

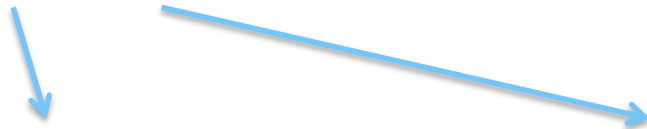
CMS outreach activities

IPPOG meeting, October 2018

Marzena Lapka
on behalf of the CMS Communications Group

Achintya - left end of February ☹️

Piotr Traczyk - joined the CMS Outreach team (50%)



CMS Instagram



<https://www.instagram.com/cmsexperiment/>

CMS Social Media



www.facebook.com/CMSexperiment

17 000 followers



www.twitter.com/CMSexperiment

www.twitter.com/CMSpapers

www.twitter.com/CMSvoices (people from CMS tweeting about their day-to-day work life, **closed March 2018**, reason: no contributors)

43 000 followers

3 000 followers

1 000 followers



www.instagram.com/cmsexperiment/ (opened March 2018)

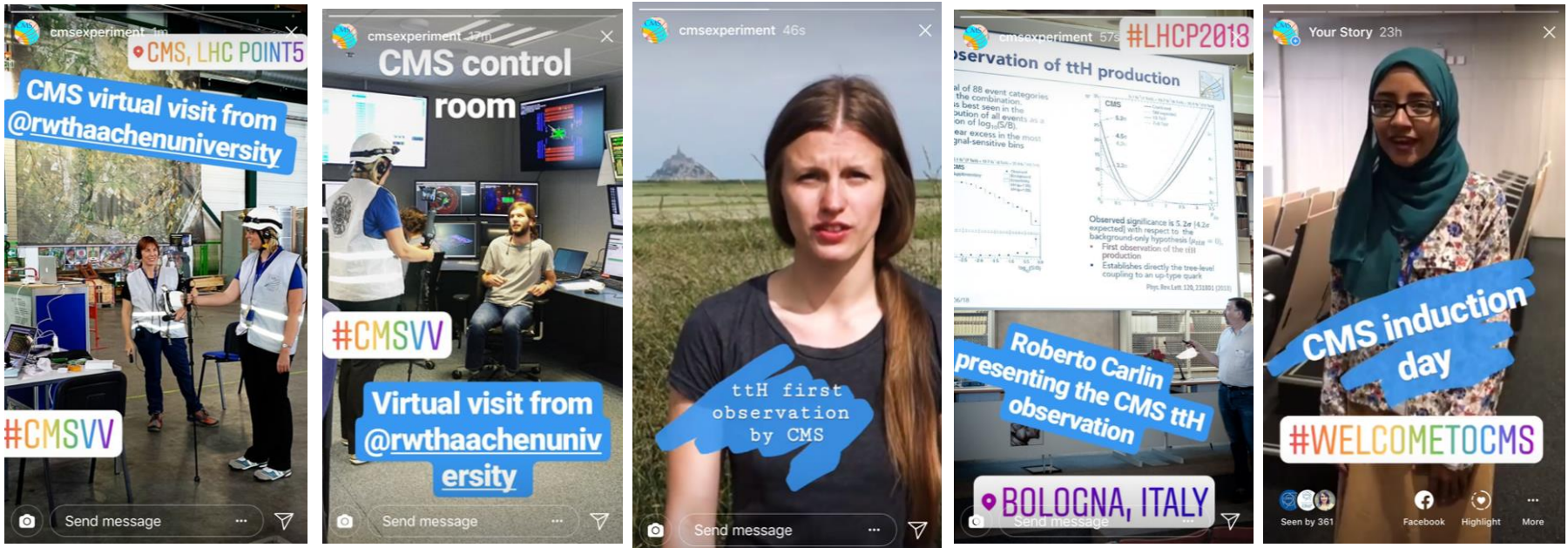
1 600 followers



www.youtube.com/user/CMSExperimentTV

2 000 followers

Launch of Instagram stories

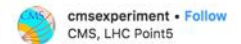


- Capture of the moment, behind the scenes
- Vertical mode (easy to view on a phone)
- Limit - 15 secs. (but a few stories can make one “bigger” story)
- Geotaging content to reach local audience → CMS used for conferences, tagging institutes after Virtual Visits
- institute tag (starting to collaborate with the CMS institutes)

