

CMS Experiment at the LHC, CERN

Data recorded: 2012-May-27 23:35:47.271030 GMT

Run/Event: 195099 / 137440354

Open data in teaching and education

A 3D visualization of particle tracks from a CMS detector. The tracks are represented as colored lines (green, orange, blue, red) radiating from a central point, with some tracks extending further out. The background is dark with some faint grid lines and a blue cylindrical structure.

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Open data

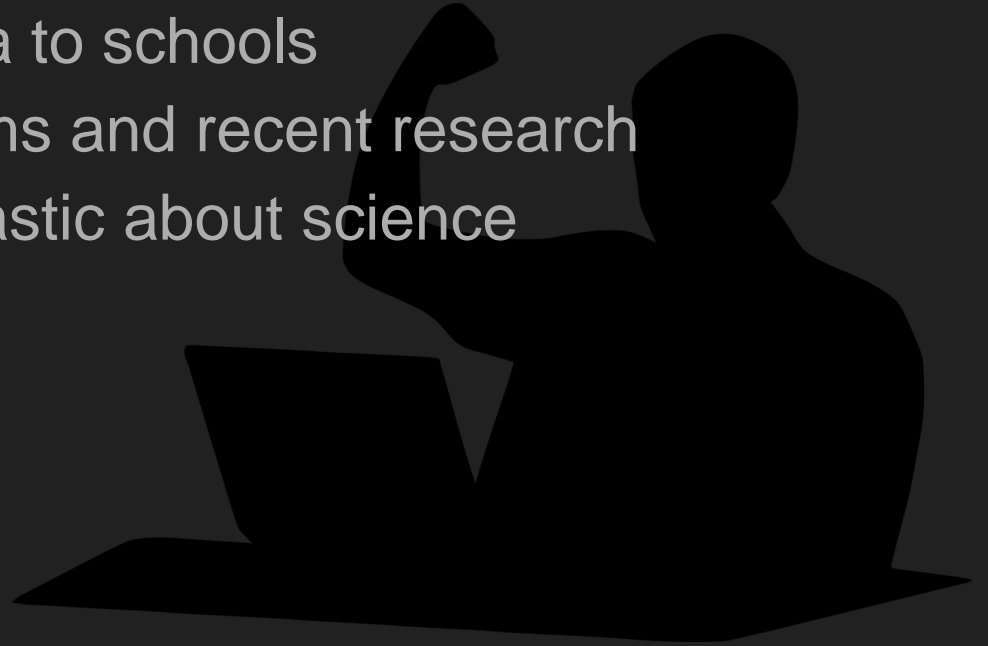
- Anyone can access, free to use and share
- Why should we use it in education?
- How can we use it?



