UNIVERSITY OF OXFORD

ATLAS EXPERIMENT

Finding the ATLAS Open Data

19/11/2021

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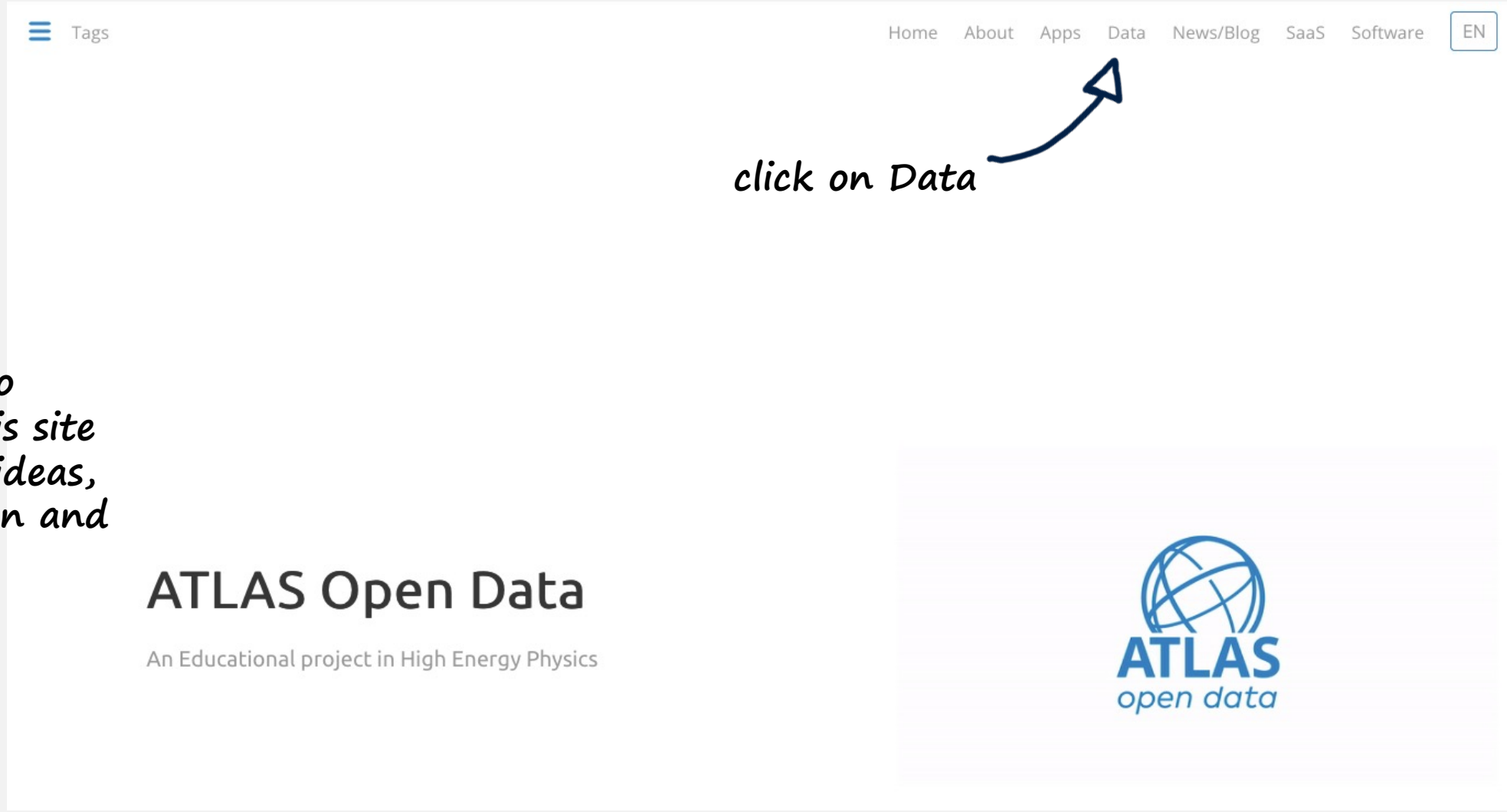
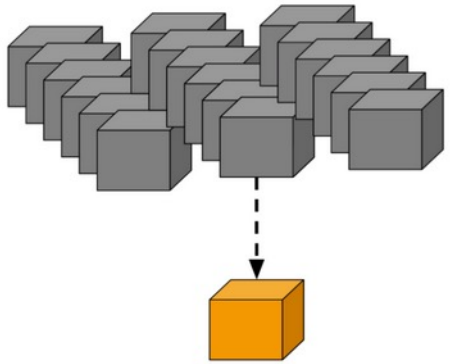
First, go to the ATLAS Open Data website,
opendata.atlas.cern



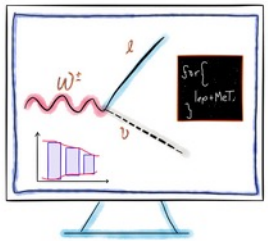
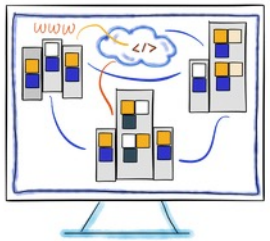
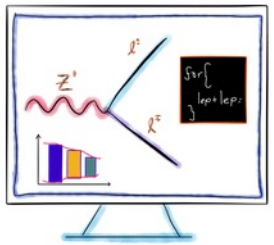
Feel free to explore this site for useful ideas, information and resources!