CMS Throwback Thursdays

#makingofcms

- Chronological order (started with the engineering works 1999...)
- Captions written around interesting facts/anecdotes.



cmsexperiment #TBT #makingofcms
The excavation of the CMS underground cavern began in 1998 with an unexpected discovery: the engineers uncovered the remains of a Roman villa from around 300 AD. Coins originating from Ostia, London and Lyon were found among the items uncovered during archeological excavations that followed. The site was next covered in a layer of sand to allow for possible future investigation or display.

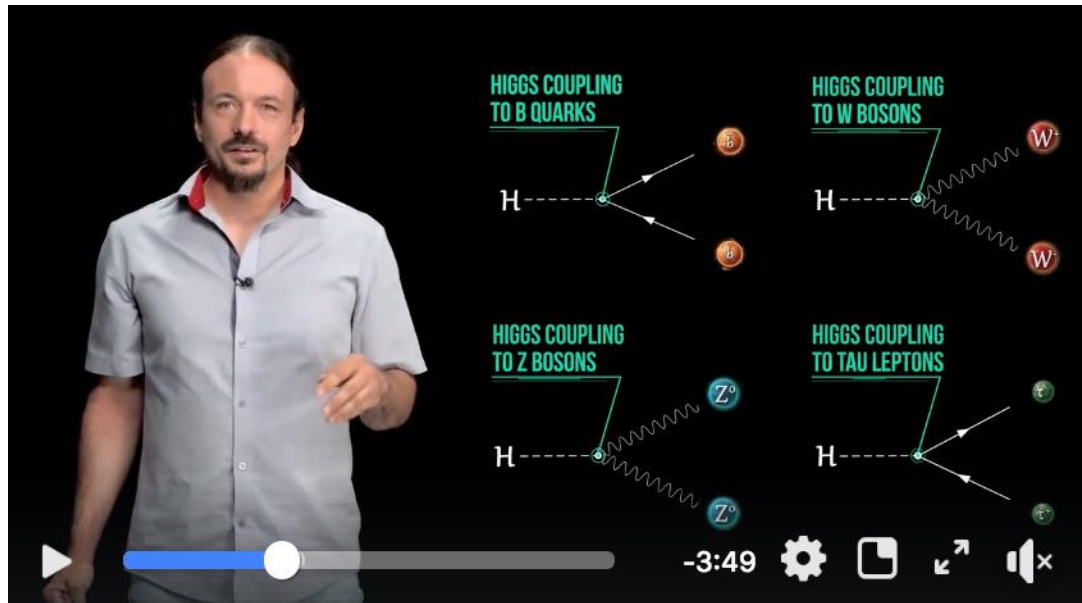
Patrice Loez .
#cmstbt #throwbackthursday #physics
#particlephysics #cern #science
#cmsexperiment #archaeology



121 likes

MAY 31

ttH result in 5 min - video



Many positive comments:

“More videos like this one please”

“Thanks! Love this”

