0 +26.1,-25.1 (stat)	604.9 ± 116.1 (stat) +95.8,-25.5 (sys)

mgl	msq	Expected # signal events (A,B,C,D)	Acceptance * efficiency (A,B,C,D)	Excluded (A,B,C,D)
100	100	1.07e+03,0.00e+00,1.[illegible]e+03,0.00e+00	6.26e-04,0.00e+00,8.25e-04,0.00e+00	y,n,n,n
100	200	2.78e+02,0.00e+00,4.62[illegible]+02,0.00e+00	2.98e-04,0.00e+00,4.96e-04,0.00e+00	n,n,y,n
100	300	2.74e+02,0.00e+00,5.23[illegible]+02,0.00e+00	3.42e-04,0.00e+00,6.53e-04,0.00e+00	n,n,y,n
100	400	3.13e+02,7.89e+01,7.05e+02,0.00e+00	4.11e-04,1.04e-04,9.26e-04,0.00e+00	n,n,n,n
100	500	2.01e+02,0.00e+00,2.38e+02,0.00e+00	2.69e-04,0.00e+00,3.18e-04,0.00e+00	n,n,n,n
100	600	9.30e+01,0.00e+00,3.34e+02,0.00e+00	1.25e-04,0.00e+00,4.50e-04,0.00e+00	n,n,y,n
100	700	2.26e+02,0.00e+00,3.00e+02,0.00e+00	3.06e-04,0.00e+00,4.06e-04,0.00e+00	n,n,n,n
100	800	3.39e+02,0.00e+00,4.12e+02,0.00e+00	4.60e-04,0.00e+00,5.59e-04,0.00e+00	n,n,y,n
100	900	[illegible]	1.00e-04,0.00e+00,[illegible]	[illegible]
100	1000	7.36e+01,0.00e+00,2.21e+02,0.00e+00	1.00e-04,0.00e+00,3.00e-04,0.00e+00	n,n,n,n
100	1400	0.00e+00,0.00e+00,1.47e+02,0.00e+00	0.00e+00,0.00e+00,2.00e-04,0.00e+00	n,n,n,n
100	2000	7.36e+01,0.00e+00,2.94e+02,0.00e+00	1.00e-04,0.00e+00,4.00e-04,0.00e+00	n,n,n,n
200	100	1.21e+03,3.03e+01,1.53e+03,0.00e+00	3.77e-03,9.45e-05,4.77e-03,0.00e+00	y,n,n,n
200	200	1.71e+03,7.42e+01,2.01e+03,2.18e+01	2.61e-02,1.13e-03,3.06e-02,3.32e-04	y,y,n,n
200	300	5.08e+02,2.50e+01,1.02e+03,1.09e+01	1.38e-02,6.80e-04,2.77e-02,2.96e-04	y,y,y,n
200	400	4.35e+02,3.41e+01,9.31e+02,1.01e+01	1.56e-02,1.22e-03,3.33e-02,3.61e-04	y,n,y,n
200	500	4.44e+02,2.62e+01,7.75e+02,0.00e+00	1.81e-02,1.07e-03,3.16e-02,0.00e+00	y,n,y,n
200	600	3.56e+02,2.25e+01,6.09e+02,4.62e+00	1.54e-02,9.77e-04,2.64e-02,2.01e-04	y,y,y,n
200	700	2.41e+02,3.16e+01,4.95e+02,1.43e+01	1.08e-02,1.42e-03,2.22e-02,6.40e-04	y,y,y,n
200	800	2.20e+02,2.62e+01,4.30e+02,8.05e+00	1.00e-02,1.19e-03,1.96e-02,3.67e-04	y,y,y,n
200	900	1.87e+02,1.71e+01,3.76e+02,1.27e+01	8.59e-03,7.85e-04,1.73e-02,5.83e-04	y,n,y,n
200	1000	1.73e+02,1.13e+01,3.72e+02,7.42e+00	7.98e-03,5.21e-04,1.72e-02,3.42e-04	y,n,y,n
200	1400	1.51e+02,1.08e+01,3.33e+02,6.48e+00	6.99e-03,5.00e-04,1.54e-02,3.00e-04	y,n,y,n
200	2000	1.62e+02,8.66e+00,3.59e+02,0.00e+00	7.49e-03,4.00e-04,1.66e-02,0.00e+00	y,n,y,n
300	100	9.94e+02,5.56e+01,1.41e+03,3.71e+01	5.28e-03,2.95e-04,7.49e-03,1.97e-04	y,n,n,n
300	200	1.35e+03,7.76e+01,1.82e+03,2.69e+01	6.30e-02,3.62e-03,8.50e-02,1.26e-03	y,y,n,y
300	300	1.60e+03,9.04e+01,1.49e+03,4.64e+01	1.99e-01,1.12e-02,1.85e-01,5.77e-03	y,y,n,y
300	400	4.86e+02,3.94e+01,8.35e+02,1.13e+01	1.05e-01,8.48e-03,1.80e-01,2.43e-03	y,y,y,n
300	500	3.49e+02,3.58e+01,5.83e+02,1.12e+01	1.05e-01,1.08e-02,1.75e-01,3.37e-03	y,y,y,y
300	600	3.13e+02,2.59e+01,4.87e+02,1.14e+01	1.15e-01,9.49e-03,1.78e-01,4.18e-03	y,y,y,y
300	700	2.32e+02,2.42e+01,3.94e+02,1.03e+01	9.49e-02,9.90e-03,1.61e-01,4.21e-03	y,y,y,y
300	800	2.01e+02,2.03e+01,3.41e+02,1.09e+01	8.74e-02,8.83e-03,1.48e-01,4.74e-03	y,y,y,y
300	900	1.84e+02,1.87e+01,3.21e+02,1.23e+01	8.31e-02,8.44e-03,1.45e-01,5.55e-03	y,n,y,y
300	1000	1.66e+02,1.38e+01,3.11e+02,9.44e+00	7.65e-02,6.36e-03,1.43e-01,4.35e-03	y,n,y,y
300	1400	1.61e+02,1.30e+01,2.93e+02,3.86e+00	7.57e-02,6.11e-03,1.38e-01,1.81e-03	y,n,y,n
300	2000	1.54e+02,9.67e+00,2.96e+02,3.25e+00	7.21e-02,4.53e-03,1.39e-01,1.52e-03	y,n,y,n
400	100	8.25e+02,6.55e+01,9.87e+02,3.21e+01	5.43e-03,4.31e-04,6.50e-03,2.11e-04	y,n,y,n

