Welcome!

ATLAS Open Data Tutorial

24 November 2025

Zach Marshall (LBNL)

Welcome!

- We’re very happy to have you here!
- We hope this is a fantastic learning experience for you all
- This is our first time, so please be patient with us if something goes wrong…
- We have several tutors here to help throughout the week

Would the tutors please wave?

Code of Conduct

- Please remember while here that we should all follow the [CERN Code of Conduct]
  - We value Integrity, Diversity, Excellence, Commitment, Creativity, and Professionalism
- Or to quote Bill and Ted:

Be excellent to each other

Locations for the week

ATLAS! That's our experiment.
You can come visit on **Monday**.

You are here! This is where the tutorial will be held all week

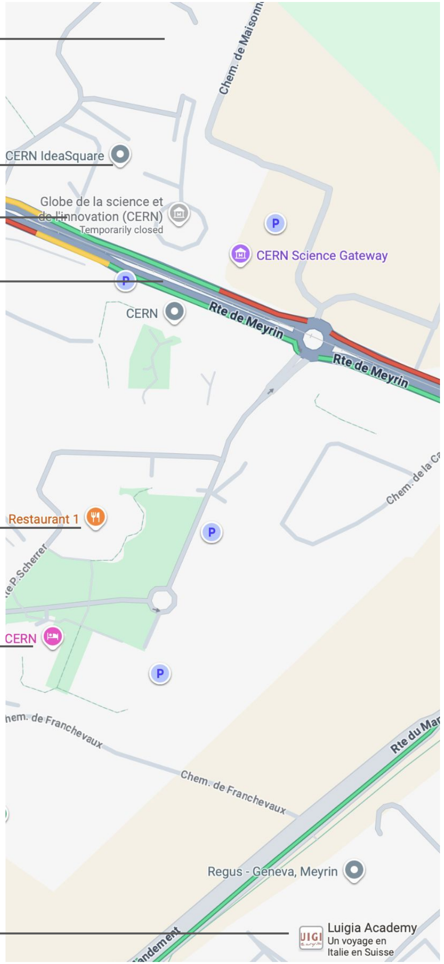
Gas station. Good for emergency snacks / drinks.

CERN tram stop

Restaurant 1 (aka R1). We expect to go here for lunch.

CERN Hotel

Luigia Academy. We will have a dinner here on **Tuesday**.



Other practicalities

- You should have access to open wifi via Eduroam or the CERN campus network
- If you use social media to post about the event, please tag @CERNIdeaSquare and @ATLASexperiment (we will also take a few pictures during the event)
- We will ask you to fill out a survey at the end of the week
    - Please help us make future iterations of this event even better!!
- For the dinner, I expect to walk over to Luigia Academy aka Luigia Meyrin
    - It's about a 10 minute walk from the CERN hotel
    - Anyone who wishes to walk is welcome to join me!
    - Our reservation is for **6:30pm**, so we can start walking around 6:10pm or so from here
- For the week, we have post-it notes for you

Please use your **red** or **pink** post-it if you need help. A tutor will come by.

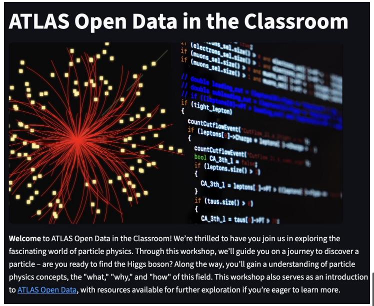
Please use your **green** post-it if you are ready to move on or would like us to speed up a bit

Now on the practicalities…

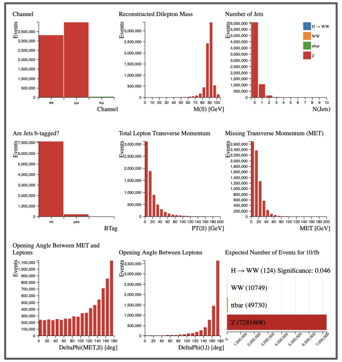
Questions?

Our Documentation Goal

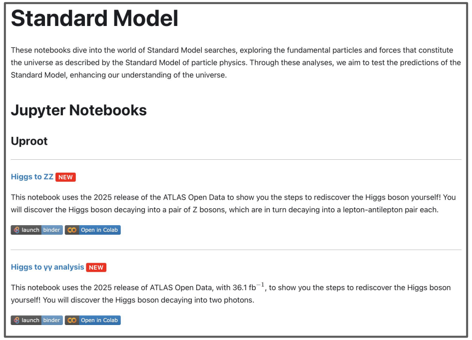
- Our goal is to have open data that's accessible to a wide variety of audiences
- We want learners to be able to move to more or less complex setups painlessly
- If you want more complexity than the Outreach and Education Open Data allow, try the Open Data for Research! If it's too complex, try the Histogram Analyzer!