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.



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

The 8 TeV samples	The 13 TeV samples	Custom samples
		
Learn more about the 2016 datasets	Explore the 10x more data in 2020 datasets	Dedicated samples for advance usage

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

The 13 TeV ...

... ATLAS Open Data samples

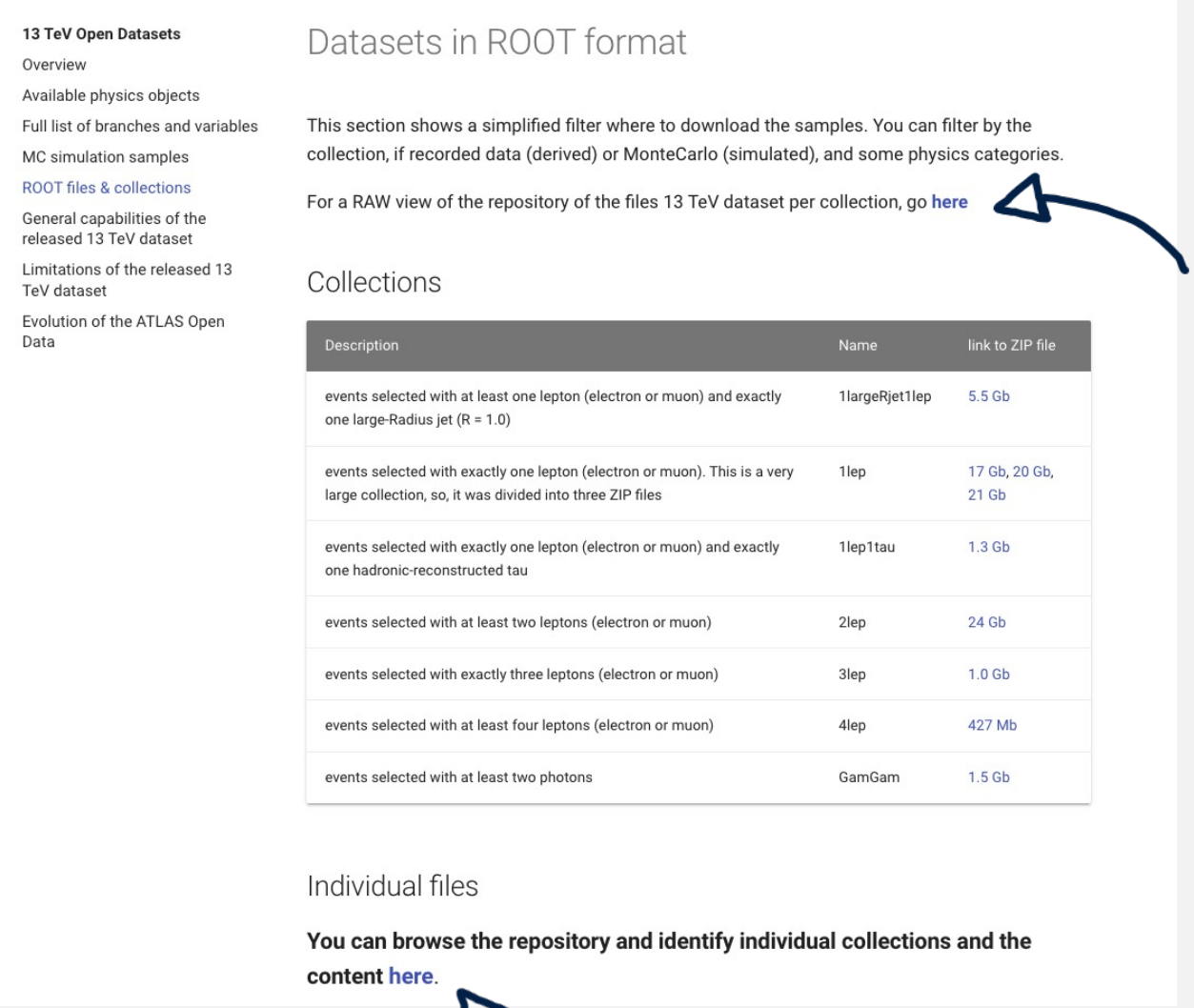
In 2020, a new set of pp collision data has been released by the ATLAS Collaboration to the public for educational purposes. The data has been collected by the ATLAS detector at the LHC at 13 TeV during the year 2016 and corresponds to an integrated luminosity of 10 fb-1. The pp collision data is accompanied 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

To find the files themselves click here...

