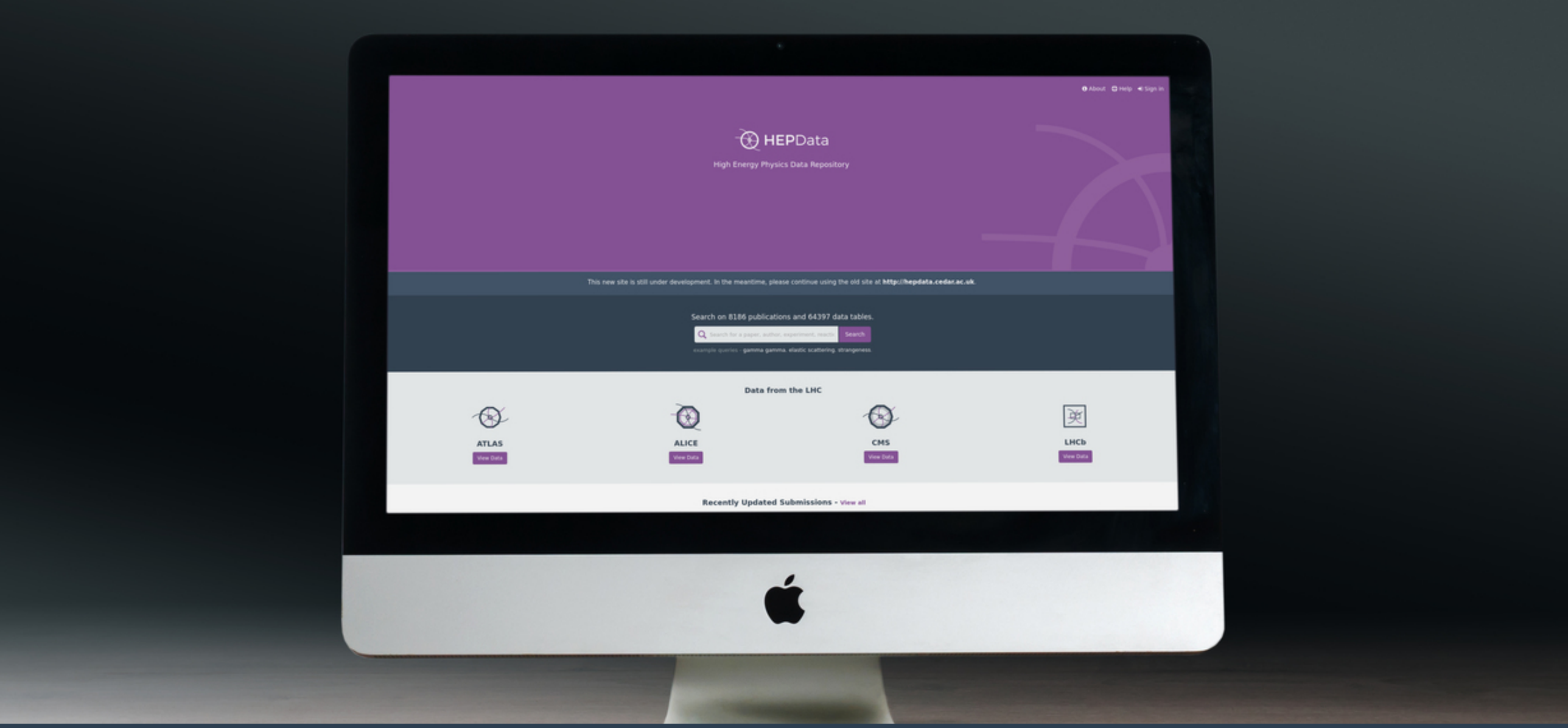

Lukas Heinrich (NYU), Eamonn Maguire (CERN)

CHEP 2016, San Francisco, USA

hepdata.net

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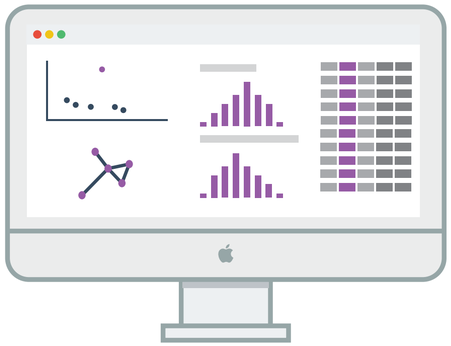
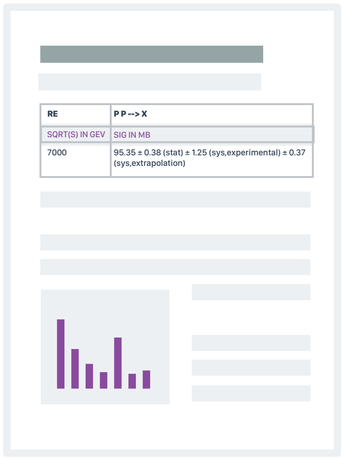
HEP Scattering experiments going back to the 1950s



Each group of scientists will analyse particular signals by processing large numbers of collisions.



The resulting analysis will be published as a paper.

But where does the processed data go?

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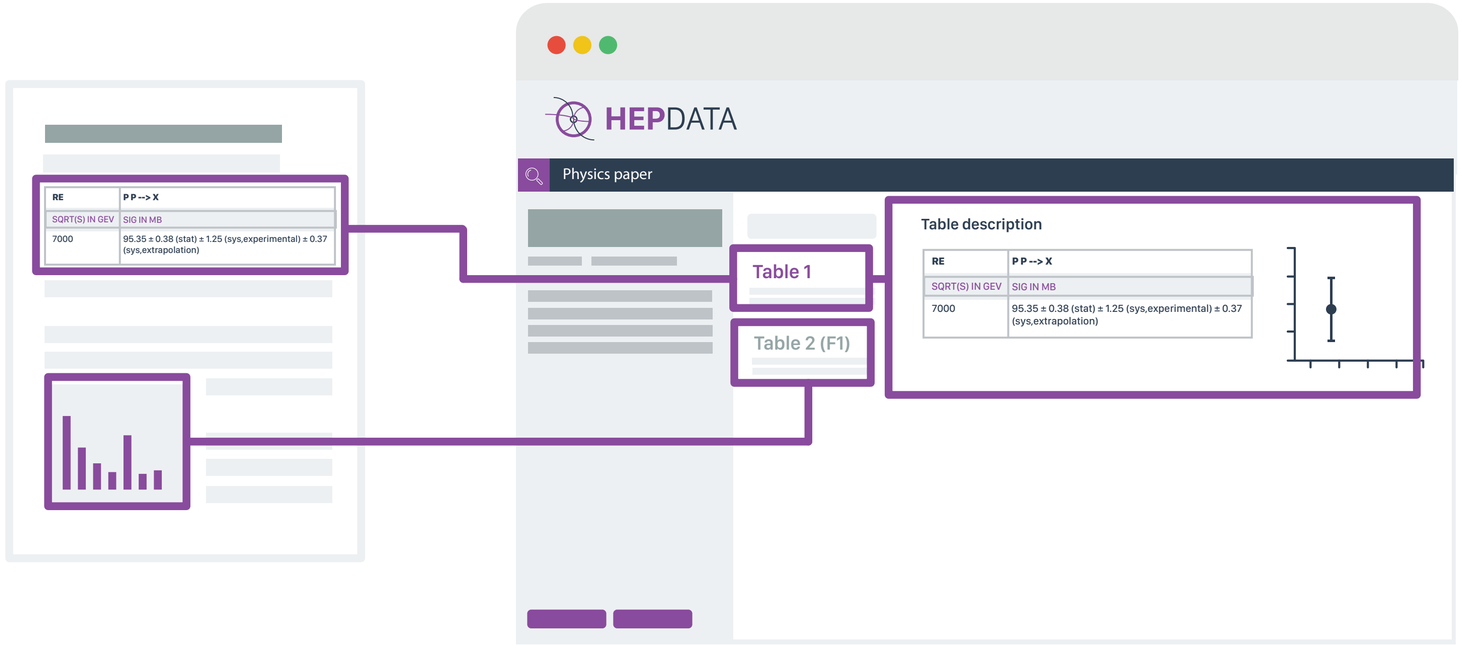
HEPData is the go to place for physicists to get access to the data underlying plots and tables in a publication.

It also links to the scripts and ROOT files for instance used in the analysis (for reproducibility).