- **Most popular CMS post on Facebook**

- 113k engagement
- Regular CMS post engagement 2k, when CERN shares max.40k

<https://www.youtube.com/watch?v=uTvmYmKZ2aY>

<https://www.instagram.com/p/Bkk4IBBAMmd/>

<https://twitter.com/CMSexperiment/status/1012010308628549632>

<https://www.facebook.com/CMSexperiment/videos/10156392493613433/>

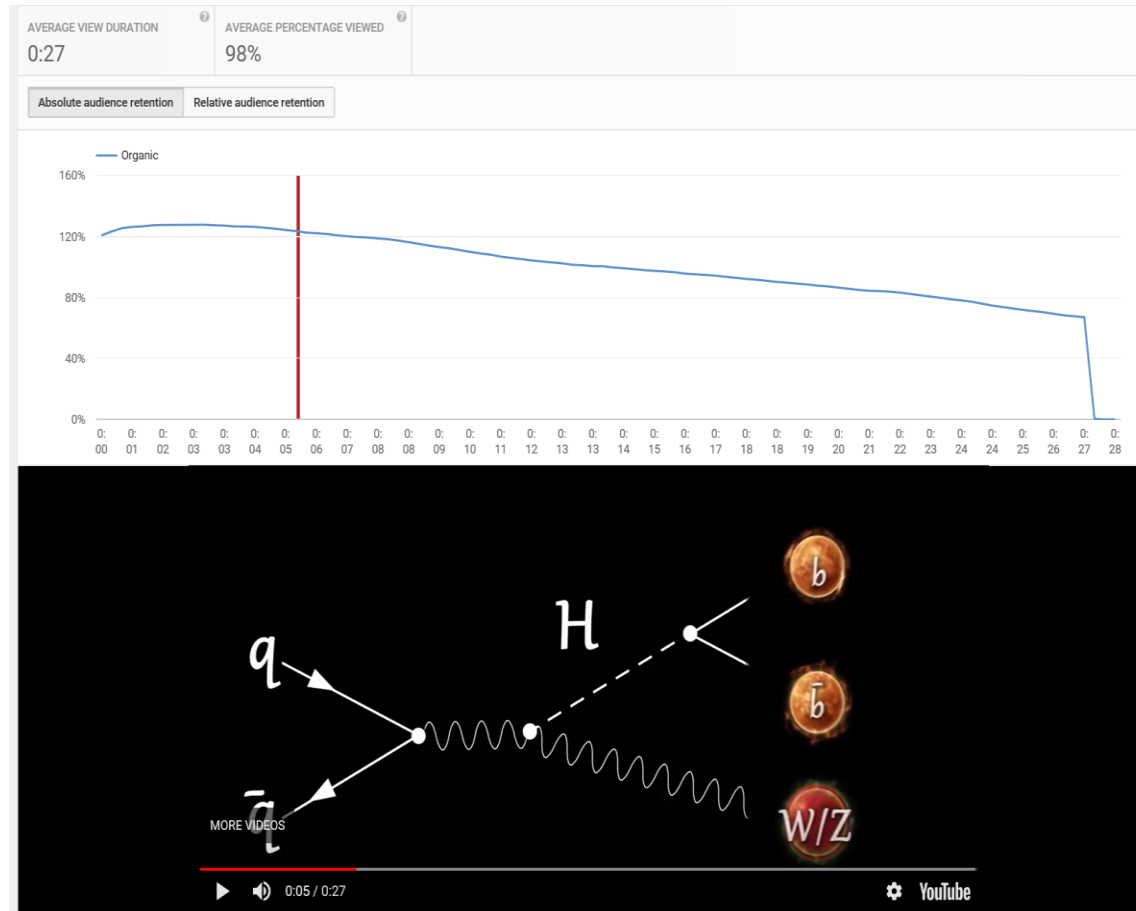
ttH result in 5 min - video

YouTube statistics



Almost 50% people on YouTube watched until the end

Hbb animation



Hbb 30 sec animation

Almost everyone watched it!

<https://www.youtube.com/watch?v=M4EEQdn-2Ms>

6th Higgs anniversary

Six ways to look at the Higgs boson

Six ways to look at the Higgs boson (6 videos, 2 min each)

- ❖ CMS physicists describing the various Higgs decay signatures and production:
<https://www.youtube.com/watch?v=cfm1CUS0lrw&list=PL6opca1Kxk9M6eXm5l-FINLq81fEli0xr&index=1>



6th Higgs anniversary

Celebration banner with ATLAS

- **the most successful post on Twitter**
- Twitter reach - 98,5K | engagement - 1,5k
- Facebook reach - 42K | engagement – 772
- Very high engagement rate (likes/shares)



CMS Experiment CERN @CMSexperiment · Jul 4
 Today is the 6th year anniversary of the discovery of the Higgs boson by CMS and @ATLASexperiment at @CERN. Happy Higgs Day!