Collections

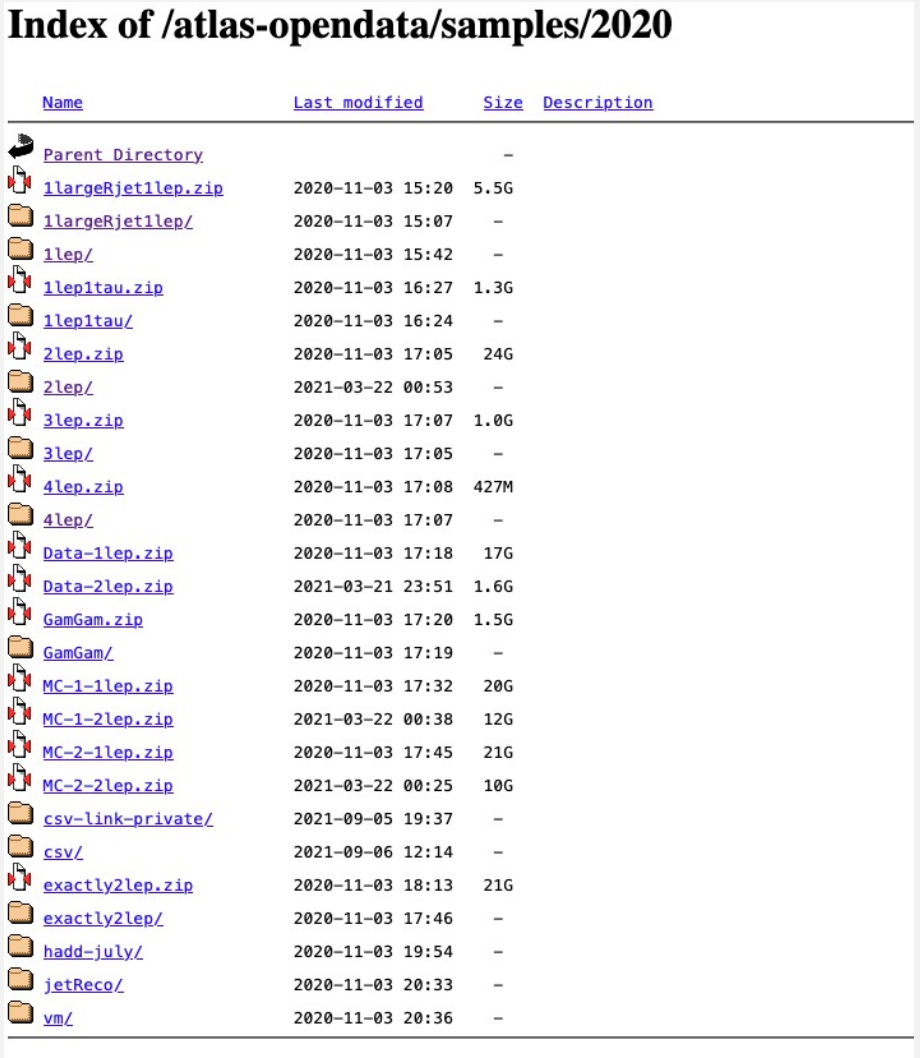
Description	Name	link to ZIP file
events selected with at least one lepton (electron or muon) and exactly one large-Radius jet (R = 1.0)	1largeRjet1lep	5.5 Gb
events selected with exactly one lepton (electron or muon). This is a very large collection, so, it was divided into three ZIP files	1lep	17 Gb, 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.

...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')