Expected # signal events Acceptance * efficiency

AAD 2011 — Search for squarks and gluinos using final states with jets and missing transverse momentum with the ATLAS detector in sqrt(s) = 7 TeV proton-proton collisions

Experiment: CERN-LHC-ATLAS (ATLAS)
Preprinted as CERN-PH-EP-2011-145
Archived as: ARXIV:1109.6572
Conference paper ATLAS-CONF-2011-155
Record in: INSPIRE
Rivet Analysis: ATLAS_2011_S9212183

CERN-LHC. Study of events having final states with no leptons, jets and missing transverse momentum, and with no reconstructed electrons or muons, in proton-proton collisions at a centre-of-mass energy of 7 TeV. Data are selected with various cuts and criteria to enhance different physics regions as described in the text of the paper. Exclusion limits on gluino and squark masses in SUSY models are presented for a simplified model (described in the paper) together with limits on m_0 and m_1/2 in MSUGRA/CMSSM models. The data sample has a total integrated luminosity of 1.04 FB-1 and shows no excess above the Standard Model background. Additional model interpretations are given in the Conference Note.

Extra data files (exclusion limits, acceptance*efficiency, slha files)

View list of currently selected plots

Table 1

as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

The distribution in Meff (scalar sum of the missing transverse moment pT jets) for events with at least 2 jets after the application of all selec shows the number of observed data points per 100 GeV bin plus the b Carlo and its upper and lower 1-sigma error limits uncertainty band.
Location: F 1

	. : DATA	. : BACKGROUND
	ET(C=MM) : > 130 GeV	
	ET(C=MM)/M(C=EFFECTIVE) : 0.3	
	M(C=EFFECTIVE) : > 1000 GeV	
	PT(C=JET) : > 40 GeV	
	PT(C=LEADING JET) : > 130 GeV	
	RE : P P --> 0LEPTON .GE.2JETS MM	
	SQRT(S) : 7000.0 GeV	
M(C=EFF) IN GEV	N/100 GEV	
300. – 400.	4605	5214 +1051,-845
400. – 500.	5159	5725 +1426,-759
500. – 600.	1905	2198 +516,-320
600. – 700.	739	888 +199,-104

Extra resource relating to the paper arxiv:1109.6572 - CERN-PH-2011-145

Experimental acceptance/efficiency and excluded cross section*branching ratios:
- Signal expectations and experimental acceptance/efficiency for M_gluino vs M_squark grid (massless LSP)
- Signal expectations and experimental acceptance/efficiency for CMSSM/MSUGRA grid

SLHA files:
- susy sqgl slha files
- susy CMSSM/MSUGRA slha files

Extra resource relating ot the ATLAS NOTE ATLAS-CONF

Experimental acceptance/efficiency and excluded cross section*branchi
- (direct decays) - SHLA files
- (one-step cascade decays, x=1/4) - SHLA files
- (one-step cascade decays, x=1/2) - SHLA files
- (one-step cascade decays, x=3/4) - SHLA files

Experimental acceptance/efficiency and excluded cross section*branchi
- (direct decays) - SHLA files
- (one-step cascade decays, x=1/4) - SHLA files
- (one-step cascade decays, x=1/2) - SHLA files
- (one-step cascade decays, x=3/4) - SHLA files

Table 5

as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

95% CL exclusion limit in the (Mgluino,Msquark) plane for the simplified model described in the paper. The gluino mass and the masses of the squarks of the first two generations are set to the values shown. The lightest neutralino is assigned mass of zero. All other supersymmetric particles, including the squarks of the third generation, are decoupled by being given masses of 5 TeV.
Location: F 2

	M(C=NEUTRALIN0) : 0.0 GeV
	RE : P P --> 0LEPTON JETS MM
	SQRT(S) : 7000.0 GeV
M(C=GLUINO) IN GEV	M(C=SQUARK) GEV
715.5	1976.2
716.5	1928.7
717.3	1881.2
717.5	1874.2

