### **The Durham HepData Project**





ABOUT HEPDATA · SUBMITTING DATA

# HepData <u>status+history</u>

Contact us at: hepdata@projects.hepforge.org

HepData is funded by the UK STFC and hosted at the Durham IPPP. HepData also maintains the UK mirror of the PDG.





### Mike Whalley Durham U., UK

HepData Advisory Committee kickoff meeting 12th November 2014 Durham, UK

### Brief Introduction to HepData

- Purpose to compile (mainly) published HEP 'cross section' data and make them publicly available.
- Small group, based at the IPPP, Durham U. (UK) -
  - DB Manager/Physicist (MW part-time/retiring)
  - New DB Manager/Physicist (GraemeWatt)
  - Non-Physicist Assistant (Joanne Bentham)
- STFC(UK) funded (>35 years) presently to October 2016.
- 1980-2005 pre-history old HepData
- 2005-2014 history new HepData
- Why?

### Why? - a few reasons

- Reliable, published and usable data should be freely available to the community.
- Data often appears only as plots people need numbers e.g. for detailed comparisons.
- A large amount of effort (and money!) goes into producing these data.
- Data can often be difficult to locate.

For these reasons, and others, it is imperative and useful to preserve and make easily available these data sets.

HepData is a tool to do this.

# Pre-History (~1980-2005)

- HepData actually started life ~1975 with a 5 year SRC theory grant to compile together experimental data cross section distributions which previously had been in the possession of a number of sources.
- Early days in collaboration with the PDG at Berkeley

   produced the DB management system, the Berkeley
   Database Management System (BDMS) and
   developed the language PPDL.
- Went live ~1980 (Pink), using BDMS,
- 1980 began experimental rolling grant.
- In those days it ran as a batch system on the Rutherford Lab central computer (Electric).

# Pre-History (~1980-2005)

- I took over as Database Manager in 1982 and continued the process of collecting data from the experiments as well as moving the system on to an interactive system (VM, CMS etc...).
- Over the years we moved through various platforms, such a VAX-VMS, HP Unix (with guest accounts), and eventually in the early 1990s on to a Web based system. All using the same BDMS management system.
- Project also took on various other activities such as implementing the SLAC (ppf/ppa) - Spires - data in BDMS for the UK, the running of a UK PDG mirror, and eventually a SPIRES mirror, as well as LHAPDF.

# Old Web Interface

	containing numerical values structure functions, and polar Group (UK) with help from th	of HEP scattering data such isation measurements, from e COMPAS group (Russia,) ar	as total and differential cro wide range of experiments d is updated at regular inte	atabase oss sections, fragme s. It is compiled by the ervals.	ntation functions, he <b>Durham Database</b>		
	• Reaction Database HELP • Full U	lser Guide 👳 Une <u>register</u> to tell us wi	o you are, or <mark>feedback</mark> to cond us any c	ommments, suggestions or comp	alers. 🥹		
	Standard (Keyword) Searc	h Method	Other Me	thods of Search t	ne Database		
You	are using the OLD HepData R If you wish to use the NEW on	eaction database e, click <u>here</u>	• Form Interface A fill-in form for ma	kin			
Enter search com	mand:		<ul> <li>Easy search method Step-by-step through initial states to final states</li> </ul>	1) <u>AALTONEN</u>	109-90 Experiment FERMILAB-PUB-09-50	FNAL-0830 - Detector/Collabo 7-E (OCT 2009)	oration: CDF
then: Submit Sear	rch or Clear or ask for HELP		Data Reviews	Display th	e Full Data Re	cord Display the Tabl	e Index Show SLAC/HEP Entry
Search syntax: key where "op" is =, >, and "boolean" is A {} indicates option Example searches rec = peep gener rec = p> p and she = f exp deep here? and she f2 active search peed bloc re place p> p and she = f exp deep here? and she f2 mether p> p and she = f exp deep here? and she f2 mether p> peed she = f exp deep here? and she	<pre>word {op} value {boolean keys , &lt;, &gt;=, &lt;=, (the default is =). ND, OR, and NOT. hal elements. why it authors either swith or junes? the end of values performs a right the end of values performs a right the case insensitive. tical keywords must be repeated belect for specific help): } [REAC] [FSP] [BEAM] [TARG] [EXP]</pre>	word {op} value} { ht truncated search. in complex searches.	Compilations of self to locate format. Single Photon Product Two-Photon Reactions Drell-Yan cross section Drell-Yan cross section Inclusive particle prod Hadronic Total Cross 3 Low Energy Neutrino ( These Data Reviews an G - Nuclear and Partic reviews can be obtain Pre-defined Event Shapes (Thrust Event Shapes in Ere- Stevent Shapes in non-E Stevent Shapes in non-E	Fermilab-Teva centre-of-mas and transvers (RED 4792) ( Set Systematic E For the meas the quoted sy- ed Additional unit Table 1 - T 1,1	atron. Measurement of s energy of 1.96 TeV. the energy > 30 GeV ba- all kumacs) (all number rrors and Correction surement of DSIG/D stematic error is 6 PC the servation of the lum F 3 (in paper/preprint clusive isolated pho	f the inclusive isolated photon The measurement covers the ised on a data sample with tot is ns ET/DETARAP T inosity measurement.	a cross section in pbar-p collisions at photon pseudorapidity range -1.0 to 1.0 al integrated luminosity of 2.5 fb-1.
Particle vocabular	y: for help select first letter of n	name from below:	<ul> <li>Jet production in E+E-</li> <li>Jet production in non-</li> </ul>	COREAC: PBAR P COBS: DSIG/DE PLAB: 204776	> GAMMA X T/DETARAP 1.000 GeV/c		
Output Text Size = NORM/	AL V D		to the HEPDATA h	om	PBAD	P> CAMMA X	7
Other	Related Databases	SPIRES-HEP	Experiments En	nail	ETABAR/	P=2) = -10  TO  10	_
· · · · ·					ETARAP(	s) = 1960 CEV	
				ET(D=2)	DISICULDET	B=2)/DETABAB(B=2)	
				(GEV)	D(SIG)/DEI(	PB/GEV)	
				30 TO 34	123 +- 1 (DSY	S=+15.5 PCT,-14.5 PCT)	
				34 TO 39	62.1 +- 0.3 (DS	YS=+10.8 PCT,-9.8 PCT)	
				39 TO 44	31.0 +- 0.2 (DS	YS=+9.8 PCT,-8.4 PCT)	