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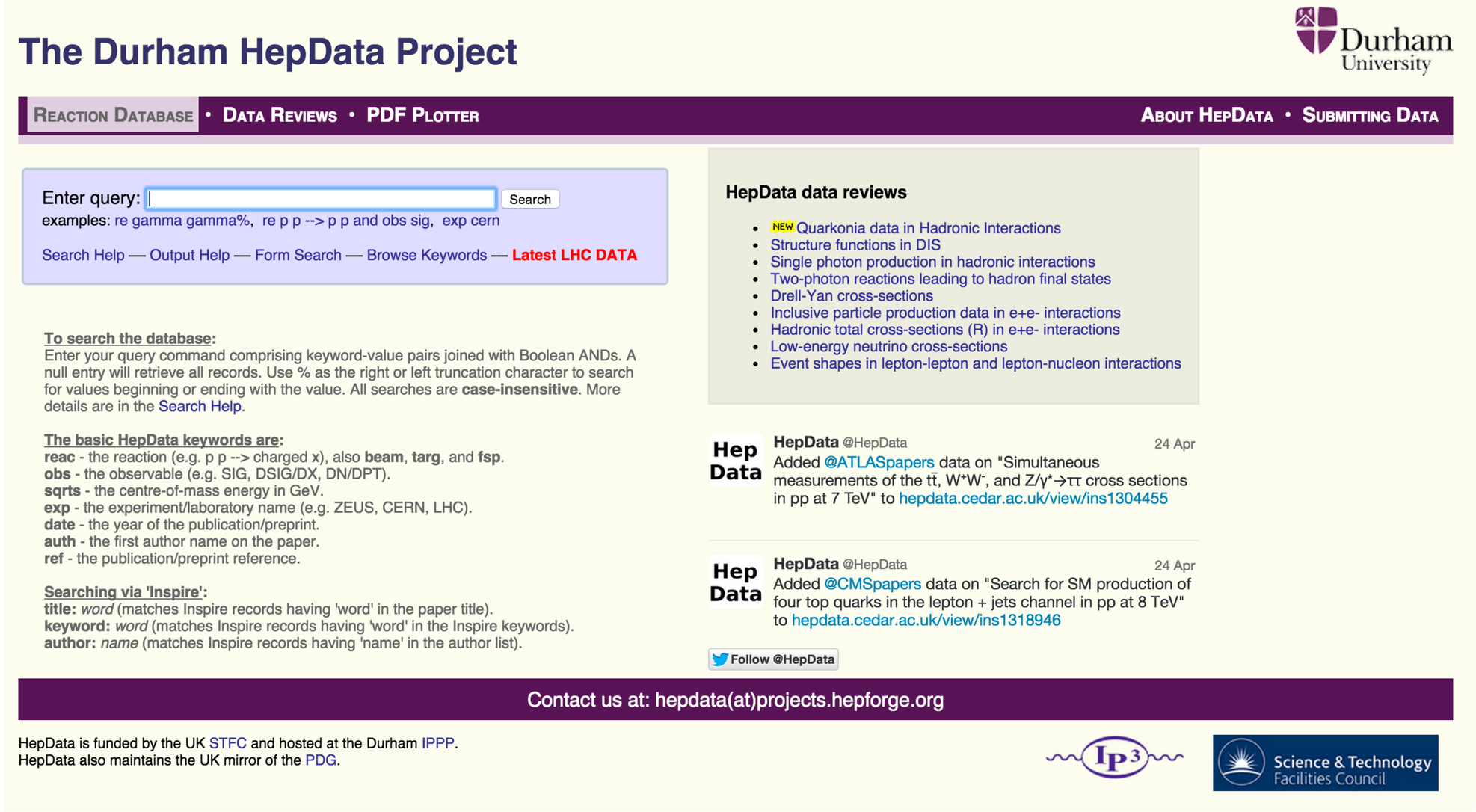

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Durham University

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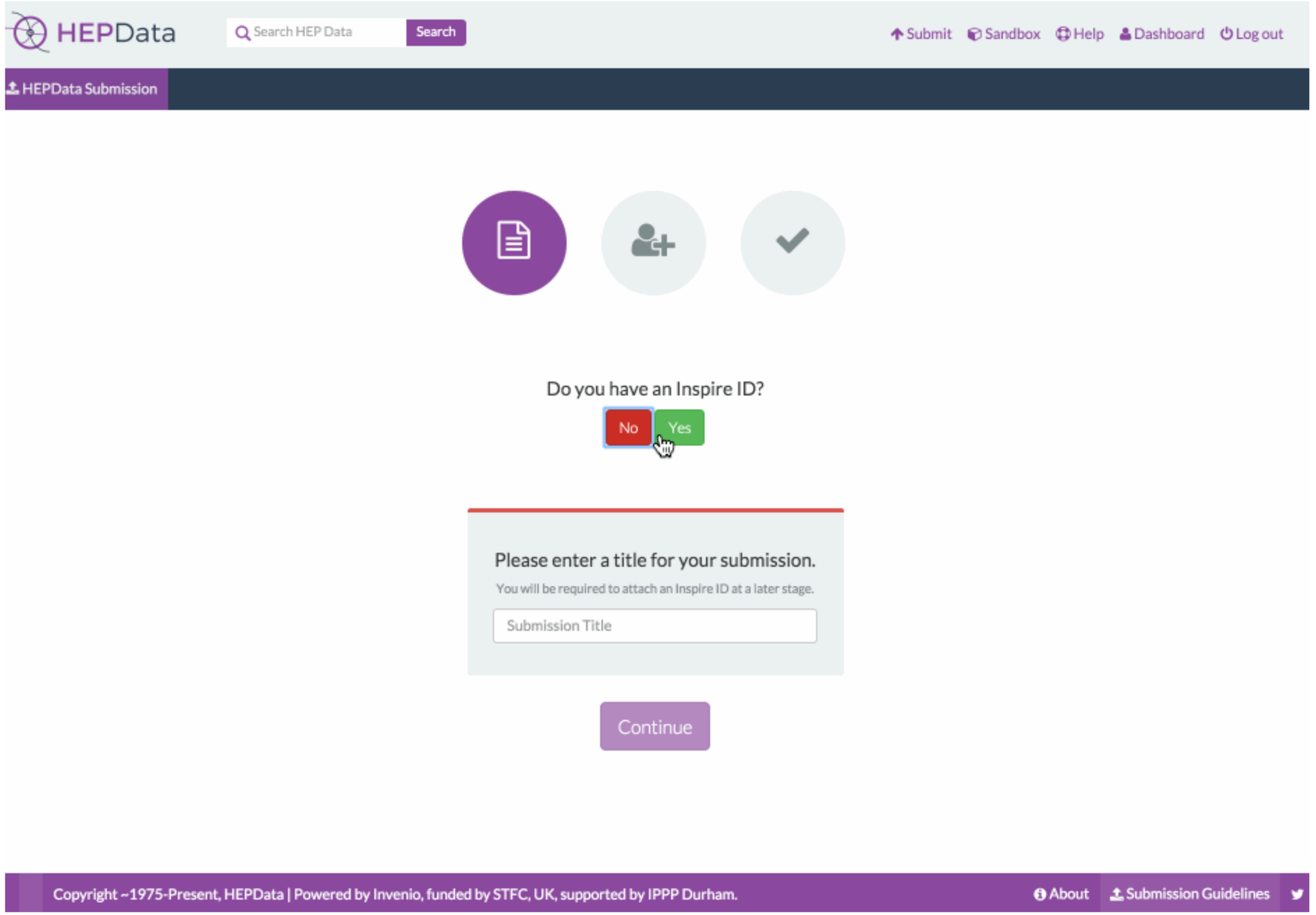

