The CMS Open Data workshop: Introduction

August 1st, 2022 Kati Lassila-Perini

CMS Data preservation and open access coordinator Helsinki Institute of Physics (Finland)

Welcome!

Kati

On behalf of the CMS Open data team

The organizing team of this workshop:







Organizers and speakers

Edgar Carrera Jarrin (U. San Francisco de Quito, EC) Julie Hogan ((Bethel University, Brown University, US) Matthew Bellis (Siena College, US) Kati Lassila-Perini (Helsinki Institute of Physics, FI) Clemens Lange (PSI) Jieun Yoo (UIC, US) Achim Geiser (DESY) Thomas McCauley (University of Notre Dame, US) Xavier Alexander Tintin Gavilanes (Escuela Politecnica Nacional (EC)) Sezen Sekmen (Kyungpook National University, KR)

Helpers and contributing

Sarah Markham (Siena College, US) Kalin Johnson (Brown University, US) Dietrich Liko (Austrian Academy of Sciences, AT) Kharol Chicaiza (EPN, EC) Andres Luis Chicaiza (EPN, EC) Pamela LLerena (EPN, EC) Nitsih Dhringa (Panjab University, IN) Daniela Merizalde (USFQ, EC) Jose Ochoa (USFQ, EC) Edison Patricio Jimenez (EPN, EC) Enrique Piedra (EPN, EC) David Mena (EPN, EC)

Goals?

What do you expect? What do we expect?



We made some assumptions

We think that you want to use CMS open data and simulation for physics research.

Therefore, we think you want to understand:

- the basic physics object usage (object access, id, corrections, how to write them out)
- how one can select events and access trigger information
- how to evaluate the luminosity
- the possibilities for large-scale data processing.

In addition, we think you will be interested in <a>o how to put this all together in an analysis

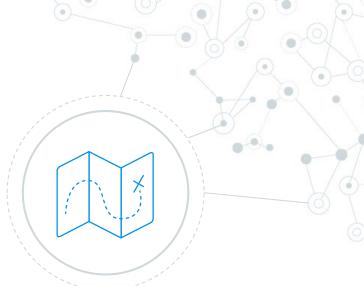


But that's not all - we get something as well

We want to:

- build a community of users
- remind of <u>https://opendata-forum.cern.ch/</u>
- get understanding of the usage patterns and needs
- get feedback of what is missing in the documentation and tutorial material
- build a proper <u>CMS open data user guide</u>.





Bear with us:

CMS Open data is always work in progress

How to get there?

Workshop structure Working methods



A set of mandatory pre-exercises

Pre-exercises

(Mandatory exercises must be completed before the start of the workshop) (Submission of work assignments is required as explained in the Orientation below)

"

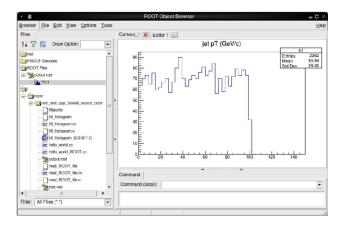
Mandatory 5 min	Orientation
Optional (external lesson)	The Unix Shell
Optional (external lesson)	Version Control with Git
Optional (external lesson)	Programming with Python
Mandatory 2h	Docker containers
Mandatory 2h	Dataset scouting
Mandatory 4h	ROOT with C++ and Python
Mandatory 2h	Intro to CMSSW
Mandatory 2h	Intro to cloud computing

Pre-exercises

- Importantly, to set up and test your working environment before the workshop
- To give some background information on the topics of this workshop
 - Many thanks for your questions!
- If these are not familiar to you, you're in trouble!

Setting up CMSSW_7_6_7 WARNING: There already exists /code/CMSSW_7_6_7 area for SCRAM_ARCH slc6_amd64_gcc493. CMSSW should now be available. This is a standalone image for CMSSW_7_6_7 slc6_amd64_gcc493. (/code/CMSSW_7_6_7/src) ls

In that case: try to catch up, we do our best to guide you through, but the priority is given to
 the ongoing exercises.



<u>Schedule</u>

londay			Tuesday		
14:30-14:50	Welcome and Intro	K. Lassila-Perini	14:30-15:30	Trigger	E. Carrera
4:50-15:50	Physics Objects: Intro and POET	M. Bellis, E. Carrera,			
		K. Lassila-Perini	15:30-16:30	Luminosity	J. Yoo
:50-16:30	Physics Objects: Electrons	M. Bellis, E. Carrera, K. Lassila-Perini			
30-17:00	Break		16:30-17:00	Break	
00-17:40	Physics Objects: Muons	M. Bellis, E. Carrera, K. Lassila-Perini	17:00-18:30	Analysis example with Run 1 data	A. Geiser
0-18:30	Physics Objects: Jets	M. Bellis, E. Carrera, J. Hogan, K. Lassila-Perini			

Nednesd	ay	
14:30-15:10	Simplified Run 2 analysis: Intro	E. Carrera, T. McCauley
15:10-16:30	Simplified Run 2 analysis: Analysis chain	E. Carrera, T. McCauley
16:30-17:00	Break	
17:00-18:30	Simplified Run 2 analysis: Systematics and Stats	E. Carrera, T. McCauley

4:30-16:30	Cloud Computing	C. Lange,
		K. Lassila-Perini,
		X. Tintin
16:30-17:00	Break	
17:00-18:30	Run 2 analysis with ADL	S. Sekmen
11.00 10.00		

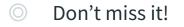
Full 4 days of work ahead of us!