44 TO 50

50 TO 60

60 TO 70

70 TO 80

80 TO 90

90 TO 110

17.2 +- 0.2 (DSYS=+10.2 PCT,-8.1 PCT)

7.93 +- 0.08 (DSYS=+10.1 PCT,-8.4 PCT)

3.54 +- 0.05 (DSYS=+9.8 PCT,-8.5 PCT)

0.908 +- 0.014 (DSYS=+9.3 PCT,-7.9 PCT)

0.441 +- 0.005 (DSYS=+8.8 PCT,-8.7 PCT)

1.76 +- 0.03 (DSYS=+10.0 PCT,-9.1 PCT)

# 2005 ->The new HepData & CEDAR

In 2005, in preparation for the LHC: JetWeb (UCL) + HepData (Durham) 3 year collaboration - CEDAR (e-science STFC funded)

UCL: Jon Butterworth, Ben Waugh + Durham: James Stirling, <u>Andy Buckley</u>, + MW

Produced: Rivet - new HepData - Hepforge

old HepData - in the long-term was unmaintainable - BDMS - Fortan + cgi scripts

new HepData - to use a standard software (Java+MySQL) - 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.



## What exactly is HepData now ?

- DataBase\* essentially of Standard Model cross sections and measurements dating back over 35 years.
- Files\*\* collections of data of varying format systematic error breakdowns, correlation matrices, slha files, acceptances, efficiencies, etc....
- Linked together through a Web page
- Different output formats eg. html, plain text, xml, plots
- Yoda files for **Rivet** input
- \* mysql + Java model using Hibernate for database persistency and Tapestry for web pages
   \*\* resource area on our main server

# The HepData 'home' page

http://hepdata.cedar.ac.uk

### **The Durham HepData Project**



ABOUT HEPDATA . SUBMITTING DATA

#### REACTION DATABASE . DATA REVIEWS . PDF PLOTTER

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	<ul> <li>HepData data reviews</li> <li>New Quarkonia data in Hadronic Interactions</li> <li>Structure functions in DIS</li> <li>Single photon production in hadronic interactions</li> </ul>
To search the database: Enter your query command comprising keyword-value pairs joined with Boolean ANDs. A null entry will retrieve all records. Use % as the right or left truncation character to search for values beginning or ending with the value. All searches are <b>case-insensitive</b> . More details are in the <b>Search Help</b> .	<ul> <li>Two-photon reactions leading to hadron final states</li> <li>Drell-Yan cross-sections</li> <li>Inclusive particle production data in e+e- interactions</li> <li>Hadronic total cross-sections (R) in e+e- interactions</li> <li>Low-energy neutrino cross-sections</li> <li>Event shapes in lepton-lepton and lepton-nucleon interactions</li> </ul>
The basic HepData keywords are: reac - the reaction (e.g. p p> charged x), also beam, targ, and fsp. obs - the observable (e.g. SIG, DSIG/DX, DN/DPT). sqrts - the centre-of-mass energy in GeV. exp - the experiment/laboratory name (e.g. ZEUS, CERN, LHC). date - the year of the publication/preprint. auth - the first author name on the paper. ref - the publication/preprint reference.	HepData @HepData 1 Nov Added @ATLASpapers data on "Search for new particles in events with one lepton and missing pT in pp at 8 TeV" to hepdata.cedar.ac.uk/view/ins1308524 Expand
Searching via 'Inspire': title: word (matches Inspire records having 'word' in the paper title). keyword: word (matches Inspire records having 'word' in the Inspire keywords). author: name (matches Inspire records having 'name' in the author list).	HepData @HepData 31 Oct Added CDF data on "Measurement of Charm Meson Pair Cross Sections" to hepdata.cedar.ac.uk/view/ins766572
	✓ Follow @HepData

#### Contact us at: hepdata(at)projects.hepforge.org

HepData is funded by the UK STFC and hosted at the Durham IPPP. HepData also maintains the UK mirror of the PDG.





### Initial search results

### The Durham HepData Project

REACTION DATABASE · DATA REVIEWS · PDF PLOTTER

### Reaction Database Search Result

Search: exp Ihc Result: 349 documents found (displaying 1 to 20) First | Previous | Next | Last | All

Enter query:

Search again

... need help with searching?

 AAD 2014 – Experiment: CERN-LHC-ATLAS (ATLAS) Preprint: CERN-PH-EP-2013-155 Archive: ARXIV:1409.5542

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

Full data record | Short data record | INSPIRE | CDS

AAD 2014 – Experiment: CERN-LHC-ATLAS (ATLAS) Published: JHEP Preprint: CERN-PH-EP-2014-209 Archive: ARXIV:1409.0746

Search for long-lived neutral particles decaying into lepton jets in proton-proton collisions at \$\sqrt{s}\$ = 8 TeV with the ATLAS detector

Full data record | Short data record | INSPIRE

AAD 2014 – Experiment: CERN-LHC-ATLAS (ATLAS) Preprint: CERN-PH-EP-2014-152 Archive: ARXIV:1408.0886

Search for WPRIME -> TOP BOTTOM -> QUARK QUARK BOTTOM BOTTOM Decays in P P Collisions at sqrt(s) = 8 TeV with the ATLAS Detector

Full data record | Short data record | INSPIRE | CDS

AAD 2014 – Experiment: CERN-LHC-ATLAS (ATLAS)

Published: JHEP 1409,037 (2014) Preprint: CERN-PH-EP-2014-139 Archive: ARXIV:1407.7494

Search for new particles in events with one lepton and missing)transverse momentum in pp collisions at sqrt(s) = 8 TeV with the ATLAS detector



ABOUT HEPDATA · SUBMITTING DATA

## Example of a HepData record

### **The Durham HepData Project**

REACTION DATABASE · DATA REVIEWS · PDF PLOTTER

#### **Reaction Database Full Record Display**

View short record or as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis or MarcXML

### AAD 2014 — Measurement of the production cross section of prompt J/psi mesons in association with a W boson in pp collisions at sqrt(s) = 7 TeV with the ATLAS detector

Experiment: CERN-LHC-ATLAS (ATLAS) Preprinted as CERN-PH-EP-2013-184 Archived as: ARXIV:1401.2831 Auxiliary Material: http://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/BPHY-2012-06/ Record in: INSPIRE Record in: CERN Document Server

CERN-LHC. The process P P --> W J/PSI X provides a powerful probe of the production mechanism of charmonium in hadronic collisions, and is also sensitive to multiple parton interactions in the colliding protons. Using the 2011 ATLAS dataset of 4.5 fb^-1 of sqrt(s) = 7 TeV pp collisions at the LHC, the first observation is made of the production of W + prompt J/psi events in hadronic collisions, using W --> MU NU and J/PSI --> MU MU. A yield of 27.4 +7.5,-6.5 W + prompt J/psi events is observed, with a statistical significance of 5.1 sigma. The production rate as a ratio to the inclusive W boson production rate is measured, and the double parton scattering contribution to the cross section is estimated.