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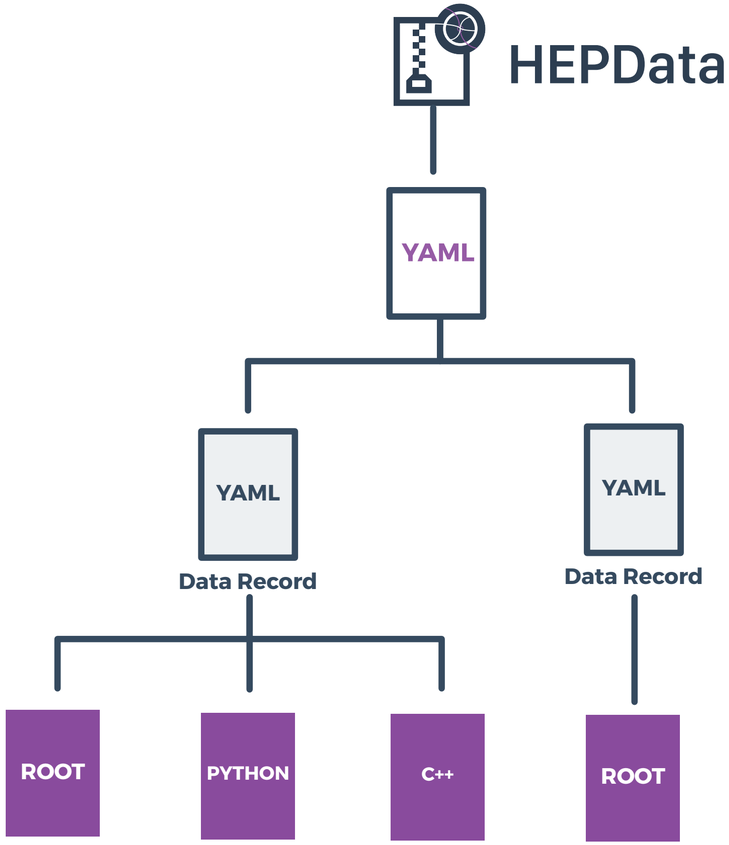

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links the submission together by detailing the data files to be loaded, their name and description, and their assocated analysis files and code.

data records

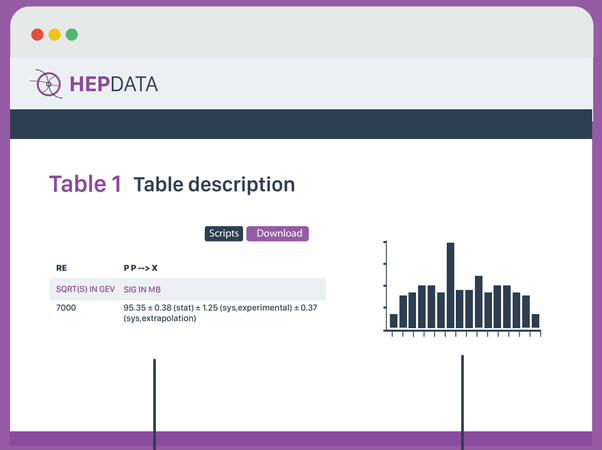
YAML (or JSON) representation of the underlying data files including value errors in a verbose format.

external data files & links

analysis files, code, links to code repositories, etc.

HEPDATA

Tables rendered from JSON



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{JSON}

Tables and plots

Web Server

Processes YAML file, inserts records in to database and links publication record with data and files.

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ATLAS Run 1 searches for direct pair production of third-generation squarks at the Large Hadron Collider

Aad, Georges , Abbott, Brad , Abdallah, Jalal , Abdinov, Ovsat , Aben, Rosemarie , Abolins, Maris , AbouZeid, Ossama , Abramowicz, Halina , Abreu, Henso , Abreu, Ricardo
ATLAS

Eur.Phys.J. C75 (2015) 510, 2015

http://dx.doi.org/10.17182/hepdata.71384

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Additional Resources

Abstract (data abstract)
CERN-LHC. This paper reviews and extends searches for the direct pair production of the scalar supersymmetric partners of the top and bottom quarks in proton--proton collisions collected by the ATLAS collaboration during the LHC Run 1. Most of the analyses use 20 fb^{-1} of collisions at a centre-of-mass energy of $\sqrt{s} = 8$ TeV, although in some case an additional 4.7 fb^{-1} of collision data at $\sqrt{s} = 7$ TeV are used. New analyses are introduced to improve the sensitivity to specific regions of the model parameter space. Since no evidence of third-generation squarks is found, exclusion limits are derived by combining several analyses and are presented in both a simplified model framework, assuming simple decay chains, as well as within the context

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Table 1
Data from Figure 4
None
Summary of the ATLAS Run 1 searches for direct stop pair production in models where no supersymmetric particle other than...
to be reviewed

Table 2
Data from Figure 5a
None
Upper limits on the stop pair production cross sections for different values of the branching ratios for the decays $\tilde{t}_1...
attention required

Table 3
Data from Figure 5b
None
Upper limits on the stop pair production cross sections for different values of the branching ratios for the decays $\tilde{t}_1...
to be reviewed

Table 2

Upper limits on the stop pair production cross sections for different values of the branching ratios for the d
$\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$ and $\tilde{t}_1 \rightarrow ff'b\tilde{\chi}_1^0$, where BR($\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$) + BR($\tilde{t}_1 \rightarrow ff'b\tilde{\chi}_1^0$) = 1. Signal points with $\Delta m(\tilde{t}$
GeV are shown. The limits quoted are taken from the best performing, based on expected exclusion C
regions from the tc-M, tc-C, t1L-bCa_low and WW analyses at each mass point.

- Theoretical cross section from
twiki.cern.ch/twiki/bin/view/LHCPhysics/SUSYCrossSections8TeVstopsbottom.

null

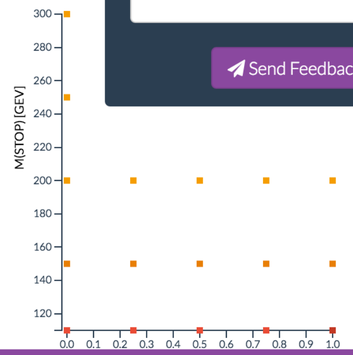
cmenergies: 8000.0

observables: M

phrases: Inclusive, Proton-Proton Scattering

M(STOP)-M(NEUTRALINO)		10.0 GeV	
SQRT(S)		8000.0 GeV	
M(STOP) [GEV]	BR(STOP --> C NEUTRALINO)	Best Expected SR	SIGMA [PB]
110	1	tc-M1	43.99823154
150	1	tc-M1	18.46035643
200	1	tc-M2	8.629444958
250	1	tc-M2	4.788953785
300	1	tc-M2	3.223368954

Visualize



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ATLAS Run 1 searches for direct pair production of third-generation squarks at the Large Hadron Collider

Aad, Georges , Abbott, Brad , Abdallah, Jalal , Abdinov, Ovsat , Aben, Rosemarie , Abolins, Maris , AbouZeid, Ossama , Abramowicz, Halina , Abreu, Henso , Abreu, Ricardo

ATLAS

Eur.Phys.J. C75 (2015) 510, 2015

http://dx.doi.org/10.17182/hepdata.71384

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production cross sections for different values of the branching ratios for the decays $\tilde{t}_1...

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Table 4
Data from Figure 6
None
Combined exclusion limits assuming that the stop decays through $\tilde{t}_1 \rightarrow t + \tilde{\chi}_1^0$ with branching ratio x and...
passed review

Table 5
Data from Figure 6
None
Combined exclusion limits assuming that the stop decays through $\tilde{t}_1 \rightarrow t + \tilde{\chi}_1^0$ with branching ratio x and...
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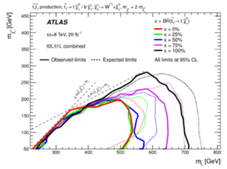
Table 6
Data from Figure 6
None
Combined exclusion limits

Table 5

http://www.hepdata.net/r



Combined exclusion limits assuming that the stop decays through $\tilde{t}_1 \rightarrow t + \tilde{\chi}_1^0$ with branching ratio x and through $\tilde{t}_1 \rightarrow b + \tilde{\chi}_1^{\pm}$ with branching ratio 1-x. This table is for the expected limit for BR=75%

- Observed limit x=BR=100% See Fig 24. hepdata.cedar.ac.uk/view/ins1380183/d63
- Expected limit x=BR=100% See Fig 24. hepdata.cedar.ac.uk/view/ins1380183/d64.

null

cmenergies: 8000.0

observables: M

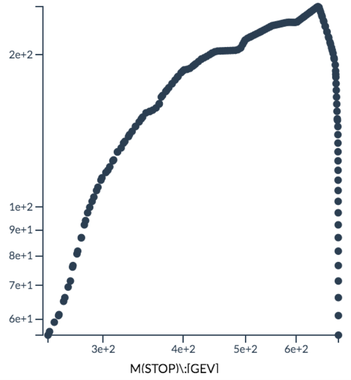
phrases: Inclusive; Proton-Proton Scattering

reactions: P P --> STOP1 STOP1 X

Showing 50 of 182 values | Show All 182 values

RE	P P --> STOP1 < TOP NEUTRALINO0 > STOP1 < BOTTOM CHARGINO1 > X
SQRT(S)	8000.0 GeV
M(STOP) [GEV]	M(NEUTRALINO) [GEV]
246.08	55.8
247.47	56.71
251.73	59.18
255.59	61

