



Finding the ATLAS Open Data

First, go to the ATLAS Open Data website,
opendata.atlas.cern

Tags

Home About Apps Data News/Blog SaaS Software EN

click on Data



Feel free to
explore this site
for useful ideas,
information and
resources!

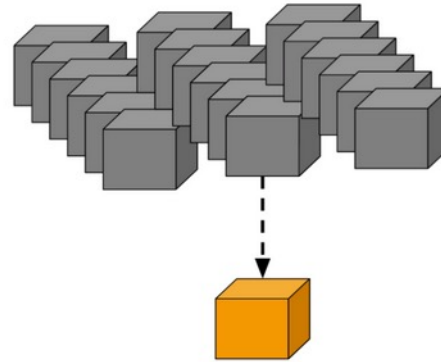
ATLAS Open Data

An Educational project in High Energy Physics



Data

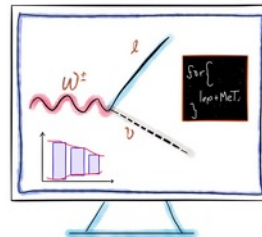
ATLAS Open Data aims to deliver High Energy Physics (HEP) real and simulated data that can be explored on the browser or computer. Take a look at the different collections below, follow the links to the dedicated documentation and explore the secrets of the smaller *known* blocks that composed of the universe.



Choose which sample you would like. Here we're going with 13 TeV – it's the biggest and highest-energy dataset

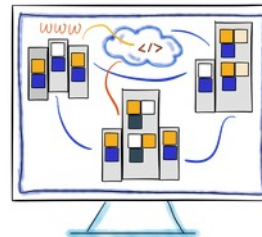
Select the data you want to access and explore its specific resources

The 8 TeV samples



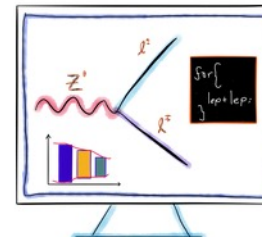
Learn more about the 2016 datasets

The 13 TeV samples



Explore the 10x more data in 2020 datasets

Custom samples



Dedicated samples for advance usage

The 13 TeV ...

... ATLAS Open Data samples

In 2020, a new set of pp collision data has been released by the ATLAS Collaboration to the public for educational purposes. The data has been collected by the ATLAS detector at the LHC at 13 TeV during the year 2016 and corresponds to an integrated luminosity of 10 fb⁻¹. The pp collision data is accompanied by a set of MC simulated samples describing several processes which are used to model the expected distributions of different signal and background events.

Follow the [Official 13 TeV Documentation](#)

Open the Official Documentation



- The released samples are provided in a simplified data format, reducing the information content of the original data analysis format used within the ATLAS Collaboration.
- The resulting format is a [ROOT](#) tuple with more than 80 branches. For those not familiar with this modular scientific software toolkit, please refer to the [ROOT documentation](#), which provides a rich set of tutorials and code examples.
- Several final-state collections are provided within the 13 TeV ATLAS Open Data release. The corresponding multiplicities of final-state objects, minimum transverse momentum requirements and collection names are shown below:

The documentation site has lots of useful information – exploring encouraged!

13 TeV Open Datasets

Overview

Available physics objects

Full list of branches and variables

MC simulation samples

[ROOT files & collections](#)

General capabilities of the released 13 TeV dataset

Limitations of the released 13 TeV dataset

Evolution of the ATLAS Open Data

Datasets in ROOT format

This section shows a simplified filter where to download the samples. You can filter by the collection, if recorded data (derived) or MonteCarlo (simulated), and some physics categories.

For a RAW view of the repository of the files 13 TeV dataset per collection, go [here](#)

Collections

Description	Name	link to ZIP file
events selected with at least one lepton (electron or muon) and exactly one large-Radius jet ($R = 1.0$)	1largeRjet1lep	5.5 Gb
events selected with exactly one lepton (electron or muon). This is a very large collection, so, it was divided into three ZIP files	1lep	17 Gb, 20 Gb, 21 Gb
events selected with exactly one lepton (electron or muon) and exactly one hadronic-reconstructed tau	1lep1tau	1.3 Gb
events selected with at least two leptons (electron or muon)	2lep	24 Gb
events selected with exactly three leptons (electron or muon)	3lep	1.0 Gb
events selected with at least four leptons (electron or muon)	4lep	427 Mb
events selected with at least two photons	GamGam	1.5 Gb

Individual files



























You can browse the repository and identify individual collections and the content [here](#).