Table 1 (Figure 5.) cor as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis or MarcXML

The W + prompt J/psi to inclusive W production cross-section ratio (times 10^6) in the J/psi fiducial region (Fiducial), after correction for J/psi acceptance (Inclusive), and after subtraction of the double parton scattering component (DPS-subtracted). The first uncertainty is statistical, the second is systematic, and the third/fourth (where applicable) is the uncertainty up/down due to spin-alignment.

ABS(YRAP(J/PSI)) PT(J/PSI) RE RE	0.0-2.1 8.5-30.0 GeV P P> W+ < MU+ NU > J/PSI < MU+ MU- > X P P> W- < MU- NUBAR > J/PSI < MU+ MU- > X	3 ×10 <sup>-6</sup> pp→ prompt J/ψ + W : pp→W ARLA3, ta - 7 TeV, [1. dt + 43.15 <sup>+</sup> 5-ty <sub>1</sub> /=21, 85 + p <sub>1.24</sub> < 30 GeV + Data File dynamic incentiony 1.0 CG including 1 feedblan × 1.5
SQRT(S) Ratio	7000.0 GeV 10**6 * BR(J/PSI -> MU+ MU-) * 1/SIG(W) * D(SIG(W JPSI))/DYRAP(J/PSI)	
Fiducial Inclusive DPS-subtracted	0.51 ± 0.13 (stat) ± 0.04 (sys) 1.26 ± 0.32 (stat) ± 0.09 (sys) +0.41,-0.25 (sys,spin-alignment) 0.78 ± 0.32 (stat) ± 0.22 (sys) +0.41,-0.25 (sys,spin-alignment)	Fiducial Inclusive DPS

Durham

ABOUT HEPDATA . SUBMITTING DATA

btracted

### another example....

### **The Durham HepData Project**

REACTION DATABASE · DATA REVIEWS · PDF PLOTTER

#### Reaction Database Full Record Display

View short record or as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis or MarcXML

#### ABELEV 2014 — Production of charged pions, kaons and protons at large transverse momenta in pp and Pb-Pb collisions at sqrt(sNN) = 2.76 TeV

Experiment: CERN-LHC-ALICE (ALICE) Preprinted as CERN-PH-EP-2013-230 Archived as: ARXIV:1401.1250 Record in: INSPIRE Record in: CERN Document Server

CERN-LHC. Measurement of transverse momentum (pT) spectra of charged pions, kaons and protons up to pT = 20 GeV at mid-rapidity in Pb-Pb and pp collisions at sqrt(sNN) = 2.76 TeV, recorded in 2010 and 2011, respectively, using the ALICE detector at the LHC. At intermediate pT (2-8 GeV) an enhancement of the proton-to-pion ratio with respect to pp collisions is observed and the ratio reaches ~0.80 in central Pb-Pb collisions. The measurement of the nuclear modification factors for charged pions, kaons and protons indicates that within the systematic and statistical uncertainties they are the same at high pT (> 10 GeV).

Table 1 (Figure 2 (left).) cor as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis or MarcXML Invariant yields of identified pions in central and peripheral Pb-Pb collisions, together with the unscaled pp reference yields.

CENTRALITY	0 TO 5 pct	60 TO 80 pct	
ETARAP	-0.8-0.8		
RE	PB PB> (PI+ + PI-) X	PB PB> (PI+ + PI-) X	P P> (PI+ + PI-) X
SQRT(S)/NUCLEON	2760.0 GeV		
PT IN GEV		1/(Nev*2*PI*PT)*D2(N)/DPT/DYRAP IN GEV**	-2
2.0 - 2.2	2.302 ± 0.004 (stat) ± 0.210 (sys)	0.06735 ± 0.00025 (stat) ± 0.00714 (sys)	0.003910 ± 0.000011 (stat) ± 0.000319 (sys)
2.2 - 2.4	1.345 ± 0.002 (stat) ± 0.122 (sys)	0.04154 ± 0.00016 (stat) ± 0.00439 (sys)	0.002432 ± 0.000008 (stat) ± 0.000199 (sys)
2.4 - 2.6	0.8011 ± 0.0015 (stat) ± 0.0728 (sys)	0.02617 ± 0.00011 (stat) ± 0.00276 (sys)	0.001539 ± 0.000006 (stat) ± 0.000126 (sys)
2.6 - 2.8	0.4828 ± 0.0009 (stat) ± 0.0438 (sys)	0.01694 ± 0.00008 (stat) ± 0.00179 (sys)	0.001011 ± 0.000004 (stat) ± 0.000083 (sys)
2.8 - 3.0	0.2960 ± 0.0006 (stat) ± 0.0268 (sys)	0.01124 ± 0.00006 (stat) ± 0.00118 (sys)	0.0006816 ± 0.0000043 (stat) ± 0.0000557 (sys)
3.0 - 3.2	0.1834 ± 0.0006 (stat) ± 0.0166 (sys)	0.007594 ± 0.000058 (stat) ± 0.000796 (sys)	0.0004670 ± 0.0000025 (stat) ± 0.0000382 (sys)
3.2 - 3.4	0.1168 ± 0.0004 (stat) ± 0.0106 (sys)	0.005238 ± 0.000043 (stat) ± 0.000548 (sys)	0.0003254 ± 0.0000019 (stat) ± 0.0000266 (sys)
		4	in the second se



ABOUT HEPDATA · SUBMITTING DATA

### example showing link to 'resource area' file

REACTION DATABASE · DATA REVIEWS · PDF PLOTTER

ABOUT HEPDATA · SUBMITTING DATA

#### Reaction Database Full Record Display

View short record or as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis or MarcXML

#### AAD 2013 — Measurement of the high-mass Drell-Yan differential cross-section in pp collisions at sqrt(s)=7 TeV with the ATLAS detector

Experiment: CERN-LHC-ATLAS (ATLAS) Preprinted as CERN-PH-EP-2013-064 Archived as: ARXIV:1305.4192 Record in: INSPIRE

CERN-LHC. Based on an integrated luminosity of 4.9 /fb, the differential cross-section in the Z/gamma measured with the ATLAS detector as a function of the invariant mass, Mee, in the range 116 < Mee fiducial region in which both the electron and the positron have transverse momentum pT > 25 GeV a pseudorapidity letal < 2.5..