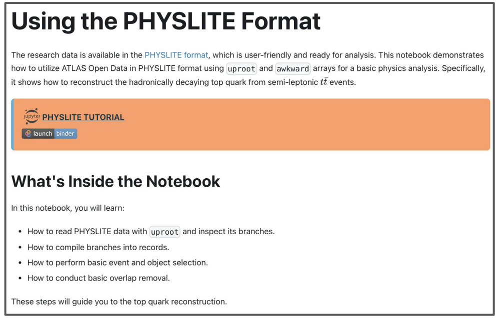
Introductory "Classroom Apps"



No-code "Histogram Analyzers"



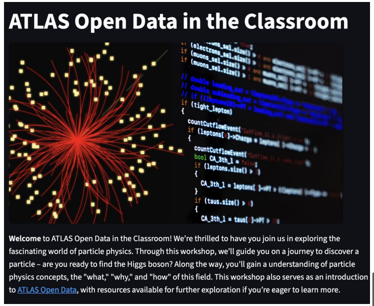
Open Data for Education and Outreach



Open Data for Research

This Week

- We expect to focus Monday–Tuesday on Education and Outreach Open Data
- We expect to focus Wednesday–Thursday on Research Open Data
- There’s no *strict* line between the two, which many of you will see



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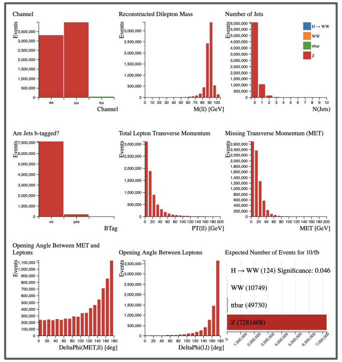

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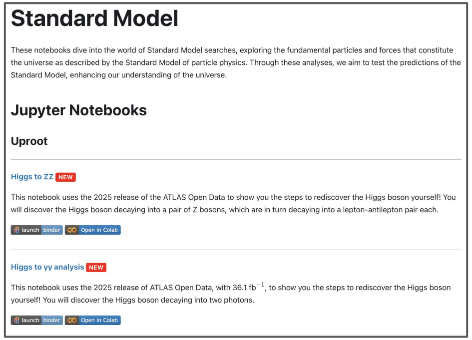
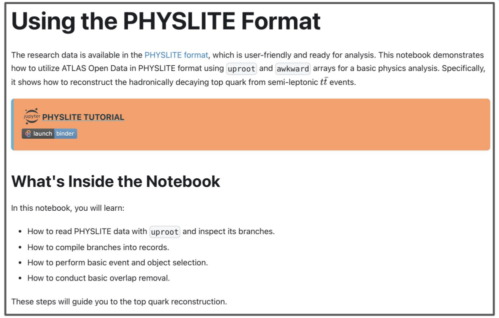


Open Data for Education and Outreach



Open Data for Research

Monday and Tuesday: Outreach and Education Open Data

ATLAS EXPERIMENT

- We're going to give you a crash-course overview of the LHC and ATLAS
- Monday will mostly focus on what O&E open data and tools were released
- Tuesday will show off a bunch of things that you can do with the O&E open data
    - If you already know the subjects, we hope they'll be interesting as use-cases for the open data; if you don't know the subjects we hope that you'll come away knowing some things!

Monday 24 November

09:00 → 09:15	**Welcome to IdeaSquare** Speaker: Ole Anton Werner (CERN IdeaSquare)	15m	3179/R-E06
09:15 → 09:30	**Practical Information** Speaker: Zach Marshall (Lawrence Berkeley National Lab. (US))	15m	3179/R-E06
09:30 → 10:30	**Introduction to LHC Physics and ATLAS** Speaker: Antonio Manuel Mendes Jacques Da Costa (The University of Manchester (GB))	1h	3179/R-E06
10:30 → 10:45	**Resources to Run On** Speaker: Giovanni Guerrieri (CERN)	15m	3179/R-E06
10:45 → 11:15	**Coffee**	30m	3179/R-E06
11:15 → 12:15	**Conceptually, what Open Data were Released?** Speaker: Zach Marshall (Lawrence Berkeley National Lab. (US))	1h	3179/R-E06
12:15 → 14:00	**Lunch**	1h 45m	3179/R-E06
14:00 → 15:30	**Intro to the O&E Open Data specifics** Speakers: Antonio Manuel Mendes Jacques Da Costa (The University of Manchester (GB)), Dr Eirik Gramstad (University of Oslo (NO))	1h 30m	3179/R-E06
15:30 → 16:00	**Coffee**	30m	3179/R-E06
16:00 → 17:00	**Notebook Analysis: Live Demo** Speaker: Mariana Isabel Vivas Albornoz (Deutsches Elektronen-Synchrotron (DE))	1h	3179/R-E06
17:30 → 19:00	**ATLAS Visitors Center / Control Room Tour** We will walk together over to ATLAS for a visit. Anyone who wishes to join is welcome. Speakers: Giovanni Guerrieri (CERN), Zach Marshall (Lawrence Berkeley National Lab. (US))	1h 30m	3162/1-K01