To find the files themselves click here...

...or here

choose what kind
of sample you
want e.g. collisions
resulting in 1
lepton




Index of /atlas-opendata/samples/2020

Name	Last modified	Size	Description
 Parent Directory		-	
 1largeRjet1lep.zip	2020-11-03 15:20	5.5G	
 1largeRjet1lep/	2020-11-03 15:07	-	
 1lep/	2020-11-03 15:42	-	
 1lep1tau.zip	2020-11-03 16:27	1.3G	
 1lep1tau/	2020-11-03 16:24	-	
 2lep.zip	2020-11-03 17:05	24G	
 2lep/	2021-03-22 00:53	-	
 3lep.zip	2020-11-03 17:07	1.0G	
 3lep/	2020-11-03 17:05	-	
 4lep.zip	2020-11-03 17:08	427M	
 4lep/	2020-11-03 17:07	-	
 Data-1lep.zip	2020-11-03 17:18	17G	
 Data-2lep.zip	2021-03-21 23:51	1.6G	
 GamGam.zip	2020-11-03 17:20	1.5G	
 GamGam/	2020-11-03 17:19	-	
 MC-1-1lep.zip	2020-11-03 17:32	20G	
 MC-1-2lep.zip	2021-03-22 00:38	12G	
 MC-2-1lep.zip	2020-11-03 17:45	21G	
 MC-2-2lep.zip	2021-03-22 00:25	10G	
 csv-link-private/	2021-09-05 19:37	-	
 csv/	2021-09-06 12:14	-	
 exactly2lep.zip	2020-11-03 18:13	21G	
 exactly2lep/	2020-11-03 17:46	-	
 hadd-july/	2020-11-03 19:54	-	
 jetReco/	2020-11-03 20:33	-	
 vm/	2020-11-03 20:36	-	






choose real
collisions ('data')
or simulated
collisions ('Monte-
Carlo' / 'MC')






Index of /atlas-opendata/samples/2020/1lep

Name	Last modified	Size	Description
 Parent Directory		-	
 Data/	2020-11-03 15:42	-	
 MC/	2020-11-03 16:24	-	

Index of /atlas-opendata/samples/2020/1lep/Data






Name	Last modified	Size	Description
 Parent Directory		-	
 data_A.1lep.root	2020-11-03 15:21	1.5G	
 data_B.1lep.root	2020-11-03 15:26	5.2G	
 data_C.1lep.root	2020-11-03 15:33	7.7G	
 data_D.1lep.root	2020-11-03 15:42	11G	

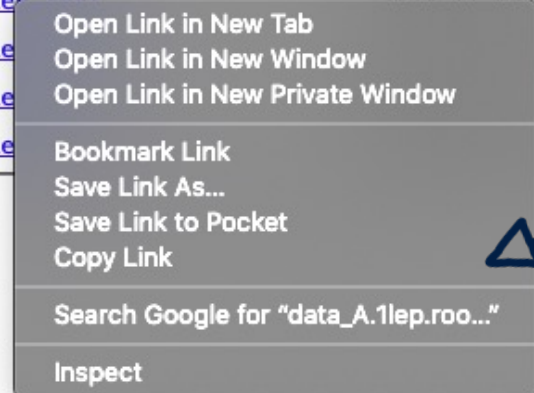
Index of /atlas-opendata/samples/2020/1lep

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory		-	
 Data/	2020-11-03 15:42	-	
 MC/	2020-11-03 16:24	-	

choose real collisions ('data') or simulated collisions ('Monte-Carlo' / 'MC')

Index of /atlas-opendata/samples/2020/1lep/Data

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory		-	
 data_A.1lep.root	2020-11-03 15:21	1.5G	
 data_B.1lep.root	15:26	5.2G	
 data_C.1lep.root	15:33	7.7G	
 data_D.1lep.root	15:42	11G	



right click on your file and copy link. Do NOT download it, these file are biiiig

Return to your code...

```
In [ ]: f = uproot.open("")
```

 ... and paste in the link!

```
In [ ]: f = uproot.open("https://atlas-opendata.web.cern.ch/atlas-opendata/samples/2020/1largeRjet1lep/MC/mc_361106.Zee.1lar
```

Finished 🎉