15

thing

Energy scale & res Unfolding

Link to the full breakdown of the sources of errors

Table 1 (T 2, F 2, 3.) The same or as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, St modelling Theoretical Measured differential cross sections as a function of the di-electron mass for DY production at the Becari

background events uncertainty %C statistic uncertainty for bin-by-bin unfolding electron reconstruction uncertainty	resource area file
uncertainty of the energy scale and energy resolution uncertainty of the unfolding method	
trigger uncertainty includes all uncertainties of the MC modeling (vertex	position, I pT, pile-up, K-factors)

includes all uncertainties of the NC modeling (vertex position, I pT, pile-up, K-factors) uncertainty of theoretical extrapolation to the fiducial region luminosity uncertainty

ABS(ETARAP(EE))	< 2.5		
PT(C=E)	> 25 GeV	fro	m tha databasa
RE	PP->E+E-X Iro		n the database
SQRT(S)	7000.0 GeV		
	BORN		DRESSED
M(EE) IN GEV		D(SIG)/DA	(EE) IN PB/GEV
116 130.	0.224 ± 1.1% (stat) ± 4	.2% (sys)	0.215 ± 1.1% (stat) ± 4.2% (sys)
130 150.	0.102 ± 1.4% (stat) ± 4	.3% (sys)	0.0984 ± 1.4% (stat) ± 4.3% (sys)
150 170.	0.0512 ± 2.0% (stat) ±	4.6% (sys)	0.0493 ± 2.0% (stat) ± 4.6% (sys)

nee xmin	nee xnax	Stat.	Nbkg stat.	CDY stat.	Nbkg	Reco.	Id.	Energy scalesre	Unfolding	Trigger	MC delli	Theoretical	Lord
Ge	N	<-unco	rrelated	(*)->	¢			-bis-to-b	in correla	ated (%)-			)
116	130	1.1	0.1	0.7	1.3	1.6	2.3	2.1	1.5	0.8	0.2	0.3	1.8
130	150	1.4	0.2	0.7	1.8	1.6	2.3	1.7	1.5	0.8	0.5	0.2	1.8
150	170	2.0	0.3	1.0	2.5	1.6	2.3	1.6	1.5	0.8	0.2	0.2	1.8
170	190	2.7	0.4	1.3	2.8	1.6	2.3	1.0	1.5	0.8	0.2	0.2	1.8
190	210	3.0	0.5	1.7	3.4	1.6	2.4	1.5	1.5	0.8	0.3	0.4	1.8
210	230	4.4	0.9	2.0	4.1	1.6	2.4	2.0	1.5	0.8	0.8	0.5	1.8
230	250	5.2	0.9	2.4	3.8	1.6	2.4	1.2	1.5	0.8	0.2	0.3	1.8
250	300	4.3	0.7	0.9	4.1	1.6	2.4	1.7	1.5	0.8	0.2	0.2	1.8
300	400	5.1	0.9	1.0	4.4	1.6	2.5	1.7	1.5	0.8	0.3	0.3	1.8
400	500	9.4	2.0	0.9	4.0	1.6	2.6	2.3	1.5	0.8	0.5	0.4	1.8
500	700	11	2.0	0.8	3.1	1.6	2.6	2.4	1.5	0.8	0.2	0.3	1.8
700	1000	24	4.0	0.6	4.3	1.6	2.6	2.8	1.5	0.8	0.2	0.4	1.8
1000	1500	50	7.6	0.4	3.1	1.7	2.5	3.3	1.5	0.8	0.3	0.4	1.8
dresse	d level												
								********					
mee	nee xnax	Stat.	Sbkg stat.	CDY stat.	Nhkg	Reco.	Id.	Energy scaleáre	Unfolding	Trigger	MC dell:	Theoretical	Loni
Ce	NV VI	<-unco	rrelated	(8)->	S			-biz-to-b	in correla	ated (1)-			2