ATLAS M_gluino vs M_squark vs M_lsp SLHA data files
file name: susy_MSSM_Msq_Mgl_Mlsp.txt

neutralino mass = 0 GeV

MSSM_sqgl	gluino-mass (GeV)													
squark-mass (GeV)	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000
200	x	x	x	x	x	x	x	x	x	x	x	x	x	x
300	x	x	x	x	x	x	x	x	x	x	x	x	x	x
400	x	x	x	x	x	x	x	x	x	x	x	x	x	x
500	x	x	x	x	x	x	x	x	x	x	x	x	x	x
600	x	x	x	x	x	x	x	x	x	x	x	x	x	x
700	x	x	x	x	x	x	x	x	x	x	x	x	x	x
800	x	x	x	x	x	x	x	x	x	x	x	x	x	x
900	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1000	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1200	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1400	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1600	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1800	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2000	x	x	x	x	x	x	x	x	x	x	x	x	x	x

neutralino mass = 95 GeV

MSSM_sqgl	gluino-mass (GeV)															
squark-mass (GeV)	100	150	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000
100	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
150	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

mgl	msq	Expected # signal events (A,B,C,D,E)	Acceptance * efficiency (
200	200	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	300	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	400	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	500	1.13e+02,2.24e+02,1.79e+04,4.99e+02,1.74e+02	1.54e-04,3.05e-04
200	600	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	700	1.17e+02,1.17e+02,1.24e+04,0.00e+00,1.17e+02	1.75e-04,1.75e-04
200	800	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	900	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	1000	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	1200	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	1400	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	1600	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	1800	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
200	2000	0.00e+00,0.00e+00,0.00e+00,0.00e+00,0.00e+00	0.00e+00,0.00e+00
300	200	1.86e+02,5.52e+02,2.61e+04,4.86e+02,2.55e+02	2.91e-04,8.62e-04
300	300	3.33e+02,8.17e+02,1.90e+04,8.42e+02,2.79e+02	1.39e-03,3.40e-03
300	400	1.94e+02,4.61e+02,1.71e+04,5.32e+02,7.11e+02	1.40e-03,3.32e-03
300	500	2.17e+02,7.46e+02,1.29e+04,7.24e+02,8.64e+02	2.19e-03,7.52e-03
300	600	1.51e+02,4.79e+02,9.28e+03,4.95e+02,5.47e+02	1.85e-03,5.87e-03
300	700	6.47e+01,2.17e+02,7.94e+03,2.41e+02,4.01e+02	8.87e-04,2.98e-03
300	800	1.18e+02,3.86e+02,6.73e+03,4.87e+02,5.64e+02	1.72e-03,5.62e-03
300	900	1.69e+02,3.61e+02,6.44e+03,3.85e+02,3.34e+02	2.55e-03,5.46e-03
300	1000	5.58e+01,1.93e+02,6.47e+03,3.11e+02,2.71e+02	8.60e-04,2.98e-03
300	1200	4.28e+01,1.31e+02,6.16e+03,1.32e+02,1.45e+02	6.71e-04,2.05e-03
300	1400	1.05e+01,1.61e+02,5.54e+03,1.15e+02,1.27e+02	1.65e-04,2.53e-03
300	1600	2.04e+00,4.44e+01,6.25e+03,5.88e+01,2.03e+01	3.21e-05,6.99e-04
300	1800	3.20e+01,3.28e+01,5.71e+03,6.31e+01,2.67e+01	5.03e-04,5.15e-04
300	2000	3.28e+01,1.14e+02,5.81e+03,8.09e+01,1.70e+02	5.14e-04,1.79e-03
400	200	6.69e+02,8.48e+02,1.68e+04,1.27e+03,6.12e+01	1.83e-03,2.32e-03
400	300	4.17e+02,5.53e+02,1.23e+04,6.81e+02,3.99e+02	3.98e-03,5.28e-03
400	400	9.41e+02,1.64e+03,7.37e+03,1.24e+03,6.28e+02	1.95e-02,3.41e-02
400	500	2.41e+02,5.40e+02,6.97e+03,7.20e+02,7.50e+02	8.47e-03,1.90e-02
400	600	1.47e+02,3.44e+02,4.47e+03,5.78e+02,6.93e+02	7.47e-03,1.75e-02
400	700	1.52e+02,4.37e+02,3.46e+03,5.43e+02,6.04e+02	9.87e-03,2.84e-02
400	800	1.15e+02,3.25e+02,2.87e+03,4.31e+02,5.30e+02	8.71e-03,2.46e-02

Reaction Database Full Record Display

View short record or as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhep

AAD 2012 — Study of jets produced in associat
collisions at sqrt(s) = 7 TeV with the ATLAS det

Experiment: CERN-LHC-ATLAS (ATLAS)
Preprinted as CERN-PH-EP-2001-218
Archived as: ARXIV:1201.1276
Record in: INSPIRE

CERN-LHC. Measurements of cross sections for final states containing a W b
and hadronic jets in proton-proton collisions at a centre-of-mass energy of 7
TeV. The data is from the full 2010 sample with a total integrated luminosity
of 36 pb-1. Cross sections are measured in both the electron and muon decay
modes of the W and are presented as a function of inclusive jet multiplicity
up to five jets. For each multiplicity, cross sections are determined as a
function of (1) each jet PT, (2) the scalar sum (HT) of the PT of the charged
lepton, missing PT and all jets, (3) the invariant mass of the jets and (4)
rapidity distributions of various combinations of leptons and jets. The
results are corrected for all detector effects and all known backgrounds.
Comparative results are also shown for particle-level predicitions from ALPGE
SHERPA and BLACKHAT-SHERPA. A separate link gives the Non-Perturbati
correction for each table.