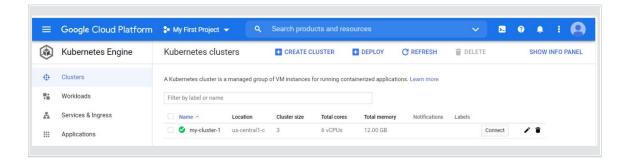
Material available from the schedule and from the indico agenda Each lesson has a dedicated Mattermost channel in CMSODWS2022

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CMS analysis on a cloud environment

- You will have the opportunity to learn how to run a CMS open data processing job in real scale on commercial cloud environment.
- If you want to participate, let us know in <u>the survey</u> at the latest on Tuesday.
- It will be hands-on and you will get a temporary account
 - We've got resources for it through CERN IT projects.
- We'll be using Kubernetes engine on Google Cloud Platform





Getting help - live

- In <u>mattermost</u>, choose the channel corresponding to the lesson.
- Do not hesitate to ask!
 - But check if the same question has already been asked.
- Out and paste the command and the error message
 - If needed, use `some code in line`
 - or ```block of code or output```
 - shift-return for a line break in a message
- Reload the tutorial page every now and then for updates.
- During live lessons
 - In the meeting room, use the mic.
 - In zoom:
 - Quick remarks (e.g. zoom problems) in zoom chat
 - Use "Raise hand" for voice questions

CM	ISODWS2022 ~ +	
=	Q Find channel	
~ CHA	NNELS	È
⊕	C++ and Python pre-exer	
⊕	Cloud pre-exercise	
•	CMSSW pre-exercise	
⊕	Datasets pre-exercise	
⊕	Docker pre-exercise	
⊕	Off-Topic	
a	TTbarLJets tutorial prepa	
ð	Cloud tutorial preparation	
â	Objects tutorial preparati	
•	Town Square	

Getting help - live

- You are many we are really happy about that.
 - 130 registrations
 - 38 of you have already gone through the pre-exercises.
- We are there to help you!
- Please read the instructions carefully
 - We are not professional technical writers and some details may not be that well exposed in the text.
 - Suggestions for improvements are most welcome.



Ask! Ask! Ask!

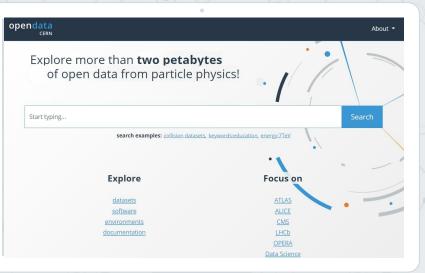
The excellence in teaching is not pushing forward those who know the most,

but taking care that no one is left behind.



How to get help after?

Information sources Communication



CERN Open data portal

Serves the data, associated analysis artefacts, usage examples

CMS Open Data Guide

Cms-opendata-guide

Table of contents

How to use this site

The site's philosophy

How to contribute or contact us

How to get help

Q Search

CMS Open Data Guide Home

CMS Open Data CERN Open Data Portal CMS Open Data Finding Data Computing Tools UNIX ROOT

- C++ and Python
- Git Docker
- Virtual Machines
- CMSSW Overview
- Data Model Analyzers

Selection

- Configuration
- Conditions Data
- Analysis
- Data and Simulation

CMS Open Data Guide

A Warning

This guide is under construction

Welcome to the guide for CMS open data. This guide is brought to you by the CMS open data group, on a best-effort basis. All software and instructions are provided "as is", without warranty of any kind. This is ongoing work and we appreciate your feedback and/or your help building this guide.

How to use this site

The lefthand tabs will help you navigate the site. If you click on each tab, it will expand to show further subsections. The sections will guide you through the main topics you will need to become familiar with to conduct an analysis using CMS Open Data, You'll learn about the computing tools needed to deal with CMS open data and about CMSSW, which is the software used by CMS. You'll also learn how to conduct a particle physics analysis

The site's philosophy

This site is thought as a navigation aid. The CMS Collaboration has built an extensive amount of ptation over the years. However, given the pature of our rapidly evelving research

CMS Open data guide

Work in progress, will be completed with the material in this tutorial.

Do you want to help?

opendața			Q	
all categories • Latest Top Categories			+ New Topic	
Торіс		Replies	Views	Activity
X11 forwarding with docker Containers Last voit	4 K	1	58	3h
Error response from daemon: pull access denied for 3813b5241687, repository does not exist or may require 'docker login' Containers	089=	5	27	21d
Git usage in CMS open data environments Software tools	84	1	49	25 Jul
CMS open data VM images updated	8	0	49	8 Jul
Running CMS OpenData containers in WSL2 Containers	ß	0	80	26 Jun
★ Welcome to the CERN Open Data forum! News	0	0	84	Dec '19

CERN Open data forum

Feel free to post questions! Feel free to reply as well!

Most frequently asked questions at this workshop will be added.

Other sources of information

Open data portal support mail: opendata-support@cern.ch

- Technical issues
- Questions to limited audience
- CMS <u>WorkBook</u> and <u>SWGuide</u>
 - Careful: instructions might not correspond to the CMSSW version needed for open data
- CMSSW source code
 - Keep in mind the versioning,
 - for 2011-2012 open data use <u>CMSSW 5 3 X as tag</u>.
 - for 2015 data use <u>CMSSW 7 6 X as tag</u>.

Now, let's get to work!

Enjoy the workshop! We'll love to hear feedback from you on Thursday.

Thanks!

Any questions?

Find us in <u>mattermost</u>



Credits

Thanks to my colleagues

- in the DPOA group in CMS
 - all organizers and contributors
- in the CERN Data preservation services
 - CERN Open data portal team, and many other services that we rely on

And great thanks to all CMS open data users!

And thanks to <u>SlidesCarnival</u> for this free presentation template