7	<-12E.CO	orrelated	(8)->	S			bis-to-bi	in corre.	lated (%	)		
130	1.1	0.1	0.7	1.3	1.6	2.3	2.1	1.5	0.8	0.2	0.3	1.8
150	1.4	0.2	0.7	1.8	1.6	2.3	1.7	1.5	0.8	0.5	0.2	1.8
170	2.0	0.3	1.0	2.5	1.6	2.3	1.6	1.5	0.8	0.2	0.2	1.8
190	2.7	0.4	1.3	2.8	1.6	2.3	1.0	1.5	0.8	0.2	0.2	1.8
210	3.0	0.5	1.7	3.4	1.6	2.4	1.5	1.5	0.9	0.3	0.4	1.8
230	4.4	0.9	2.1	4.1	1.6	2.4	2.0	1.5	0.8	0.8	0.5	1.8
250	5.2	0.9	2.4	3.8	1.6	2.4	1.2	1.5	0.9	0.2	0.3	1.8
300	4.3	0.7	0.9	4.1	1.6	2.4	1.7	1.5	0.8	0.2	0.2	1.8
400	5.1	0.9	1.0	4.4	1.6	2.5	1.7	1.5	0.8	0.3	0.3	1.8
500	9.4	2.0	0.9	4.0	1.6	2.6	2.3	1.5	0.8	0.5	0.4	1.8
700	11	2.0	0.8	3.1	1.7	2.6	2.4	1.5	0.8	0.2	0.3	1.8
1000	24	4.0	0.6	4.3	1.7	2.6	2.8	1.5	0.8	0.2	0.4	1.8
1500	50	7.6	0.5	3.1	1.7	2.5	3.3	1.5	0.8	0.3	0.4	1.8
	130 150 170 210 230 250 300 400 500 700 1500	C-IDC           130         1.1           150         1.4           170         2.0           190         2.7           210         3.0           230         4.4           250         5.2           300         4.3           500         9.4           700         11           1000         24           1500         50	<-uncorrelated           130         1.1         0.1           150         1.4         0.2           170         2.0         0.3           190         2.7         0.4           210         3.0         0.5           230         4.4         0.9           250         5.2         0.9           300         4.3         0.7           400         5.1         0.9           500         9.4         2.0           700         11         2.0           1000         24         4.0           1500         5.0         7.6	<-uncorrelated (%)->           130         1.1         0.1         0.7           150         1.4         0.2         0.7           170         2.0         0.3         1.0           190         2.7         0.4         1.3           210         3.0         0.5         1.7           230         4.4         0.9         2.1           250         5.2         0.9         2.4           300         4.3         0.7         0.9           400         5.1         0.9         1.0           500         9.4         2.0         0.9           700         11         2.0         0.8           1000         24         4.0         0.6           1500         50         7.6         0.5	C-uncorrelated (%)->         C-uncorrelated (%)->           130         1.1         0.1         0.7         1.3           150         1.4         0.2         0.7         1.8           170         2.0         0.3         1.0         2.5           190         2.7         0.4         1.3         2.8           210         3.0         0.5         1.7         3.4           230         4.4         0.9         2.1         4.1           250         5.2         0.9         2.4         3.8           300         4.3         0.7         0.9         4.1           400         5.1         0.9         1.0         4.4           500         9.4         2.0         0.9         4.0           700         11         2.0         0.8         3.1           1000         24         4.0         0.6         4.3           1500         5.0         7.6         0.5         3.1	*-uncorrelated (%)->         *           130         1.1         0.1         0.7         1.3         1.6           150         1.4         0.2         0.7         1.8         1.6           170         2.0         0.3         1.0         2.5         1.6           190         2.7         0.4         1.3         2.8         1.6           210         3.0         0.5         1.7         3.4         1.6           230         4.4         0.9         2.1         4.1         1.6           250         5.2         0.9         2.4         3.8         1.6           300         4.3         0.7         0.9         4.1         1.6           250         5.2         0.9         2.4         3.8         1.6           300         4.3         0.7         0.9         4.1         1.6           500         9.4         2.0         0.9         4.0         1.6           500         9.4         2.0         0.9         4.0         1.6           700         11         2.0         0.8         3.1         1.7           1000         24         4.0	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

### Plotting data within HepData



### Plotting multple datasets within HepData

PI(C=E)	> 25 GeV									
RE	P P> E+ E	- x								
SQRT(S)	7000.0 GeV									
	BORN			DRES	SED					
E) IN GEV			I	O(SIG)/DM(EE) IN P	B/GEV			0.0% (SYS)	U.UU402 I 4.0%	(siai) ± 0.0% (sys)
116 130.	0.224 ± 1.19	% (stat)	± 4.2% (s	sys) 0.215	± 1.1% (stat)	± 4.2% (sys)		5.9% (sys)	0.00165 ± 5.1%	(stat) ± 5.9% (sys)
130. – 150.	0.102 ± 1.49	% (stat)	± 4.3% (s	sys) 0.098	4 ± 1.4% (sta	t) ± 4.3% (sys)	1	£ 6.3% (sys)	0.000458 ± 9.49	% (stat) ± 6.3% (sys)
150 170.	0.0512 ± 2.0	% (stat	) ± 4.6%	(sys) 0.049	3 ± 2.0% (sta	t) ± 4.6% (sys)	)	± 5.7% (sys)	0.000141 ± 11.0	% (stat) ± 5.7% (sys)
					4000 4500	0.000002213	- 50 00 (at	() ± 7.5% (Sys)	0.0000213 ± 24	$10\%$ (stat) $\pm 7.5\%$ (sys)
					1000 1500	0.00000288	± 50.0% (Sta	at) ± 9.0% (SyS)	0.0000276 ± 5	0.0% (Stat) ± 9.8% (Sys
						Plat				
Reaction Multiple datas allows manipu	<b>Databa</b> ets from the	ase same	Selec	ermalinks Reaction of ast unda ted Datase rent, HepData reco nich have been sel	: I by Inspire II b ID=8470, RI ted: 20131218 ts for C ords can be ected from p	Plot SelectPlot	e Plot a single plot s either:	ot. This page p	presents and	
Reaction Multiple datas allows manipu a) from the 'pl b) from the 'pa Options are p pages to add modify the loc	Databa ets from the ilation of the ot' pages us aper' pages us rovided here more data s ok of the plot	ase same se dat ing 'ad using ti to ma ets. Me t are pr	Select , or diffe asets wh d this p he 'Select nipulate pre detail ovided o	ermalinks Reaction of ast unda ted Dataset rent, HepData reco nich have been sel lot to list' link ctPlot' link the list by deleting ls of individual dat on the next page.	: I by Inspire II ib ID=8470, Ri ted: 20131218 ted: 201312 ted: 2013	Plot SelectPlot	e Plot a single plot either:	ot. This page p st, or returning a 'summary (?)	presents and to the 'paper' ' link. Options to	
Reaction Multiple datas allows manipu a) from the 'pl b) from the 'pa Options are p pages to add modify the loc	<b>Databa</b> tets from the lation of the ot' pages us aper' pages us rovided here more data s ok of the plot	e same se dat ing 'ad using ti to ma ets. Me t are pr	Select , or diffe asets wh d this p he 'Select nipulate pre detail ovided co	ermalinks Reaction of ast upda ted Dataset rent, HepData reco nich have been sel lot to list' link ctPlot' link the list by deleting ls of individual dat on the next page.	: I by Inspire II ib ID=8470, Ri ted: 20131218 ted: 201312 ted: 201312 ted	Plot SelectPlot	e Plot a single plot s either:	ot. This page p st, or returning e 'summary (?)	presents and to the 'paper' I' link. Options to	
Reaction Multiple datas allows manipu a) from the 'pl b) from the 'pa Options are p pages to add modify the loc	Databa ets from the ilation of the ot' pages us aper' pages us rovided here more data s ok of the plot	ase same se dat ing 'ad using ti to ma ets. Me t are pr Curr 1 1	Select , or diffe asets whe d this p he 'Select nipulate pre detail ovided of rent list on ATLAS	ermalinks Reaction of ast unda ted Dataset rent, HepData reconnich have been sel lot to list' link the list by deleting ls of individual dat on the next page.	EV w.r.t	Plot SelectPlot	e Plot a single plot s either: complete lis y using the	ot. This page p st, or returning e 'summary (?)	presents and to the 'paper' ' link. Options to	
Reaction Multiple datas allows manipu a) from the 'pl b) from the 'pa Options are p pages to add modify the loc	Databa ets from the ilation of the ot' pages us aper' pages us rovided here more data s ok of the plot	ase same ese dat ing 'ad using ti to ma ets. Me t are pr Curr 1 1 1 2	Select , or diffe asets whe d this p he 'Select nipulate ore detail ovided of rent list on ATLAS ATLAS	ermalinks Reaction of ast unda ted Dataset rent, HepData reconnich have been sel lot to list' link ctPlot' link the list by deleting ls of individual dat on the next page. f selected plots D(SIG)/DM(EE) IN PB/G D(SIG)/DM(EE) IN PB/G	EV w.r.t	Plot SelectPlot DED=6090 (145753) Composite combined on a previous pages , clearing the o be displayed by re M(EE) IN GEV M(EE) IN GEV	e Plot a single plot s either: somplete lis y using the move sum x	ot. This page p st, or returning e 'summary (?) mary ?	presents and to the 'paper' ' link. Options to	