Link to the corrections tables

View list of currently selected plots

Total number of tables: **100**. Displaying: **1** to **10**. First | Previous | Next | La

REACTION DATABASE | DATA REVIEWS | PARTON DISTRIBUTION FUNCTION SERVER

plain text version of these correction value tables

Corrections for inclusive jet multiplicity at >20 GeV			
	Non-perturbative		QED
Bin	C_{UE} ±(stat.) ±(sys.)	C_{Had} ±(stat.) ±(sys.)	C_{QED} ±(stat.)
>=0 jets	1.000 ± 0.000 ± 0.000	1.000 ± 0.000 ± 0.000	0.992535 ± 7.21761e-05
>=1 jets	1.140 ± 0.001 ± 0.063	0.927 ± 0.000 ± 0.010	0.990344 ± 0.000196006
>=2 jets	1.200 ± 0.002 ± 0.080	0.900 ± 0.000 ± 0.005	0.991606 ± 0.000217624
>=3 jets	1.240 ± 0.003 ± 0.084	0.853 ± 0.001 ± 0.005	0.992753 ± 0.000344954
>=4 jets	1.289 ± 0.006 ± 0.092	0.803 ± 0.002 ± 0.004	0.991881 ± 0.000767215
>=5 jets	1.334 ± 0.012 ± 0.107	0.754 ± 0.003 ± 0.002	0.993659 ± 0.0013716
Corrections for jet multiplicity ratio at >20 GeV			
	Non-perturbative		QED
Bin	C_{UE} ±(stat.) ±(sys.)	C_{Had} ±(stat.) ±(sys.)	C_{QED} ±(stat.)
>= 1 / >= 0	1.140 ± 0.001 ± 0.063	0.927 ± 0.000 ± 0.010	N/A
>= 2 / >= 1	1.052 ± 0.002 ± 0.012	0.970 ± 0.000 ± 0.005	N/A
>= 3 / >= 2	1.034 ± 0.003 ± 0.001	0.948 ± 0.001 ± 0.000	N/A
>= 4 / >= 3	1.039 ± 0.006 ± 0.004	0.942 ± 0.002 ± 0.001	N/A
>= 5 / >= 4	1.000 ± 0.000 ± 0.000	1.000 ± 0.000 ± 0.000	N/A
>= 6 / >= 5	1.000 ± 0.000 ± 0.000	1.000 ± 0.000 ± 0.000	N/A
Corrections for first jet pT distribution for Njet >= 1 at >20 GeV			
	Non-perturbative		QED
Bin	C_{UE} ±(stat.) ±(sys.)	C_{Had} ±(stat.) ±(sys.)	C_{QED} ±(stat.)
20- 30	1.244 ± 0.002 ± 0.111	0.910 ± 0.001 ± 0.013	0.990473 ± 0.000246803
30- 40	1.107 ± 0.001 ± 0.043	0.926 ± 0.001 ± 0.009	0.990323 ± 0.000341429
40- 50	1.065 ± 0.001 ± 0.031	0.939 ± 0.001 ± 0.006	0.990538 ± 0.000407446
50- 70	1.044 ± 0.001 ± 0.022	0.948 ± 0.001 ± 0.006	0.990939 ± 0.000390236
70- 90	1.027 ± 0.001 ± 0.017	0.957 ± 0.001 ± 0.002	0.991828 ± 0.000515569
90- 120	1.017 ± 0.000 ± 0.015	0.965 ± 0.001 ± 0.004	0.993094 ± 0.000588361
120- 155	1.015 ± 0.001 ± 0.013	0.969 ± 0.001 ± 0.005	0.994201 ± 0.000643332
155- 195	1.010 ± 0.002 ± 0.019	0.971 ± 0.002 ± 0.001	0.994386 ± 0.00113205

KHACHATRYAN 2010 — Charged particle multiplicities in p
= 0.9, 2.36, and 7 TeV

Experiment: CERN-LHC-CMS (CMS)
Published in **JHEP 1101,079**
Preprinted as **CERN-PH-EP/1020-048**
Archived as: ARXIV:1011.5531
Record in: INSPIRE
Rivet Analysis: CMS_2011_S8884919

CERN-LHC. Measurements of the primary charged hadron multiplicity distributions for non-single-diffreactive (NSD) events in proton-proton collisions at centre-of-mass energies of 0.9, 2.36 and 7 TeV. The data were collected with a minimum-bias trigger and cover the |pseudorapidity| range from <0.5 to < 2.4. Numerical values were supplied by the authors. Covariant matrices of the multiplicities are given in the extra information of this record.