Visualize



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Angular analysis of the $B^0 \to K^{*0}\mu^+\mu^-$ decay using 3 fb^{-1} of integrated luminosity

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Eur.Phys.J. C76 (2016) 41
coordinator

Measurement of the forward-backward asymmetry in the distribution of leptons in $t\bar{t}$ events in the lepton+jets channel
Phys.Rev. D90 (2014) 072001
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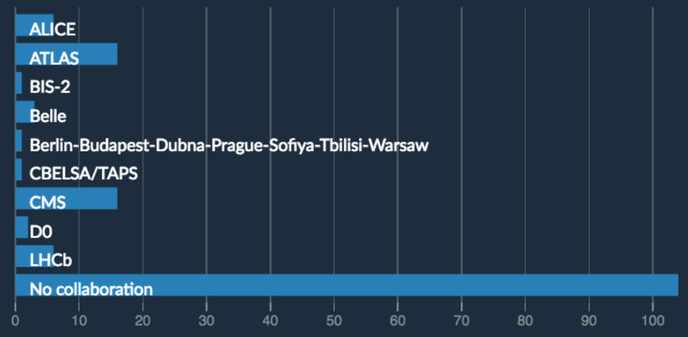

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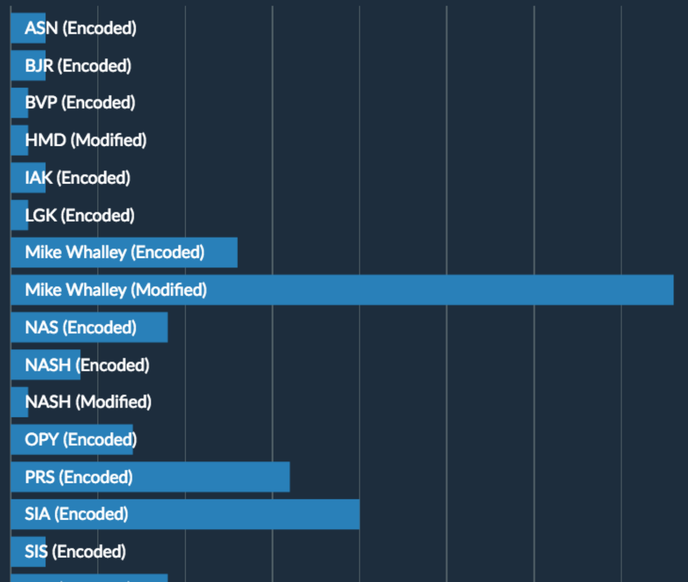

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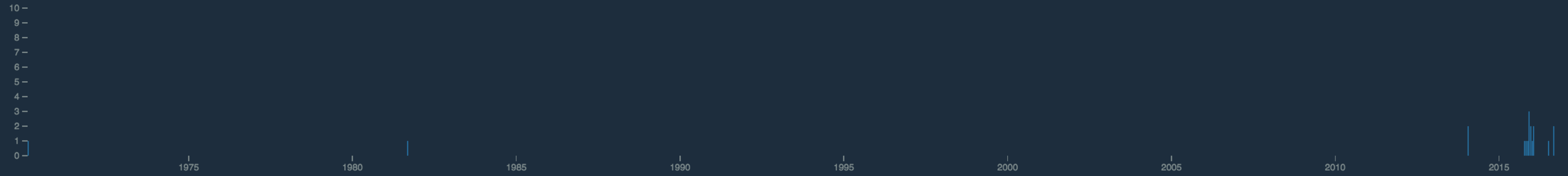

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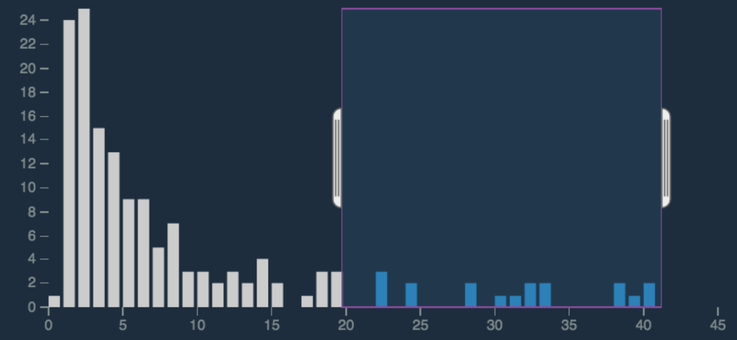

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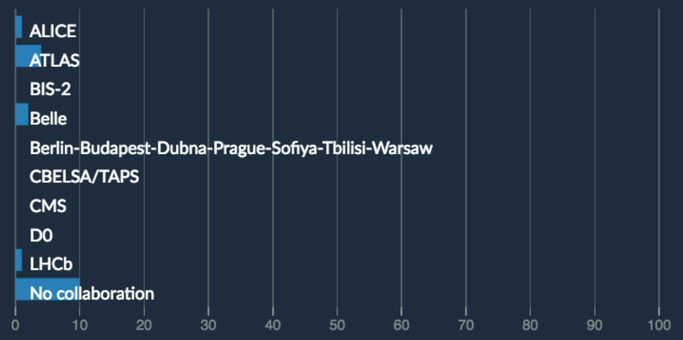

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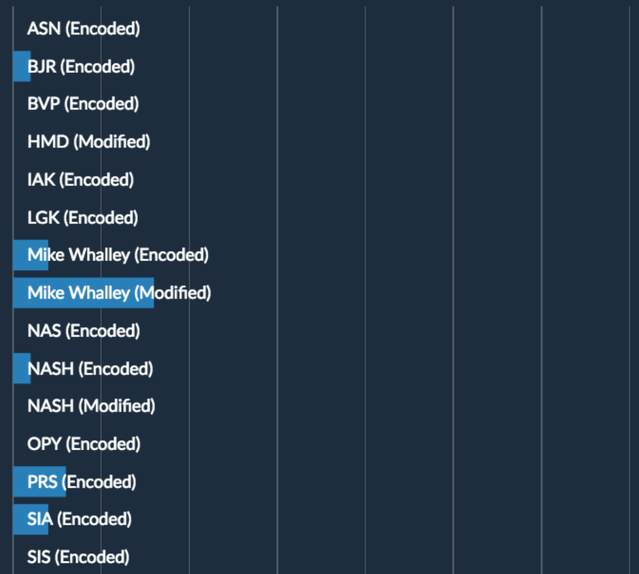

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Version 1

Version 2

Table 1

Page 17 of preprint

The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the...

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Table 2

Auxiliary Figure 9b.

Signal acceptance for the GGM model with tan(β)=30 in the combined electron and muon SR-Z.

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Table 3

Figure 8A

Normalized ZZ fiducial cross section (multiplied by 10^6 for readability) in values of the leading reconstructed dilepton

The observed and expected EmissT distribution in the dielectron SR-Z. The negigible estimated contribution from Z+jets is distributions. The last bin contains the overflow.

energies 8000

Data

Dc

SQRT(S)	8000.0 GeV			
EVENTS	25 GEV			
ETMISS [GEV]	Data	Expected Background	GGM 700 200 1.5	GGM 900 600 1.5
200 - 225	0	0	0	0
225 - 250	6	0.95 -0.51, 0.41 stat	6.46	0.97
250 - 275	1	0.9 -0.26, 0.41 stat	6.82	1.07
275 - 300	1	0.42 -0.19, 0.12 stat	2.82	1.17
300 - 325	1	0.34 -0.15, 0.16 stat	2.41	1.05
325 - 350	2	0.07 -0.16, 0.19 stat	3.11	1.08
350 - 375	1	0.68 -0.55, 0.56 stat	0.7	1.13
375 - 400	1	0.17 -0.15, 0.1 stat	0.9	1.2
400 - 425	0	0.24 -0.1, 0.11 stat	0.69	1.01
425 - 450	1	0.01 ±0.08 stat	0.72	0.94