Tuesday 25 November

09:00 → 10:30	**Systematic Uncertainties and other Concepts** Speaker: Zach Marshall (Lawrence Berkeley National Lab. (US))	1h 30m	3179/R-E06
10:30 → 11:00	**Coffee**	30m	3179/R-E06
11:00 → 12:30	**Statistics** Speaker: Robert Les (Michigan State University (US))	1h 30m	3179/R-E06
12:30 → 14:00	**Lunch**	1h 30m	3179/R-E06
14:00 → 15:30	**Machine Learning** Speaker: Ethan Lewis Simpson (The University of Manchester (GB))	1h 30m	3179/R-E06
15:30 → 16:00	**Coffee**	30m	3179/R-E06
16:00 → 16:45	**Overflow**	45m	3179/R-E06
16:45 → 17:00	**Outreach and Education Wrap-up / Summary** Speaker: Antonio Manuel Mendes Jacques Da Costa (The University of Manchester (GB))	15m	3179/R-E06
18:30 → 20:00	**Tutorial Dinner**	1h 30m	

Wednesday and Thursday: Research Open Data

ATLAS EXPERIMENT

- Wednesday will mostly focus on what research open data and tools are available
  - Lots of time on a ‘realistic’ demo, because running on these things is more complex
- Thursday will go through a few specific issues with the open data that might be useful
  - Systematics are key for ‘real’ research analyses
  - We want to talk about limitations so you don’t get any ‘wrong’ answers
  - Open Event Generation is a different set of data, and we’ll show you how to use it as well

Wednesday 26 November

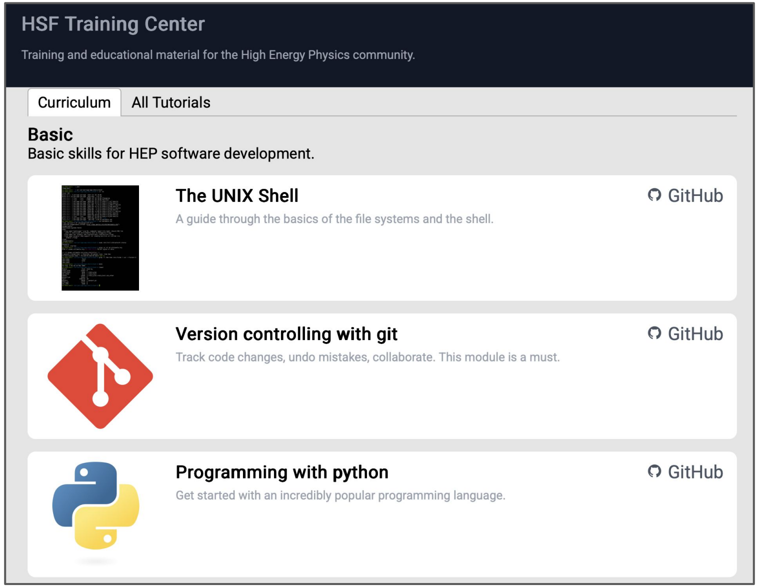
09:00 → 10:30	**Open Data for Research Overview** **Speaker:** Mariana Isabel Vivas Albornoz (Deutsches Elektronen-Synchrotron (DE))	1h 30m	3179/R-E06
10:30 → 11:00	Coffee	30m	3179/R-E06
11:00 → 12:30	**PHYSLITE to Open Data** **Speakers:** Dr Eirik Gramstad (University of Oslo (NO)), Giovanni Guerrieri (CERN), Zach Marshall (Lawrence Berkeley National Lab. (US))	1h 30m	3179/R-E06
12:30 → 14:00	Lunch	1h 30m	3179/R-E06
14:00 → 15:30	**Resources and analysis demo** **Speaker:** Baida Achkar	1h 30m	3179/R-E06
15:30 → 16:00	Coffee	30m	3179/R-E06
16:00 → 17:30	**Resources and analysis demo** **Speaker:** Baida Achkar	1h 30m	3179/R-E06