Link to the covariant matrices of the multiplicities

View list of currently selected plots

Total number of tables: **29**. Displaying: **1** to **10**. First | Previous | Next | Last

Table 1
as: plain text, AIDA, PyROOT, YODA, ROOT, mpl or jhepwork

Mean multiplicity for charged hadron production for |pseudorapidity| < 2.4.
Location: T 4, F 7

	ABS(ETARAP(P=3)) : 2.4
	PT(P=3) : > 0 GeV
	RE : P P --> CHARGED X
SQRT(S) IN GEV	MEAN(NAME=MULT(P=3))
900.	17.9 ± 0.1 (stat) ± 1.1 (sys)
2360.	22.9 ± 0.5 (stat) +1.6,-1.5 (sys)
7000.	30.4 ± 0.2 (stat) +2.2,-2.0 (sys)

The following resource information is available for the paper:

Covariance matrices of the multiplicity at sqrt(s) = 0.9 TeV for | eta | < 0.5.
Covariance matrices of the multiplicity at sqrt(s) = 0.9.TeV for | eta | < 1.0
Covariance matrices of the multiplicity at sqrt(s) = 0.9 TeV for | eta | < 1.5
Covariance matrices of the multiplicity at sqrt(s) = 0.9 TeV for | eta | < 2.0
Covariance matrices of the multiplicity at sqrt(s) = 0.9 TeV for | eta | < 2.4

Covariance matrices of the multiplicity at sqrt(s) = 2.36 TeV for | eta | < 0.5.
Covariance matrices of the multiplicity at sqrt(s) = 2.36 TeV for | eta | < 1.0
Covariance matrices of the multiplicity at sqrt(s) = 2.36 TeV for | eta | < 1.5
Covariance matrices of the multiplicity at sqrt(s) = 2.36 TeV for | eta | < 2.0
Covariance matrices of the multiplicity at sqrt(s) = 2.36 TeV for | eta | < 2.4

Covariance matrices of the multiplicity at sqrt(s) = 7 TeV for | eta | < 0.5.
Covariance m
Covariance m
Covariance m
Covariance m

gzipped, tarre

Covariance matrices of the multiplicity at sqrt(s) = 7TeV fo
The first covariance comes from the resampling of the data,
the second from the resampling of the response matrix.
They are both symmetrical.
The errors from both resamplings are added in quadrature to

n_i	n_j	cov_data	cov_mtx
0	0	1.088e-06	2.665e-07
0	1	-1.532e-07	-1.625e-07
0	2	-2.152e-08	-2.688e-08
0	3	1.523e-08	1.692e-08
0	4	2.160e-08	1.287e-08
0	5	1.520e-08	7.933e-09
0	6	3.648e-09	1.644e-09
0	7	6.333e-10	-2.839e-09
0	8	-4.389e-10	-3.260e-09
0	9	1.035e-10	-9.107e-10
0	10	-1.778e-11	2.011e-09
0	11	-7.572e-10	3.377e-09
0	12	-3.684e-10	2.446e-09
0	13	1.864e-09	2.543e-10
0	14	3.764e-09	-1.731e-09
0	15	3.123e-09	-2.506e-09
0	16	1.110e-10	-2.270e-09
0	17	-3.054e-09	-1.718e-09
0	18	-4.561e-09	-1.361e-09
0	19	-3.972e-09	-1.347e-09
0	20	-2.086e-09	-1.315e-09
0	21	-1.689e-10	-1.032e-09
0	22	1.079e-09	-4.876e-10
0	23	1.484e-09	1.633e-10
0	24	1.111e-09	7.083e-10
0	25	2.816e-10	1.021e-09
0	26	-6.452e-10	1.085e-09
0	27	-1.297e-09	9.968e-10

HepData - entering data

At present all data entry is done at Durham by either myself or my assistant.

Data files are sent to us by the experimenters which we convert into the required input format.

Before the LHC we had to ask...but now we are getting several request/week to enter data from the LHC experimenters!

I believe that in the long term this situation is unsustainable.

Need to get external encoders or experiments themselves to help by inputting direct into data records with Durham providing an overarching management role controlling the actual entry into the public database.

HepData - entering the data D.I.Y.

We have been developing a web entry form
+ simplified entry language

REACTION DATABASE | DATA REVIEWS | PARTON DISTRIBUTION FUNCTION SERVER | OTHER HEP RESOURCES

DATA INPUT FORM

1 → Please specifiy a file to upload

Choose File no file selected

2 → Upload

Uploading the file 6011.input

4 → 3 → Process the Input Data - then -[Display] the Final Record (getstarted with arXiv:)

```
*author: AAD
*reference: CERN-PH-EP-2012-197 : 2012
*reference: ARXIV:1208.2880 : 2012
*status:  Encoded 17 AUG 2012 by MRW
*title: Search for new phenomena in the WW to l nu lprime nuprime final state in pp collisions at sqrt(s) = 7 TeV with the ATLAS detector
*comment: CERN-LHC
*spiresId: 8888888
*durhamId: 6011
*inspireId: 1127504
*detector: ATLAS
*experiment: CERN-LHC-ATLAS
*dataset:
*location: T 2,F 2
*dscomment: Execpected and observer 95% upperlimits on cross section time branching ration for pp --> G < W W >
*reackey: P P -->
*obskey: SIG
*qual: RE : P P --> G X
*qual: SQRT(S) IN GEV : 7000
*yheader: ACCEPTANCE*EFFICIENCY : SIG(C=EXPECTED) IN PB : SIG(C=OBSERVED) IN PB
*xheader: MT(C=GRAVITON(RS)) IN GEV
*data: x : y : y : y
 200 ; 3.0 +- 0.1; 17.6;  20.3;
 350 ; 16.8 +- 0.5; 4.68;  5.51;
 500 ; 24.4 +- 0.7; 1.30;  1.46;
 750 ; 30.7 +- 0.9; 0.315;  0.264;
```

Inspire & HepData

Already have Inspire<==>HepData links in records

Now, thanks to Piotr Praczyk of the CERN Inspire group, we have:

1) HepData data within and displayable in Inspire

2) HepData search terms in Inspire

3) Inspire search terms in HepData

Inspire & HepData

INSPIRE HEP

Welcome to INSPIRE! INSPIRE is now in full operation and supersedes SPIRES.
Please direct questions, comments or concerns to feedback@inspirehep.net.