### Plotting multiple datasets within HepData

### **Reaction Database Composite Plot**

This page displays the combined data plot with options to 'replot' the data changing various features of the plot. Mouseover keywords for more information.



Wednesday, 12 November 2014

### Searching for data records in HepData

- Historically this is based on keywords:
- Physics: RE, FSP, OBS, SQRTS, PLAB
- Bibliographic: AUTH, REF, EXP, DE
- plus more recently via the 'title' and 'keyword' from Inspire

```
eg ... RE p p --> j/psi x
fsp JET and OBS DSIG/DX
title: higgs
keyword: elastic scattering
exp lhc
exp atlas
Needs bringing into the 21st century!
Vocabulary needs updating<sub>9</sub>
```

### HepData-Inspire connection

- HepData is linked to Inspire at various levels
- I. Reciprocal links on their respective web pages for common papers.
- 2. Inspire holds a copy of the HepData data records and displays via the HepData tag on their "detailed record" page.
- 3. HepData has the facility to use Inspire searching, for example a word from the title with "title:Higgs".

### HepData

#### 1. ABELEV 2013 – Experiment: CERN-LHC-ALICE (ALICE) Preprint: CERN-PH-EP-2013-135 Archive: ARXIV:1307.6796

Multiplicity Dependence of Pion, Kaon, Proton and Lambda Production in p-Pb Collisions at sqrt(s\_NN) = 5.02 TeV

Full data record I Short data record I INSPIRE





Information References Citations Files Plots HepData

Multiplicity Dependence of Pion, Kaon, Proton and Lambda Production in p-Pb Collisions at  $\sqrt{(s_N N)} = 5.02 \text{ TeV}$ - ALICE Collaboration (Abelev, Betty Bezverkhny *et al.*) Phys.Lett. B728 (2014) 25-38 arXiv:1307.6796 [nucl-ex] CERN-PH-EP-2013-135

THIS DATA COMES FROM DURHAM HEPDATA PROJECT

SUMMARY:

CERN-LHC. Measurements of the transverse momentum multiplicity dependences of I Proton-Lead collisions at a centre-of-mass energy/nucleon of 5.02 TeV. The dependen momentum on the charged particle multiplicity density dN/dETARAP is also presented,

#### DATASETS:



Description: pT-differential invariant yield of charged pions in pPb collisions with centr

Go to the rec	ord		
Plain			
		$p Pb \rightarrow (P)$	$I^+ + PI^-)X$
		y <sub>CM</sub> =	0.0 - 0.5
1	class = 0.0 - 5.0 %	= 5.0 - 10.0 %	= 10.0 -
		$\sqrt{s}/nucleon$	= 5020.0 ~GeV
$p_T(GeV)$		$(1/Nev) \cdot (1/(2 \cdot P\Gamma p_T))$	$) \cdot d^2(N)/dp_T/d$
		†††Collapse	TTT
0.1-	93.88 ±0.23(stat)	78.00 ±0.21(stat)	67.39 ±0.
0.12	±6.75(sys)	±5.61(sys)	±4.85(
	82.47 ±0.17(stat)	68.38 ±0.15(stat)	59.00 ±0
0.12-	±3.73(sys)	±3.09(sys)	±2.67(
0.14			

Reaction Database Full Record Display

View short record or as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis or MarcXML

### ABELEV 2013 — Multiplicity Dependence of Pion, Kaon, Proton in p--Pb Collisions at sqrt(s\_NN) = 5.02 TeV

Experiment: CERN-LHC-ALICE (ALICE) Preprinted as CERN-PH-EP-2013-135 Archived as: ARXIV:1307.6796 Record in: INSPIRE



CERN-LHC. Measurements of the transverse momentum multiplicity dependences of Pion, Kaon, Proto production in Proton-Lead collisions at a centre-of-mass energy/nucleon of 5.02 TeV. The dependences mean transverse momentum on the charged particle multiplicity density dN/dETARAP is also presented

Total number of tables: 22. Displaying: 1 to 10. First | Previous | Next | Last | All

Table 1 (F 1.) The part or as: input, plain text, AIDA, PyROOT, YODA, ROOT, mpl, ScaVis pT-differential invariant yield of charged pions in pPb collisions with centre-of-mass energy/nucleon=5.0

RE SQRT(S)/NUCLEON	P PB> (Pl+ + Pl-) X 5020.0 GeV		
YRAP(C=CM)	0.0-0.5		
class	0.0-5.0 pct	5.0-10.0 pct	10.0-20.0 pct
PT IN GEV		(1/Nev)*(1/(2*PI*PT))*D2	2(N)/DPT/DYRAP IN GEV
0.1 - 0.12	93.88 ± 0.23 (stat) ± 6.75 (sys)	78.00 ± 0.21 (stat) ± 5.61 (sys)	67.39 ± 0.14 (stat) ± 4.
0.12 - 0.14	82.47 ± 0.17 (stat) ± 3.73 (sys)	68.38 ± 0.15 (stat) ± 3.09 (sys)	59.00 ± 0.10 (stat) ± 2.
0.14 - 0.16	72.69 ± 0.15 (stat) ± 3.29 (sys)	60.08 ± 0.13 (stat) ± 2.72 (sys)	51.80 ± 0.09 (stat) ± 2

Inspire downloads data on a regular basis from HepData based on a HepData 'timestamp' indicating the date of last change.