Thursday 27 November

09:00 → 10:00	**Systematic Uncertainties** **Speaker:** Zach Marshall (Lawrence Berkeley National Lab. (US))	1h	3179/R-E06
10:00 → 10:30	**Limitations of Open Data** **Speaker:** Mariana Isabel Vivas Albornoz (Deutsches Elektronen-Synchrotron (DE))	30m	3179/R-E06
10:30 → 11:00	Coffee	30m	3179/R-E06
11:00 → 12:30	**An RDataFrame Example** **Speaker:** Dr Eirik Gramstad (University of Oslo (NO))	1h 30m	3179/R-E06
12:30 → 14:00	Lunch	1h 30m	3179/R-E06
14:00 → 15:30	**Open Event Generation Data** **Speaker:** Zach Marshall (Lawrence Berkeley National Lab. (US))	1h 30m	3179/R-E06
15:30 → 15:45	**Summary / Closeout** **Speakers:** Antonio Manuel Mendes Jacques Da Costa (The University of Manchester (GB)), Zach Marshall (Lawrence Berkeley National Lab. (US))	15m	3179/R-E06

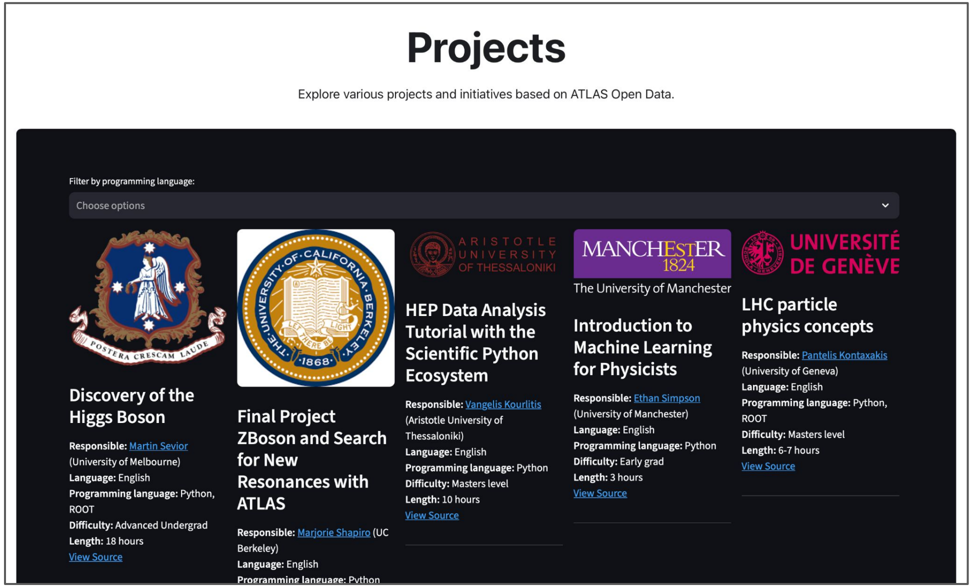
Brushing up on the basics

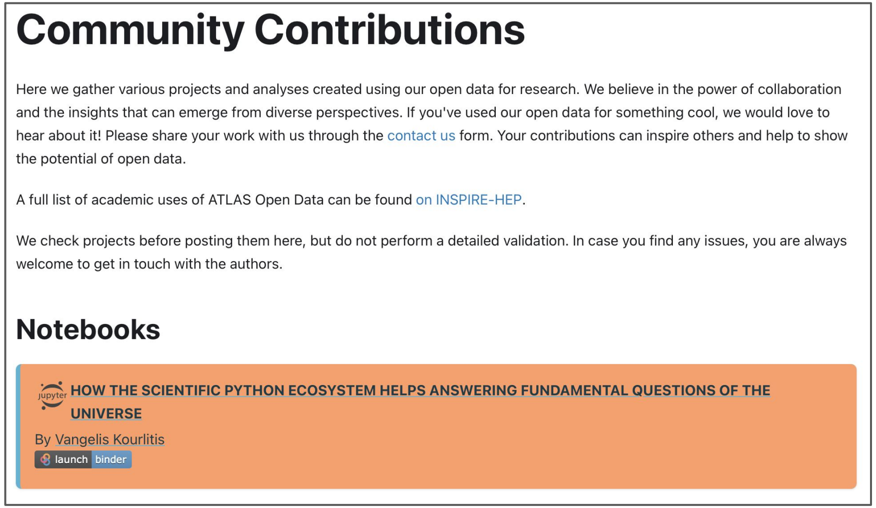
- We will expect that you’re generally familiar with git, python, and notebooks
- For the Open Data for Research, bash and C++ are strongly recommended
- The HSF Training Center has some material available if you find you need a refresher



Your Projects

- We ***love*** hearing about how you use the Open Data!
- Please share any of your future work with us (we will of course credit you if we list it!)
- Feel free to browse other projects / courses that were constructed with the Open Data in case you're interested in re-using some material





Thank You for Coming!

- Big **THANKS** to the IdeaSquare folks for hosting us this week!
- Now before we get started with the material…

Questions?