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

Information | References (23) | Citations (25) | Files | Plots | HEP Data

Measurement of the Inclusive Isolated Prompt Photon Cross Section in p anti-p Collisions at s(1/2) = 1.96-TeV using the CDF Detector.**

CDF Collaboration (T. Aaltonen (Helsinki Inst. of Phys.) *et al.*) Show all 583 authors.

Oct 2009
8 pp.

Phys.Rev. D80 (2009) 111106
DOI: 10.1103/PhysRevD.80.111106
FERMILAB-PUB-09-507-E
e-Print: arXiv:0910.3623 [hep-ex] PDF
Experiment: FNAL-E-0830, FNAL-TEV-CDF

Abstract: A measurement of the cross section for the inclusive production of isolated photons by the CDF experiment at the Fermilab Tevatron collider is presented. The measurement covers the pseudorapidity region |eta^gamma|<1.0 and the transverse energy range E_T^gamma>30 GeV and is based on 2.5/fb of integrated luminosity. The sample is almost a factor of seven larger than those used for recent published results and extends the E_T^gamma coverage by 100 GeV. The result agrees with next-to-leading order perturbative QCD calculations within uncertainties over the range 50<E_Tgamma<400 GeV, though the energy spectrum in the data shows a steeper slope at lower E_T^gamma.

Inspire & HepData

INSPIRE HEP

Welcome to INSPIRE! INSPIRE is now in full operation and supersedes SPIRES.
Please direct questions, comments or concerns to feedback@inspirehep.net.

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

Information | References | Citations | Files | Plots | HEP Data

Measurement of the Inclusive Isolated Prompt Photon Cross Section in p anti-p Collisions at s(1/2) = 1.96-TeV using the CDF Detector** - CDF Collaboration
(Aaltonen, T. *et al.*) Phys.Rev. D80 (2009) 111106 arXiv:0910.3623 [hep-ex]
FERMILAB-PUB-09-507-E

This data comes from the Durham HEPData project

SUMMARY:

Comments:

Table

Plain

↑↑↑Plot↑↑↑

	$ETARAP_3 \in (-1.0, 1.0)$
	$\bar{p}\,p \rightarrow GAMMA\,X$
	$\sqrt{s} = 1960.0\,GeV$
$ET_3\,(GeV)$	$d(\sigma)/dET_3/dETARAP_3\,(Pb/GeV)$

↓↓↓Expand↓↓↓

Inspire & HepData

This data comes from the Durham HEPData project

SUMMARY:

Comments:

Table

Plain

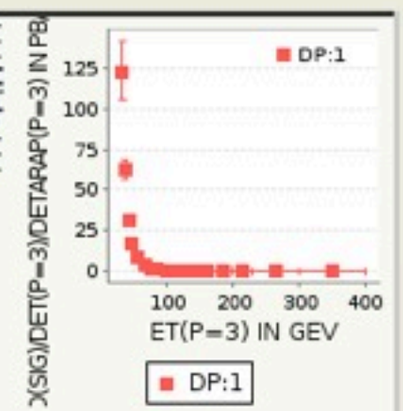
$ETARAP_3 \in (-1.0, 1.0)$

$\bar{p}\,p \rightarrow GAMMA\,X$

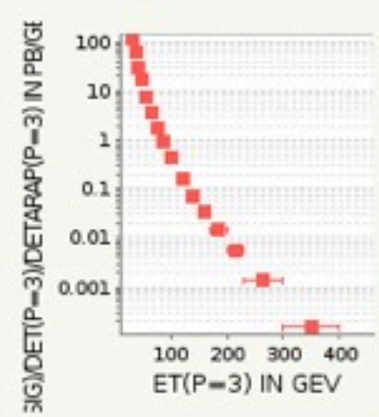
$\sqrt{s} = 1960.0\,GeV$

↑↑↑Hide↑↑↑

$ET_3\ (GeV)$	$d(\sigma)/dET_3/dETARAP_3\ (Pb/GeV)$
	↑↑↑Collapse↑↑↑
30.0 – 34.0	123 ± 1 (stat) +15.5%,-14.5% (sys)
34.0 – 39.0	62.1 ± 0.3 (stat) +10.8%,-9.8% (sys)
39.0 – 44.0	31.0 ± 0.2 (stat) +9.8%,-8.4% (sys)
44.0 – 50.0	17.2 ± 0.2 (stat) +10.2%,-8.1% (sys)
50.0 – 60.0	7.93 ± 0.08 (stat) +10.1%,-8.4% (sys)
60.0 – 70.0	3.54 ± 0.05 (stat) +9.8%,-8.5% (sys)
70.0 – 80.0	1.76 ± 0.03 (stat) +10.0%,-9.1% (sys)
80.0 – 90.0	0.908 ± 0.014 (stat) +9.3%,-7.9% (sys)
90.0 – 110.0	0.441 ± 0.005 (stat) +8.8%,-8.7% (sys)
110.0 – 130.0	0.168 ± 0.003 (stat) +8.6%,-8.7% (sys)
130.0 – 150.0	0.0725 ± 0.0016 (stat) +7.8%,-8.0% (sys)
150.0 – 170.0	0.0341 ± 0.0008 (stat) +8.8%,-10.0% (sys)
170.0 – 200.0	0.0146 ± 0.0004 (stat) +8.8%,-9.1% (sys)
200.0 – 230.0	0.00566 ± 0.00024 (stat) +9.0%,-10.6% (sys)
230.0 – 300.0	0.00138 ± 0.00008 (stat) +10.0%,-10.7% (sys)
300.0 – 400.0	0.000149 ± 0.000021 (stat) +15.2%,-13.4% (sys)