#Hi6GS



15 275 596

You Retweeted



ATLAS Experiment @ATLASexperiment · Jul 4
 Today is the 6th year anniversary of the discovery of the Higgs boson by ATLAS and @CMSexperiment at @CERN. Happy Higgs Day!



You, ATLAS Experiment and CERN

3 112 213

CMS 2012 data release

- ❖ The release was announced on Dec 20, 2017
<https://home.cern/about/updates/2017/12/cms-releases-more-one-petabyte-open-data> <http://cms.cern/news/observing-higgs-over-one-petabyte-new-cms-open-data>
- ❖ In this release:
 - 550 TB of collision data (RunB and RunC of 2012)
 - 510 TB of MC and growing (the transfer is still ongoing)
 - Completely new CERN Open Data portal (CODP) user interface.
 - Major redesign of the underlying structure.

Playing with Protons

A new paper, accepted for publication in *Physics Education*!!!

Tells the teachers' side of the [Playing with Protons](#) story, an innovative training course for primary school teachers that started at CERN in 2016

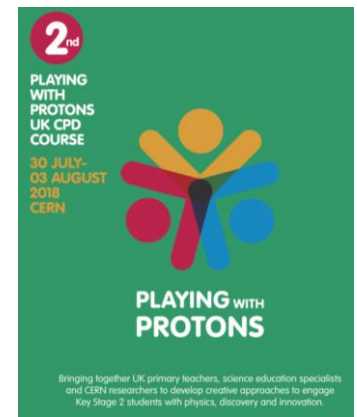
5 courses for 50 primary teachers from UK and Greece

>5,000 students engaged in wonder-full, hands-on, creativity-based activities in UK and Greece, some of which received awards at national and international level

Follow-up evaluation indicates that the course boosted teachers':

- ❖ Interest in particle physics, physics and science
- ❖ Confidence to teach particle physics, physics and science
- ❖ Creativity with how to teach particle physics, physics and science
- ❖ Knowledge sharing with colleagues etc.

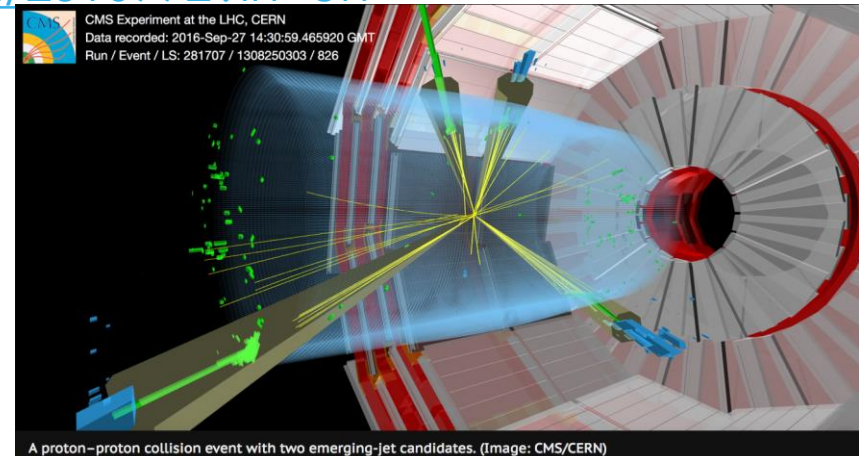
*Acknowledgements: CMS, ATLAS, IdeaSquare, CREATIONS EU Project
All who contributed (with workshops, talks, visits etc)*