As yet does not download any of the 'resource area' extra files.

Inspire attempts reformatting items of the text (eg reactions).

### HepData-Elsevier connection

So	cienceDire	CT Journals   Books		Shopping ca	rt   Sign in 🖽   Help	Durhan	n		
	Download PDF	Export I	h ScienceDirect	Advanced sear	rch	University			
=		Physics Letters	s B	Prevent prime b					
	ELSEVIER	Volume 728, 20 January 2014, Pages 562–578	es 562–578	_	Citing articles (0)				
	Search for	new phenomena in photon <del>1</del>	iet events collecte	d in	Related reference work	articles			
	proton-pro	proton–proton collisions at $\sqrt{s} = 8$ TeV with the ATLAS detection		tor *	Data for this Article				
	AILAS Collabo	Show more			HepData Reaction dat	ta			
	http://dx.doi.org/1	0.1016/j.physletb.2013.12.029 0		Open Access					
	Abstract This Letter describes a model-independent search for the production of new resonances in photon + jet (y+jet) events using 20 fb <sup>-1</sup> of proton-proton LHC data recorded with the ATLAS detector at a centre- of-mass energy of $\sqrt{s} = 8$ TeV. The $y+jet$ mass distribution is compared to a background model fit from			т	he Durham Hep	Data Project		Dur	
				R	EACTION DATABASE + DATA REVI	EWS - PDF PLOTTER	ABOUT HEPDAT	A + SUBMITTING	
	data; no significan level on generic ( non-thermal quant	ss energy of $\sqrt{s} = 8$ TeV. The $\gamma + jet$ mass distribution is compared to a background model fit from no significant deviation from the background-only hypothesis is found. Limits are set at 95% credibility on generic Gaussian-shaped signals and two benchmark phenomena beyond the Standard Model: hermal quantum black holes and excited quarks. Non-thermal quantum black holes are excluded below		5% credibility andard Model: xcluded below	Re	, mpl, ScaVis or MarcXML			
	masses of 4.6 TeV	/ and excited quarks are excluded below mass	es of 3.5 TeV.		A	AD 2013 - Search t	for new phenomena in	photon+jet events collecte	d in proto
	1. Introduction	duction machanisms have been seened that	i produce mapping shates 1 inte	(v+iot) feel	P	xperiment: CERN-LHC-ATLAS ( ublished in PL 8728,562 (2014) (	ATLAS) (DOI:10.1016/j.physietb.2013.12.029)	ATLAS detector	
	states. They inclu quirks [7], [8] and past searches [14	de non-thermal quantum black holes (QBHs)   [9], Regge excitations of string theory [10], [1 ], [15], [16], [17] and [18], the only LHC sear	1], [2] and [3], excited quarks [ 1] and [12], and topological pio ch for this signature was done	4], [5] and [6], ns [13]. Of the using proton-	P A A R R	reprinted as CERN-PH-EP-2013- rchived as: ARXIV:1309.3230 uxiliary Material: http://atlas.web.o lecord in: INSPIRE lecord in: CERN Document Service	-126 cern.ch/Atlas/GROUPS/PHYSICS/PA ver	PERS/EXOT-2012-22/	
	proton (pp. ) collis	sion data obtained at a centre-of-mass energ	v of $\sqrt{s} = 7$ TeV with the ATI $J$	AS detector It	C of pi of pi bits	ERN-LHC. A model-independent f proton-proton LHC data recorde hoton + jet mass distribution is co nly hypothesis is found. Limits an henomena beyond the Standard I oles are excluded below masses	t search is made for the production of ed with the ATLAS detector in 2012 at ompared to a background model fit fro e set at 95% credibility level on generi Model: non-thermal quantum black ho of 4.6 TeV and excited quarks are ex-	new resonances in photon + jet events usin a centre-of-mass energy of sqrt(s) = 8 TeV m data; no significant deviation from the bar c Gaussian-shaped signals and two bench les and excited quarks. Non-thermal quant cluded below masses of 3.5 TeV.	ig 20 fb%1 /. The :kground- mark um black
						Table 1 ( Figure 1. ) ******* Invariant mass of the photon+jet p estimates are given in each bin, w	or as: input, plain text, AIDA, PyRC pair for events passing the final select where the fit estimates are rounded to	OT, YODA, ROOT, mpl, ScaVis or Man ions. The number of observed events and i the nearest integer.	CXML the fit background

	RE	P P -> GAMMA JET X
23	SQRT(S)	8000.0 GeV Observed Data Fit Estimate
	MIGAMMA JED IN GEV	Events

### Some statistics

• Total Records/Papers: 8029

# • LHC 349 / 726

- \* ATLAS 164 / 294
- \* CMS 83 / 284
- \* ALICE 74 / 87
- \* LHCb 23/49

Although apparently only ~30% of LHC data has been entered into HepData this represents a very large part of the 'classic' HepData type data (ie SM type). Searches and more exotic things are less well represented.

# 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 five-fold to the present day.

We show in RED the accesses from 'commercial' sites (ie those ending .com, .net, .org and .co.uk) and in GREEN the rest.