ETARAP(P=3) : -1.0 TO 1.0



Data Reviews

Home Page
Other Data Reviews
Reaction Database

CONTENTS

HEPDATA ON-LINE DATA REVIEW

A Review of Quarkonii Data in Hadronic Interactions

HEPDATA ON-LINE DATA REVIEW

Experiments
CERNS-SPS
NA3 NA10
NA11 NA16
NA27 NA32
NA34-3(HELIOS)
NA38 NA50
NA51 NA60
CERN-SppS
UA1 UA6
DESY-HERA
HERA-B
BNL-RHIC
PHENIX STAR
Fermilab-Tevatron
CDF D0
E772 E789
E866
CERN-LHC
ALICE ATLAS
CMS LHCb
Initial States
p(bar)-p
p-d p-A
d-A A-A
meson-p(A)
Measurements
Cross Sections
Total
Differential(Y)
Differential(PT)
Differential(X)
Polarization
Final States
J/PSI PSI
CHI/C Upsilon
D/D* DiMuon
Charm Beauty
Lambda/C Xi/C

An up-to-date archive of Quarkonii data in Hadronic Interactions

data from a specific experiment

CERN-SPS	CERN-SppS	HERA	BNL-RHIC	Fermilab-Tevatron	CERN-LHC
NA3 NA10 NA11 NA16 NA27 NA32 NA34-3 NA38 NA50 NA51 NA60	UA1 UA6	HERA-B	PHENIX STAR	CDF D0 E772 E789 E866	ALICE ATLAS CMS LHCb

data for a specific

(anti)proton-proton	proton-deutero
deuteron-nucleus	nucleus-nuclei

data for a specific m

Cross Sections	
Total Differential-PT Differential-Rapidity Differential-X Polarization	

To send any comments on this service please

Data from the ALICE Collaboration

The individual links display the specific datasets.
The publication reference link displays the SPIRES hep database entry.
The [R] link displays the complete entry for that paper from the HepData Reaction database.

- **Aamodt et al.** CERN-PH-EP-2011-057 [R] - **9050507**
  Rapidity and transverse momentum dependence of inclusive J/psi production in pp collisions at sqrt(s) = 7 TeV
  - - p p --> J/PSI.... 7000 GeV D2SIG/DPT/DYRAP
    D2SIG/DPT/DYRAP v PT (1) (Double differential J/PSI cross
    D2SIG/DPT/DYRAP v PT (2) (Differential J/PSI cross section)
  - - p p --> J/PSI.... 7000 GeV DSIG/DYRAP
    DSIG/DYRAP v YRAP (3) (Differential J/PSI cross section fr
  - - p p --> J/PSI.... 7000 GeV SIG
    SIG v Ecm (4) (Total J/PSI cross section from the di-electro
    SIG v Ecm (5) (Total J/PSI cross section from the di-muon
- **Aamodt et al.** JHEP 1201(2011)128 [R] - **9258736**
  Measurement of charm production at central rapidity in proton-prot
  - - p p --> D.... 7000 GeV DSIG/DPT
    DSIG/DPT v PT (1) (Differential cross section for prompt D0
    DSIG/DPT v PT (2) (Differential cross section for prompt D+
    DSIG/DPT v PT (3) (Differential cross section for prompt D*
  - - p p --> D.... 7000 GeV DSIG/DYRAP
    DSIG/DYRAP v RE (4) (Integrated cross sections for prompt
- **Aamodt et al.** PRL 108(2012)082001 - **9259007**
  J/psi polarization in pp collisions at sqrt(s)=7 TeV
  - - p p --> J/PSI.... 7000 GeV POL
  - - p p --> J/PSI.... 7000 GeV D2N/DCOS(THETA)
- **Aamodt et al.** PL B708(2012)265 [R] - **9340173**
  Heavy flavour decay muon production at forward rapidity in proton-
  - - p p --> MU.... 7000 GeV DSIG/DPT
    DSIG/DPT v PT (1) (pT-differential production cross section
    DSIG/DPT v PT (3) (pT-differential production cross section
    DSIG/DPT v PT (4) (pT-differential production cross section
    DSIG/DPT v PT (5) (pT-differential production cross section
    DSIG/DPT v PT (6) (pT-differential production cross section
    DSIG/DPT v PT (7) (... -)

Quick link to HepData data reviews

- NEW Quarkonia data in Hadronic Interactions
- Structure functions in DIS
- Single photon production in hadronic interactions
- Two-photon reactions leading to hadron final states
- Drell-Yan cross-sections
- Inclusive particle production data in e+ e- interactions
- Hadronic total cross-sections (R) in e+e- interactions
- Low-energy neutrino cross-sections
- Event shapes in lepton-lepton and lepton-nucleon interactions

AAMODT 2011

Rapidity and transverse momentum dependence of inclusive J/psi production in pp collisions at sqrt(s) = 7 TeV