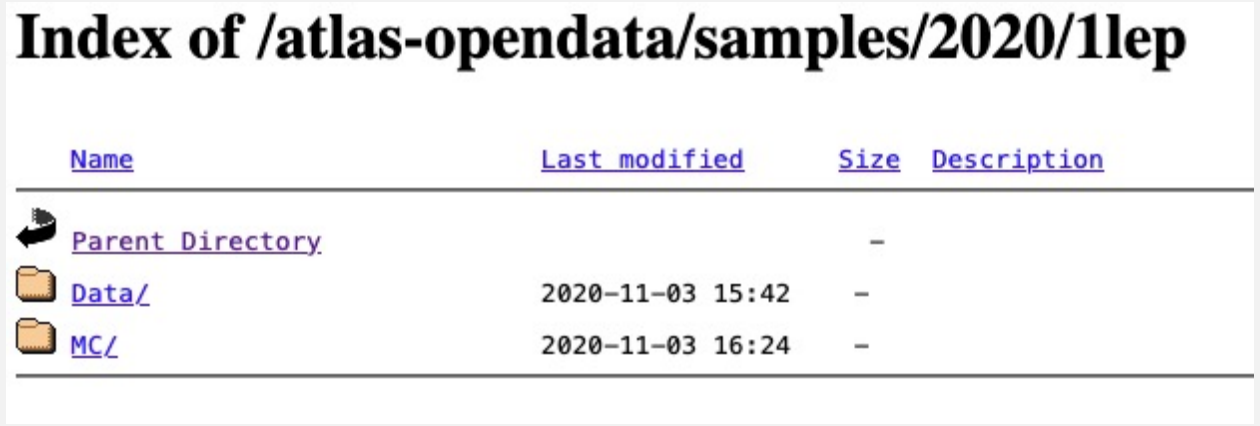
Index of /atlas-opendata/samples/2020/1lep

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

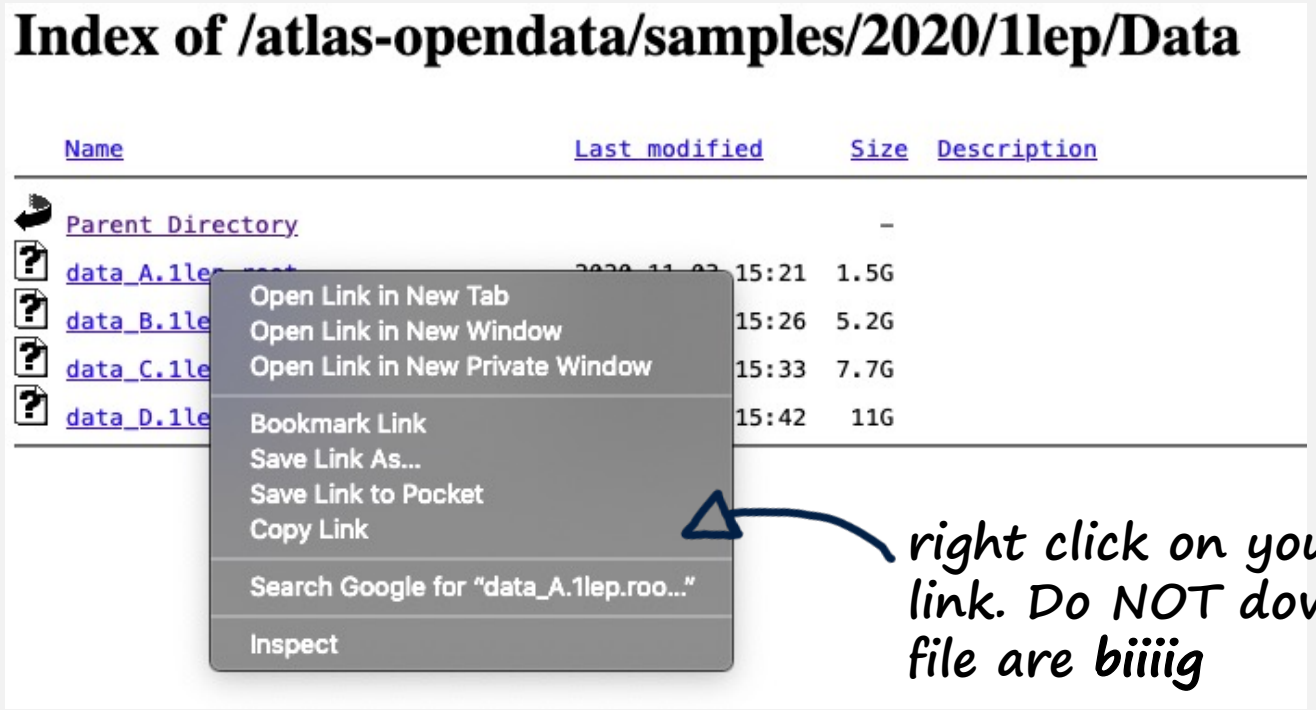
Name	Last modified	Size	Description
Parent Directory		-	
data_A.1lep.root	2020-11-03 15:21	1.5G	
data_B.1lep.root	2020-11-03 15:26	5.2G	
data_C.1lep.root	2020-11-03 15:33	7.7G	
data_D.1lep.root	2020-11-03 15:42	11G	

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	-	



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

Return to your code...

```
In [ ]: f = ROOT.TFile.Open("")
```

... and paste in the link!

```
In [ ]: f = ROOT.TFile.Open("https://atlas-opendata.web.cern.ch/atlas-opendata/samples/2020/1lep/Data/data_A.1lep.root")
```

Finished 🎉