### Access to papers

### Number of 'views' of individual LHC papers since 2010-2014

In decreasing order with same robot filtering as previous slide

ATLAS 3230 1002.0621 Charged-particle multiplicities in pp in ATLAS 2097 1108.6018 Measurement of the pseudorapidity and tr ATLAS 2094 1201.1276 Study of jets produced in association wi ATLAS 2027 1101.0070 Study of Jet Shapes in Inclusive Jet Pro ALICE 1587 1303.0737 Centrality dependence of pi, K, p produc ATLAS 1502 1107.3311 Properties of jets measured from tracks ALICE 1411 1109.2501 Harmonic decomposition of two-particle a ALICE 1398 1208.2711 Centrality Dependence of Charged Particl ATLAS 1388 1203.3087 Measurement of the azimuthal anisotropy ATLAS 1352 1112.6297 Measurement of inclusive jet and dijet p ATLAS 1336 1208.0563 Underlying event characteristics and the CMS 1136 1011.5531 Charged particle multiplicities in pp in ATLAS 1112 1107.1641 Measurement of dijet production with a v CMS 1110 1207.4724 Study of the inclusive production of cha ALICE 1066 1307.5530 K^0\_S and Lambda production in Pb-Pb col CMS 1032 1310.7291 Measurement of the differential and doub ATLAS 978 1012.5104 Charged-particle multiplicities in pp in ALICE 1101.4110 Production of pions, kaons and protons i 961 CMS 953 1111.1557 \$J/\psi\$ and \$\psi {2S}\$ production in \$ TOTEM 936 1012.3257 Measurement of proton-proton elastic sca ALICE 906 1004.3034 Charged-particle multiplicity measuremen CMS 764 1204.1409 Measurement of the elliptic anisotropy o ATLAS 751 1104.3038 Measurement of the differential cross-se ALICE 735 1208.1974 Pion, Kaon, and Proton Production in Cen ALICE 732 1307.5543 Multi-strange baryon production at mid-r ATLAS 708 1208.3144 Search for direct production of chargino ALICE 658 1007.0719 Transverse momentum spectra of charged p ALICE 619 1112.2082 Underlying Event measurements in pp coll ALICE 1307.6796 Multiplicity Dependence of Pion, Kaon, P 617 ATLAS 614 1204.5638 Search for supersymmetry in events with CMS 610 1202.4617 Inclusive b-jet production in pp collisi CMS 609 1103.0423 Search for Supersymmetry in \$pp\$ Collisi ALICE 574 1205.5724 Neutral pion and \$\eta\$ meson production ATLAS 567 1403.5294 Search for direct production of chargino ATLAS 561 1009.5908 Measurement of inclusive jet and dijet c ALICE 556 1210.4520 Transverse Momentum Distribution and Nuc ALICE 541 1401.1250 Production of charged pions, kaons and p CMS 535 1212.6660 Measurements of differential jet cross s ATLAS 533 1109.5816 Measurement of the jet fragmentation fun ATLAS 505 1304.7098 Measurement of the production cross sect 1106.0208 Measurement of the Inclusive Jet Cross S 480 ATLAS26 CMS 1203.4606 Jet mass and substructure of inclusive i 477 AL TCE 463 1007.0516 Two-pion Bose-Finstein correlations in n

# Data Reviews

Home Page Other Data Reviews Reaction Database CONTENTS Experiments CERNS-SPS NA3 NA10 NA11 NA15 NA27 NA32 NA34-30HELIOS) NA35 NA50 NA51 NA60 CERN-Sp5 JA1 JA6 DESY-HERA HERA-8 BNL-RHIC PHENIX STAR Fermilab-Tevatron CDF 00 E772 E789	HEPDATA ON-LINE DATA REVIEW A Review of Quarkon in Hadronic Interact An up-to-date archive of In Hadronic Interact data from a specific data from a specific CERN-SPS CERN-Spps HERA BNL-F NA3 NA10 UA1 HERA-B PHEI NA11 NA15 NA32 NA50 NA51 S17 data for a specific (anti)proton-proton proton-deuters deuteron-nucleus nucleus-nucleu	iii Data       HEPDATA ON-LINE DATA PEVIEW         ions.       DATA PEVIEW         if Quarkonli data practions       Atta PEVIEW         if Quarkonli data practice       Atta PEVIEW         if Quarkonli data practice       Atta PEVIEW         if Quarkonli data practice       Atta PEVIEW         if Quarkonli data practice       CERN-LHC ATLAS CMS LHCD         If Pata 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         • Aamodt et al. CERN-PH-EP-2011-057 [R] - 905007	Con     A Reaction databases.     A Reaction databases.     A Reaction databases.     D California data in Hadronic Interactions     Structure functions in DIS     Single photon production in hadronic interactions     Structure functions leading to hadron final state     Drell-Yan cross-sections     Inclusive particle production data in e+ e- interaction     Low-energy neutrino cross-sections     Event shapes in lepton-lepton and lepton-nucleon     interactions				actions interactions on final states + e- interactions ++e- interactions oton-nucleon	
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 <u>Total</u> Differential(Y) Differential(Y) Differential(X) Polarization Final States J/PSI PSI	data for a specific m           Cross Sections <u>Total</u> <u>Differential-PT</u> <u>Differential-Rapidity</u> <u>Differential-X</u> Polarization	Repldity and transverse momentum dependence of inclusive J(ps)         • - p p → J(PSI	Image: production in pp collisions at sort(s) = 7 TeV         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 (IFN): 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					
DID* DiMuon		J/psi polarization in pp collisions at sort(s)=7 TeV • - p p → J/PSL 7000 GeV POL • - p p → J/PSL 7000 GeV 02N/DCOS/THETA)			ABS(YRAP) : <0.9			
Lambda/C Xi/C		Aamodt et al. PL B706(2012)265 [R] - 9340173     Heavy flavour decay much production at forward rapidity in proton			RE : P P -> J/PSI X			
		<ul> <li>p p → MU 7000 GeV DSIG/DPT DSIG/DPT v PT (1) (pT-differential production cross section DSIG/DPT v PT (2) (pT-differential production cross section)</li> </ul>	PT IN GEV	D2/SIG/DPT/DYRAP IN MUB/GEV	SYS(+1.CS)	SYS(-	SYS(+1.SH)	SYS(-
		DSIG/DPT v PT (4) (pT-differential production cross section DSIG/DPT v PT (5) (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	0.5 (bin: 0.00-	0.59 ± 0.21 (stat) ± 0.02 (sys) ± 0.18 (sys)	0.14	-0.16	0.07	-0.1
		DSIG/DPT v PT (7) (	1.5 (bin: 1.0-	1.62 ± 0.32 (stat) ± 0.06 (sys) ± 0.27 (sys)	0.36	-0.43	0.24	-0.34
SUSY review ? Exotics review ?			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
			27					

## Summary and Conclusions

- HepData has for many years attempted to provide free access to HEP data distributions.
- It has evolved through a series of platforms to its present form now more standard system software for long term maintainablilty.
- The advent of the LHC has seen a large increase in the amount of data which HepData is attempting to compile.
- MW is retiring and Graeme is taking over to move HepData into its next phase.