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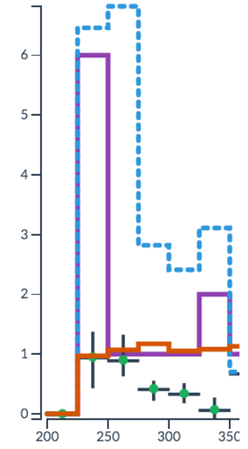

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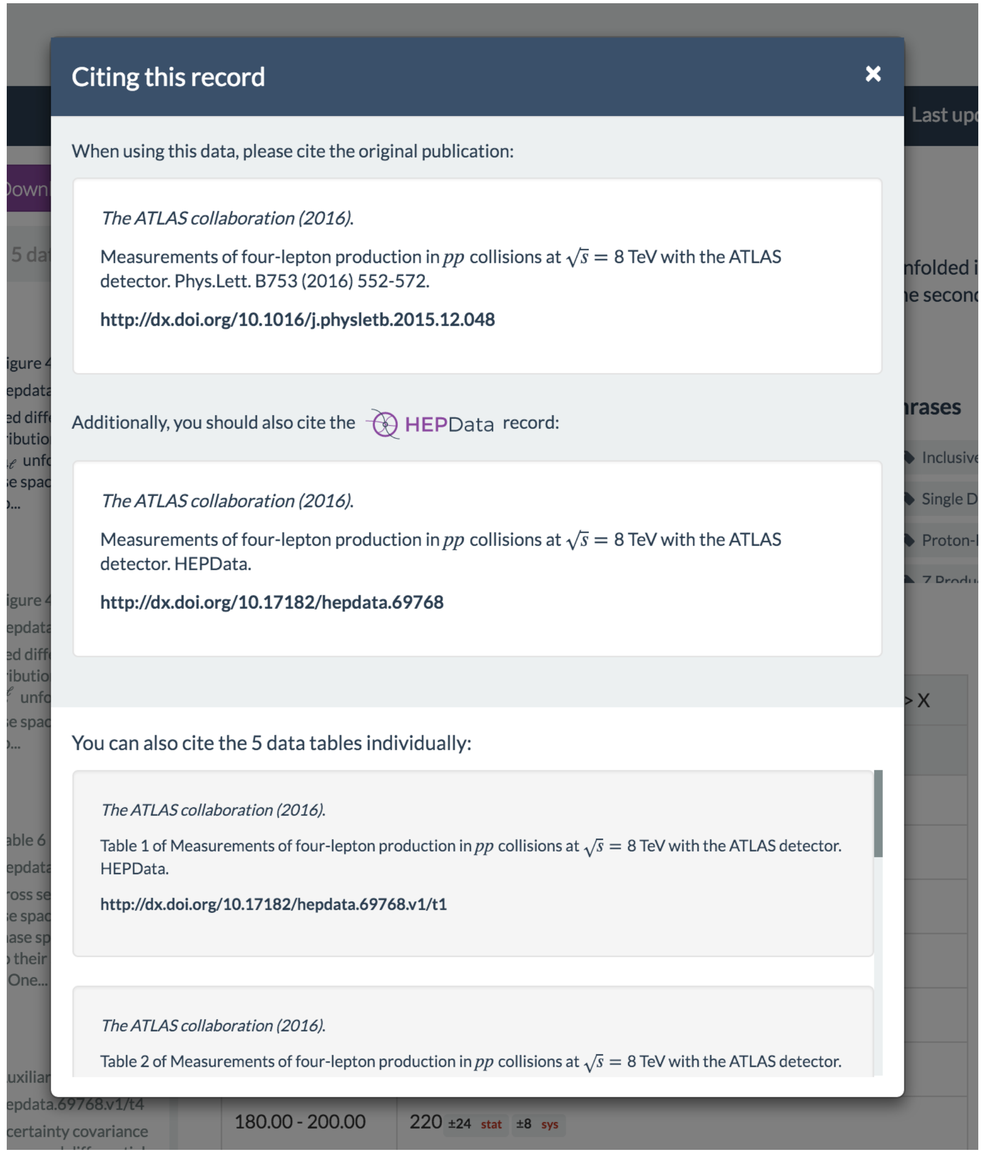

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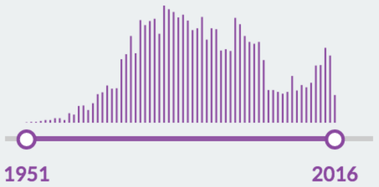

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ATLAS 246
CDF 205
ZEUS 167
CMS 162
H1 142

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Phrases

Exclusive 4187
Cross Section 3843
Integrated Cross Section 3843
Inclusive 3833
Single Differential Cross Section 2773

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Reactions

P P --> P P 314

Production of K* (892)^0 and ϕ(1020) in p-Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV

Adam, Jaroslav ; Adamova, Dagmar ; Aggarwal, Madan Mohan ; *et al.* The ALICE collaboration.

No Journal Information, 2016.

Inspire Record 1418181 DOI 10.17182/hepdata.72807

The production of K* (892)^0 and ϕ(1020) mesons has been measured in p-Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV. K^{*0} and ϕ are reconstructed via their decay into charged hadrons with the ALICE detector in the rapidity range $-0.5 < y < 0$. The transverse momentum spectra, measured as a function of the multiplicity, have p_T range from 0 to 15 GeV/c for K^{*0} and from 0.3 to 21 GeV/c for ϕ. Integrated yields, mean transverse momenta and particle…

30 data tables

Table 1 Average charged particle pseudo-rapidity density, $\langle dN_{ch}/d\eta_{lab} \rangle$, measured at mid-rapidity in visible cross section event classes and average number of colliding nucleons, $\langle N_{coll} \rangle$. Multiplicity classes are defined using the V0A estimator; values for $\langle dN_{ch}/d\eta_{lab} \rangle$ are corrected for vertexing and trigger efficiency. Since statistical uncertainties are negligible, only total systematic uncertainties are reported.

Table 2 p_T -differential yield of (K^{*0} + $\overline{K^{*0}}$)/2 in p-Pb collisions with centre-of-mass energy/nucleon=5.02 TeV (NSD). Additional systematic error: +- 3.1% (normalization).

Table 3 p_T -differential yield of (K^{*0} + $\overline{K^{*0}}$)/2 in p-Pb collisions with centre-of-mass energy/nucleon=5.02 TeV (0-20% multiplicity class).

More…

INVESTIGATION OF INCLUSIVE PROCESSES pi- A ---> pi- X AND pi- A ---> p (backwards) X AT 40-GeV/c

Abrosimov, A.T. ; Albini, E. ; Antipov, V.V. ; *et al.*

Conference Paper, 2016.

Inspire Record 209961 DOI 10.17182/hepdata.39782

None

3 data tables

Table 1 No description provided.

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Charged-particle distributions in $\sqrt{s}$=13 TeV pp interactions measured with the ATLAS detector at the LHC

Aad, Georges , Abbott, Brad , Abdallah, Jalal , Abdinov, Ovsat , Abeloos, Baptiste , Aben, Rosemarie , Abolins, Maris , AbouZeid, Ossama , Abraham, Nicola , Abramowicz, Halina

ATLAS

No Journal Information, 2016

http://dx.doi.org/10.17182/hepdata.72205

View paper in Inspire | View old HepData

Additional Resources

Abstract (data abstract)

CERN-LHC. Measurements of charged particle distributions in proton-proton collisions at a centre-of-mass energy of 13 TeV. A data sample of nearly 9 million events recorded by the ATLAS detector during a special LHC fill with low beam currents, and thus giving a low expected mean number of interactions, is used. The charged-particle multiplicity, its dependence on transverse momentum and pseudorapidity and the dependence of the mean transverse momentum on the charged-particle multiplicity are presented. The measurements are performed with charged particles with transverse momentum greater than 500 MeV and absolute pseudorapidity less than 2.5, in events with at least one charged particle satisfying these kinematic requirements

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momentum for...

Table 9

Data from Auxiliary Material

10.17182/hepdata.72205.v1/t9

Extrapolated charged-particle multiplicity distributions in proton-proton collisions at a centre-of-mass energy of 13000 GeV for events with the number of...

Table 10

Data from Auxiliary Material

10.17182/hepdata.72205.v1/t10

Extrapolated average transverse momentum in proton-proton collisions at a centre-of-mass energy of 13000 GeV as a function of the number...

Table 11

Data from F 5A

10.17182/hepdata.72205.v1/t11

Charged-particle multiplicities in proton-proton collisions at a centre-of-mass energy of 13000 GeV as a function of pseudorapidity for events with...