Experiment: CERN-LHC-ALICE (ALICE)
Preprinted as **CERN-PH-EP-2011-057**
Archived as **ARXIV:1105.0380**
Spires ID (IRN): **9050507**(View)

Table 1

Double differential J/PSI cross section from the di-electron channel as a function of transverse momentum, the first error is statistical, the first systematic error is the correlated one, the second is the non-correlated one. The last four columns are the errors considering a +1 polarization in the Collins-Soper frame, a -1 polarization in the Collins-Soper frame, a +1 polarization in the Helicity frame and a -1 polarization in the Helicity frame, respectively.
Location: T 2, P 14

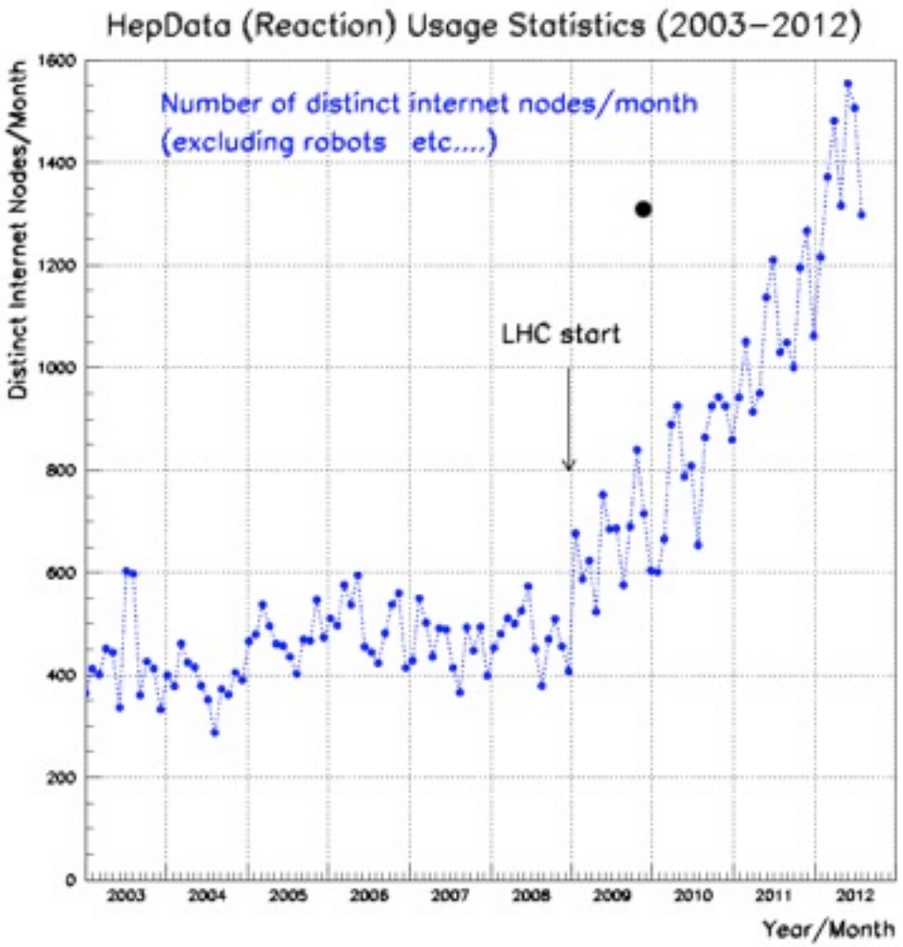
ABS(YRAP) : <0.9
RE : P P --> J/PSI X
SQRT(S) : 7000.0 GeV

PT IN GEV	D2(SIG)/DPT/DYRAP IN MUB/GEV	SYS(+1,CS)	SYS(-1,CS)	SYS(+1,SH)	SYS(-1,SH)
0.5 (bin: 0.00–1.0)	0.59 ± 0.21 (stat) ± 0.02 (sys) ± 0.18 (sys)	0.14	-0.16	0.07	-0.1
1.5 (bin: 1.0–2.0)	1.62 ± 0.32 (stat) ± 0.06 (sys) ± 0.27 (sys)	0.36	-0.43	0.24	-0.34
2.5 (bin: 2.0–3.0)	1.64 ± 0.27 (stat) ± 0.07 (sys) ± 0.20 (sys)	0.29	-0.37	0.3	-0.38
4.0 (bin: 3.0–5.0)	0.62 ± 0.11 (stat) ± 0.02 (sys) ± 0.08 (sys)	0.05	-0.07	0.14	-0.11
6.0 (bin: 5.0–7.0)	0.35 ± 0.06 (stat) ± 0.01 (sys) ± 0.04 (sys)	0.001	-0.004	0.05	-0.07

HepData Usage

As a metric to measure the use of HepData we have continued to count the number of distinct internet nodes, excluding robots etc., accessing per month.

This remained steady from ~500 up to 2009, the start of the LHC, then has increased three-fold to the present.



Conclusions/Future

- HepData continues to compile scattering data and data reviews.

- Since 2009 HepData has used its new, maintainable, software developed with the CEDAR collaboration.

- HepData has expanded to provide a 'resource' area for non-standard type distributions and information from the LHC.

- Begun to explore the possibilities of direct user data entry

- Use of HepData has increased 3-fold since the start of the LHC.

- HepData has strong connections with Inspire, with mutual linking of records, searching and data records.

- HepData continues to maintain UK PDG web site.