High-school students analysing CMS open data. Photo credit: Marzena Lapka

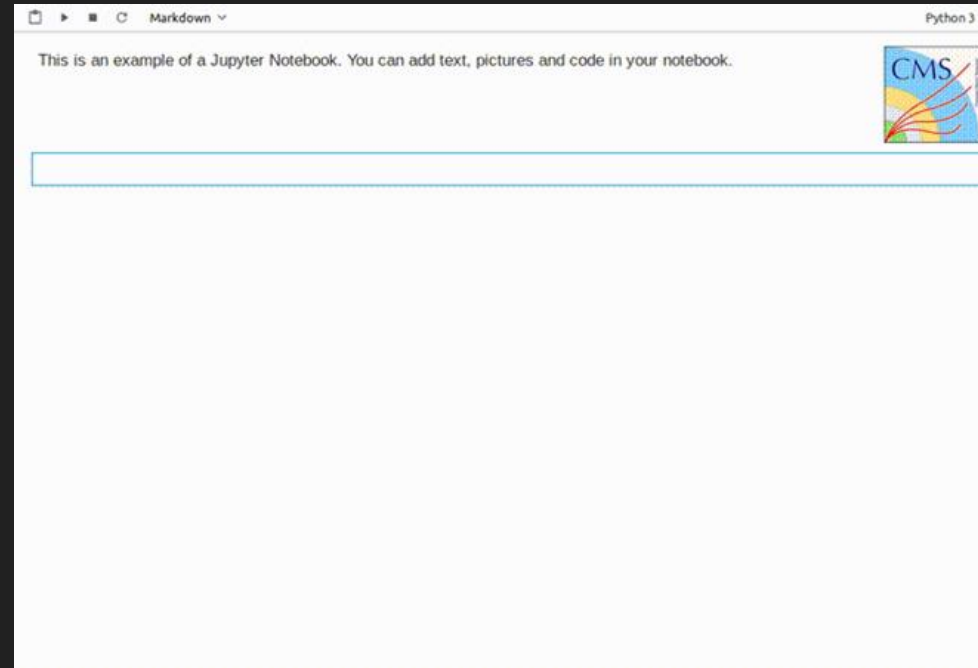
Benefits of using open data

- Open data is everywhere
- Bring real scientific data to schools
- Link between classrooms and recent research
- Make students enthusiastic about science
- It is easy to use!



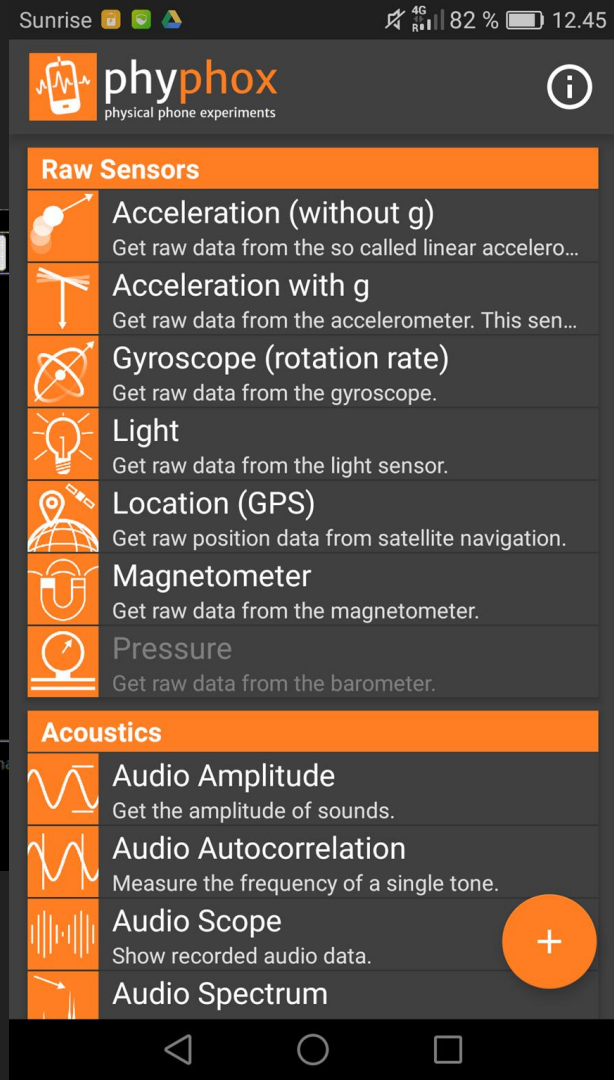
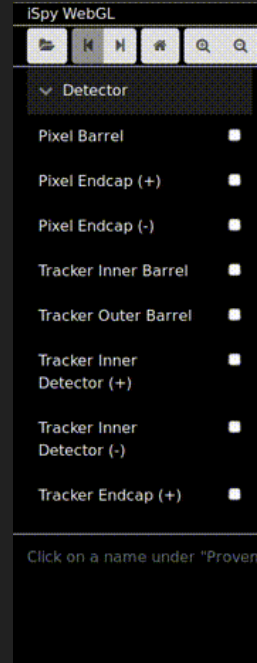
How can we use open data in education?

- Data-analysis
 - **Programming**, spreadsheet, other software
- Jupyter Notebooks and programming
- Tools are scientifically valid and widely used



Other possibilities

- Visualize collisions using CMS event display
- Collect your own data (e.g. Phyphox)



Workshop

- Today we use MyBinder because
 - no software installation needed
 - no need to create an account
 - handy tool in classroom
 - easy to share and open for everyone
- Let's try out one of our exercises!
- Open the demo exercise on MyBinder [here](#) and follow the instructions on the notebook

Got interested?

- Have these tools been tested in classroom?
- Where and how can you use them
- How to create your own materials
- Instructions and teaching material
 - <https://github.com/cms-opendata-education>

Questions?