Table 12

Table 10

http://www.hepdata.net/r

Extrapolated average transverse momentum in proton-proton collisions at a centre-of-mass energy of 13000 GeV as a function of the number of charged particles in the event for events with the number of charged particles >=1 having transverse momentum >500 MeV and absolute(pseudorapidity) <2.5.

10.17182/hepdata.72205.v1/t10

observables

PT

phrases

Inclusive | Proton-Proton Scattering

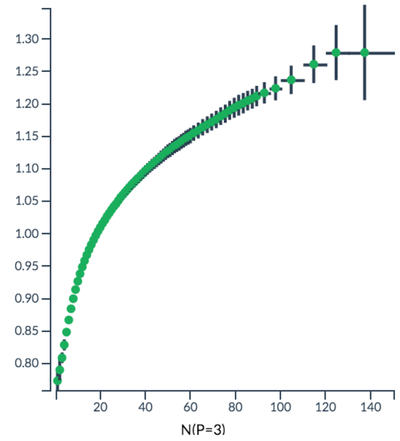
reactions

P P --> CHARGED X

Showing 50 of 81 values | Show All 81 values

ETARAP(P=3)	-2.5-2.5
Extrapolated to include strange baryons	
N(P=3)	>= 1
PT(P=3)	> 500 MEV
RE	P P --> CHARGED X
SQRTS(S)	13000.0 GeV
N(P=3)	**MEAN(NAME=PT(P=3)) [GEV]**
0.50 - 1.50	0.7737 ±0.0008 stat ±0.0155 sys
1.50 - 2.50	0.7904 ±0.0007 stat ±0.0158 sys
2.50 - 3.50	0.809 ±0.001 stat ±0.008 sys

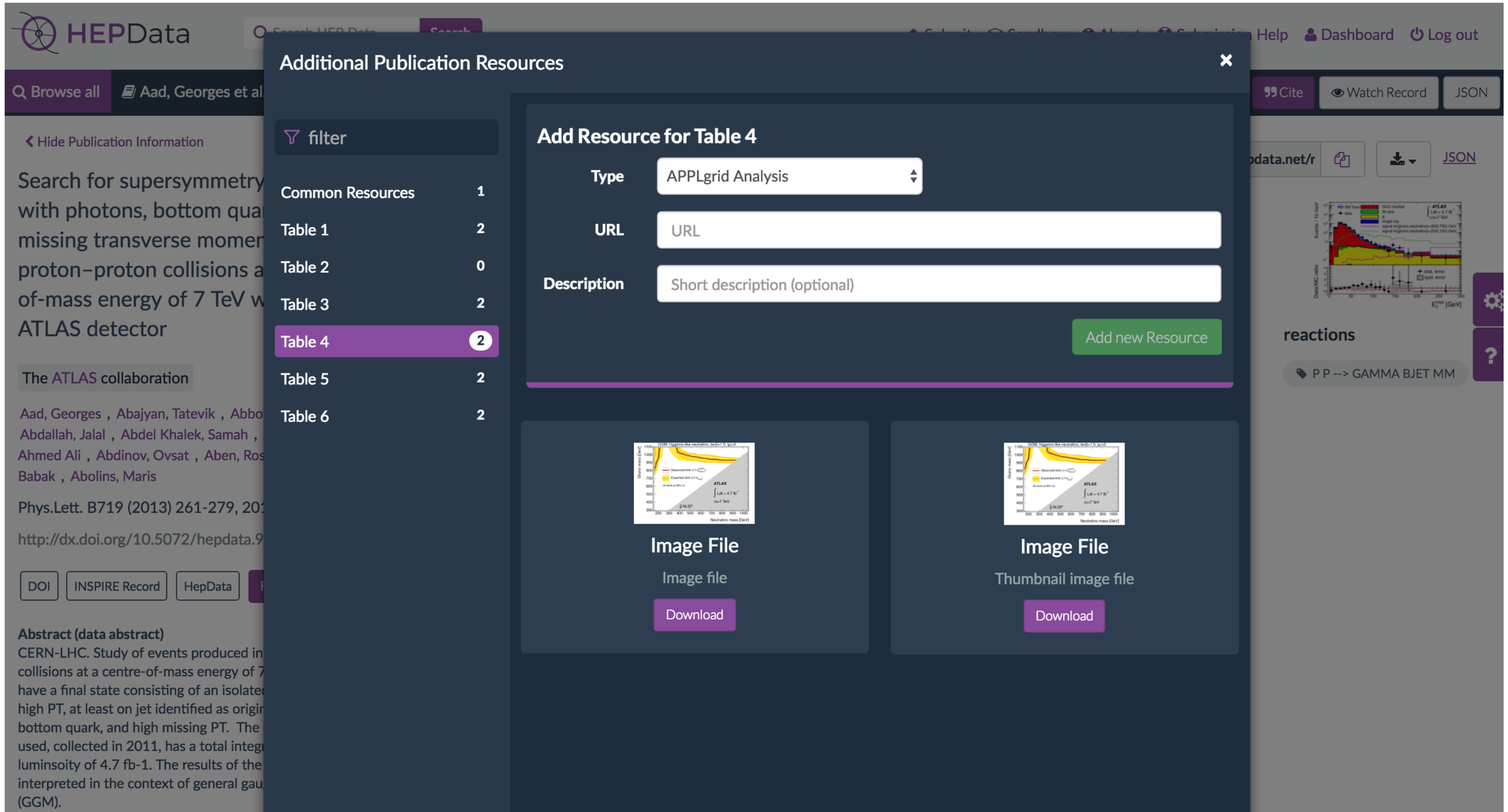
Visualize



Sum errors | Log Scale (X) | Log Scale (Y)

HEPData

Access all supplementary resources (images, slha files, RIVET analyses, etc.)



HEPData

Data Consumers

Get access to the data in many environments

1. Publication Driven Search
2. **Semantic Publishing**
3. Data Conversion
4. Access in Analysis Environments

HEPData

Semantic Publishing

Every article is tagged with schema.org vocabulary.

Makes it possible for Google and other search engines
to understand our content.

https://hepdata.net/search

Google's View

https://hepdata.net/record/ins1397180

Google's view

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HEPData

Converter

Convert from YAML to ROOT, YODA, CSV

Install via PIP, use as a web service, and contribute to more conversions with our extendable API!

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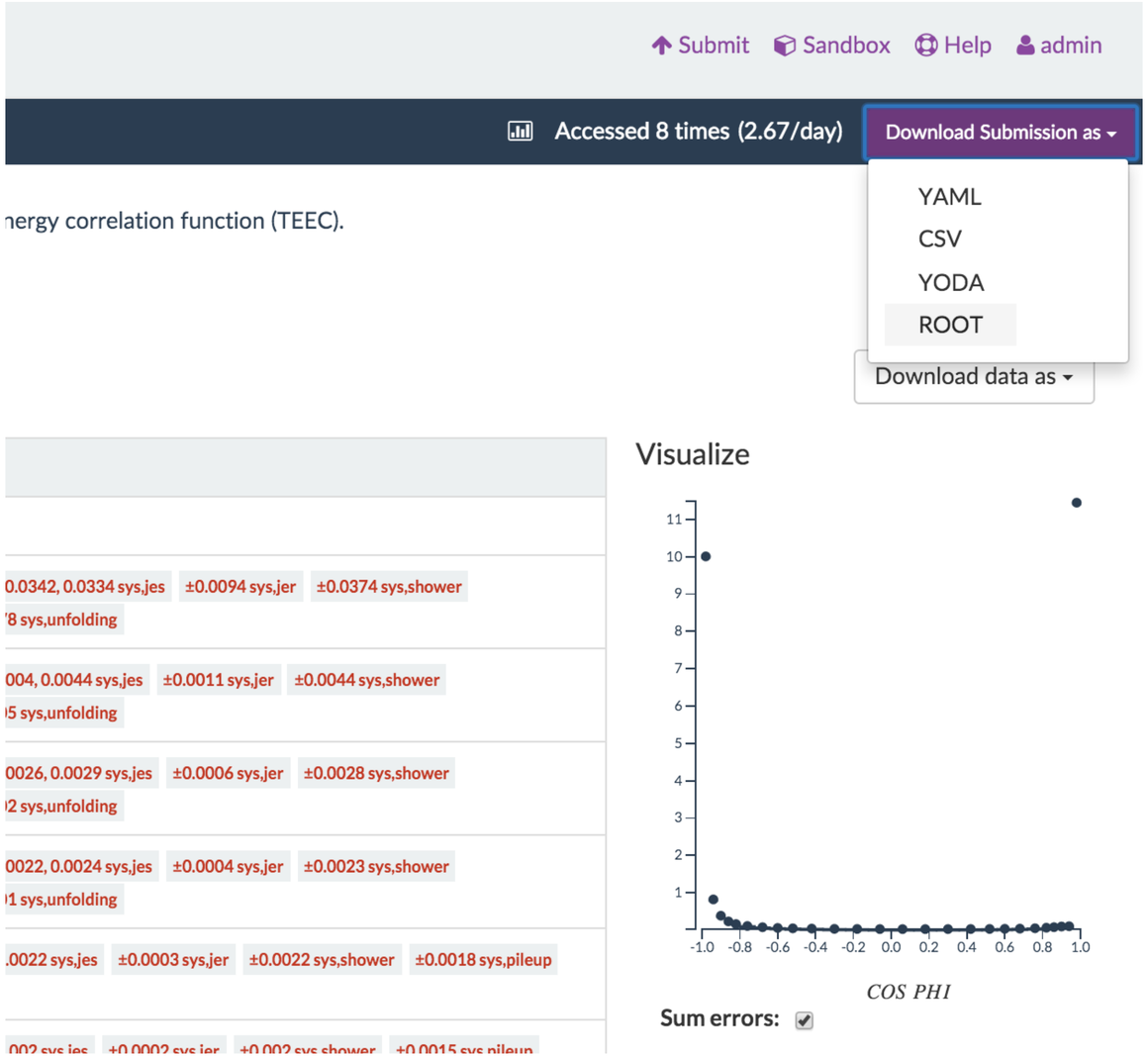
Conversion to the most common formats



Data Consumers

Get access to the data in many environments

1. Publication Driven Search
2. Semantic Publishing
3. Data Conversion
4. **Access in Analysis Environments**

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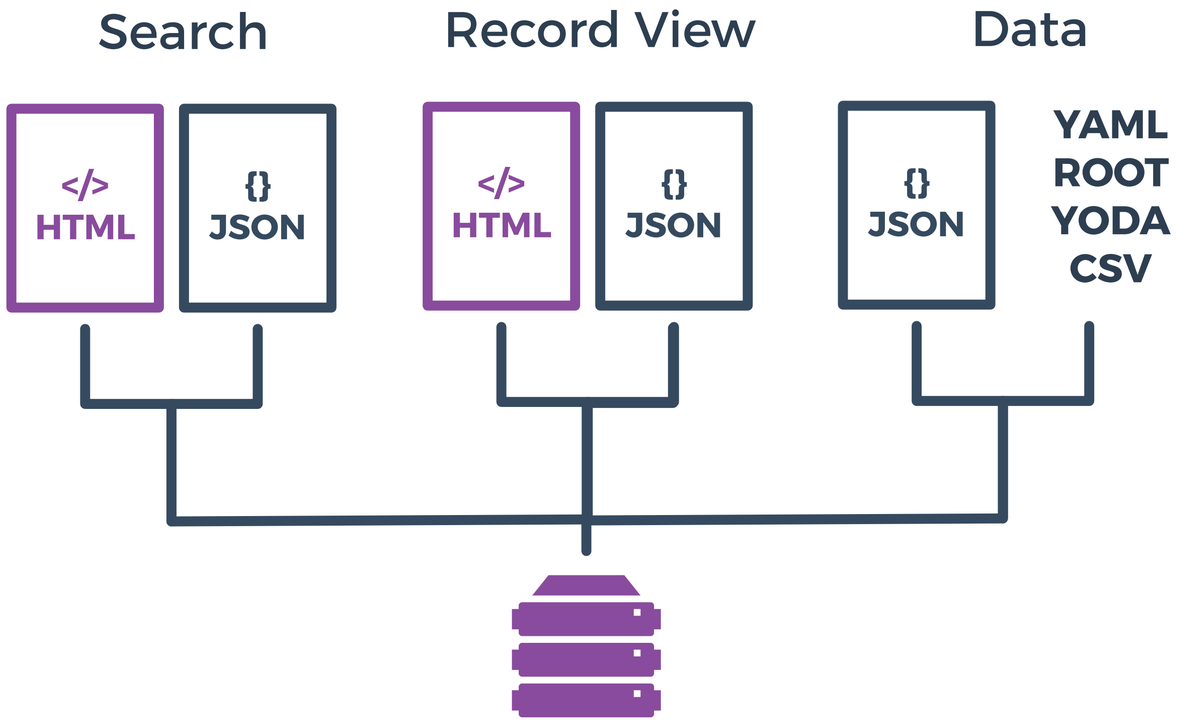


Every content page has a JSON equivalent...

So all of HEPData and its content can be accessed programmatically.

HEPData

Use case: search, access, and get data directly from Mathematica

No need to leave the software environment you like.

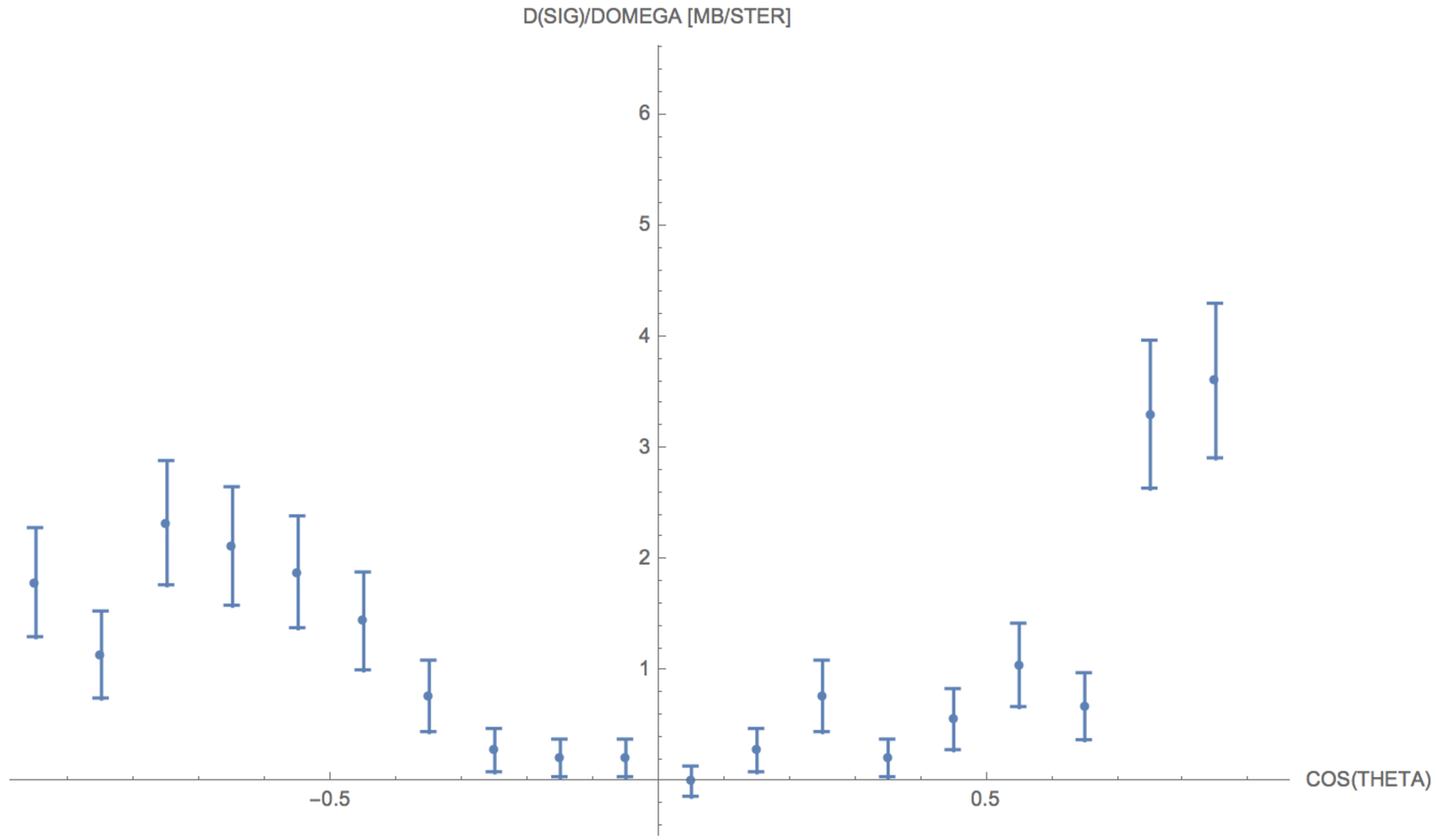
The same can be said for use in ROOT or any analysis platform with a file parser :)

HEPData

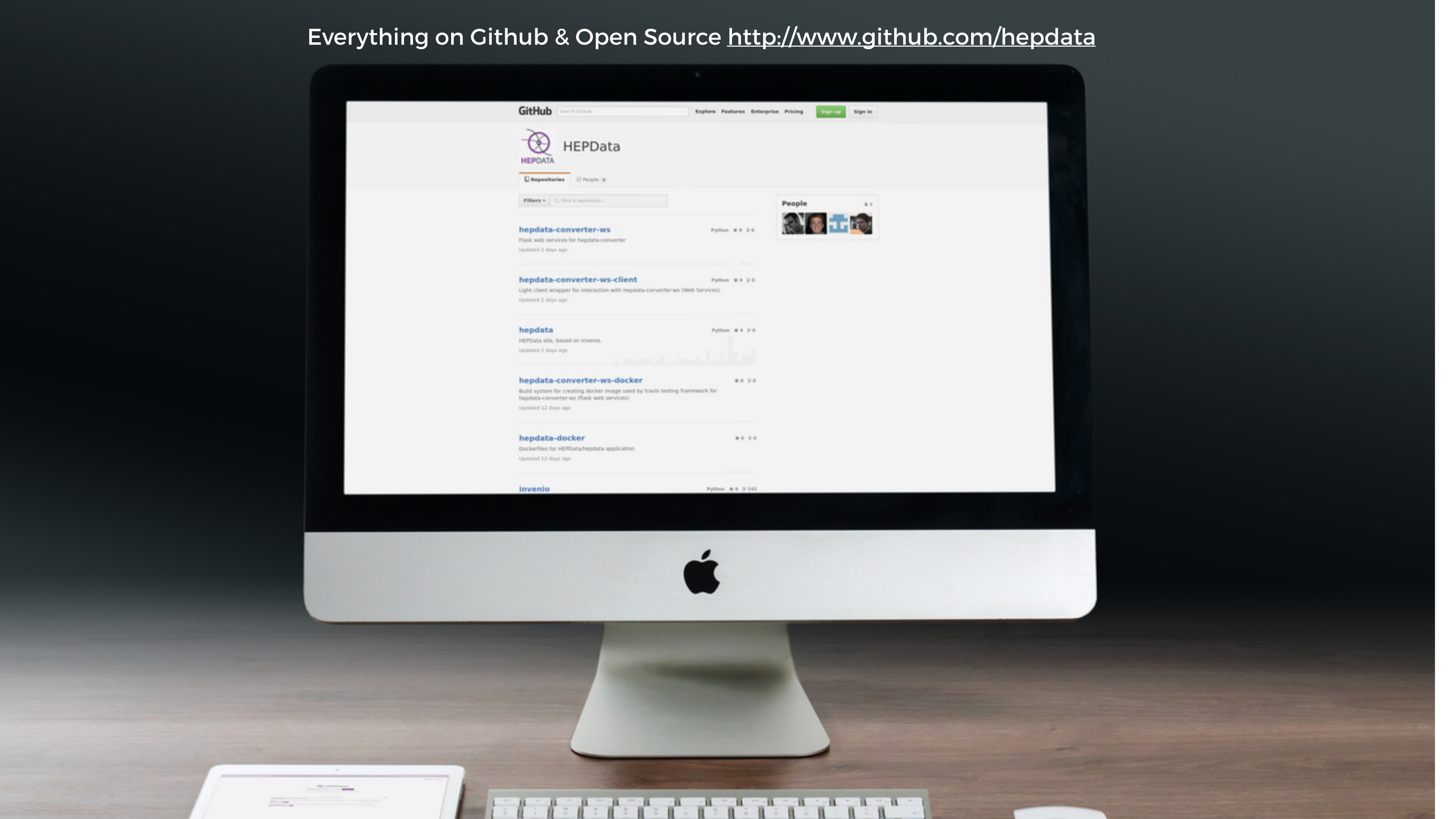
Example File here

In[111]:= **ErrorPlot[errorPoints, AxesLabel → headers]**

Out[111]=



Everything on Github & Open Source http://www.github.com/hepdata



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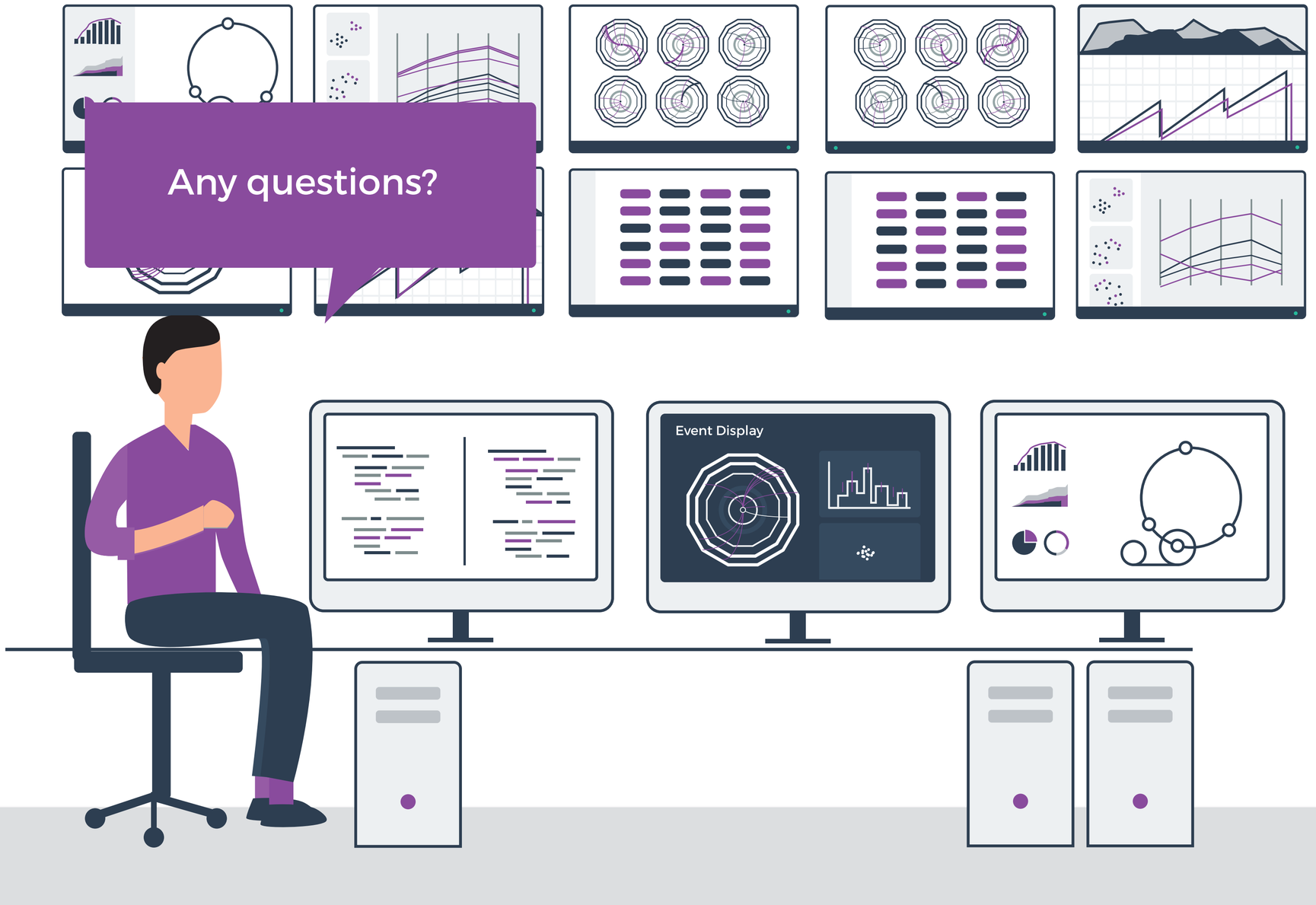
Any questions?
Event Display