Public event displays

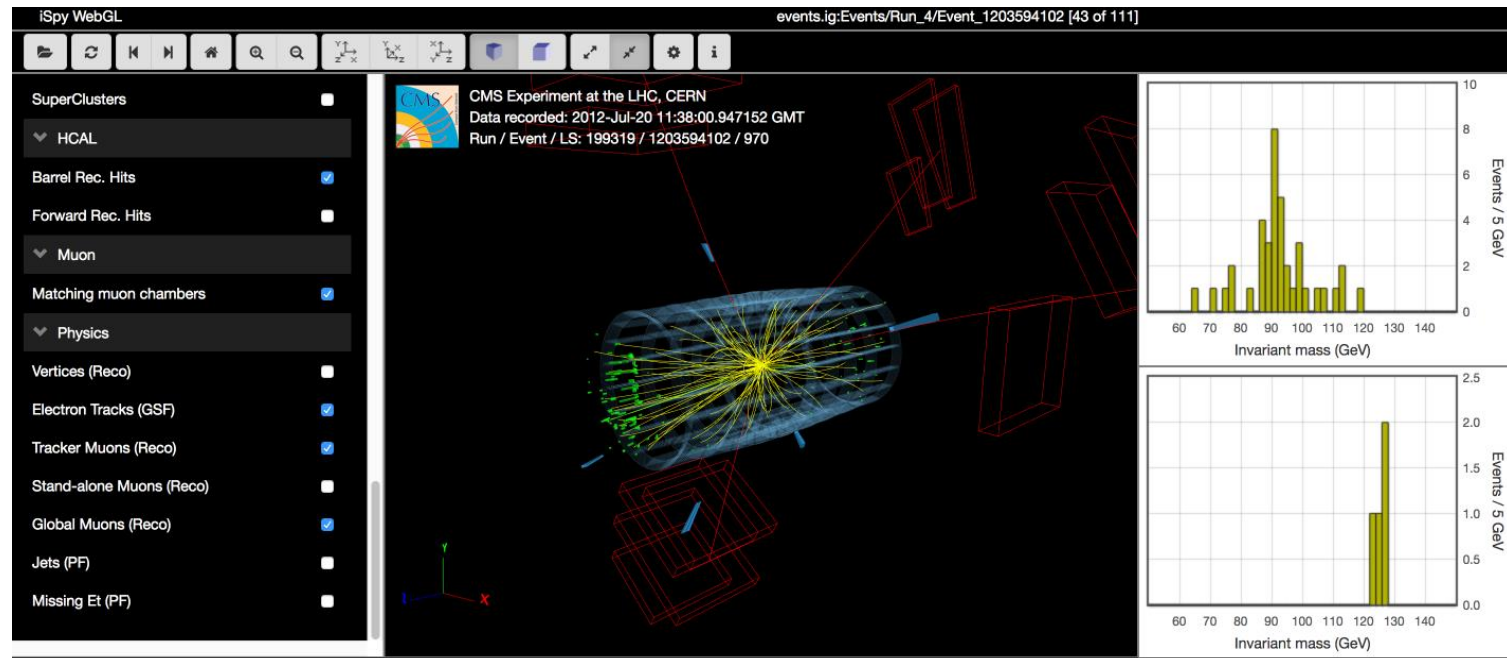
- ❖ “Displays of a collision event from a search for new particles decaying to a jet and and an emerging jet in the CMS detector”
<https://home.cern/about/updates/2018/08/hunting-dark-quarks>
- ❖ “Collisions with 1200 proton bunches in each beam recorded by the CMS detector April 2018” <http://cds.cern.ch/record/2315609?ln=en>
- ❖ “Collisions recorded by the CMS detector on 17 April 2018 at the start of the year's physics run” <http://cds.cern.ch/record/2313709?ln=en>
- ❖ “Beam Splashes seen by the CMS detector #RestartLHC 2018 (end of Mar 2018)” <http://cds.cern.ch/record/2310992?ln=en>

New version of
<http://cern.ch/ispy-webgl>
coming before end of year



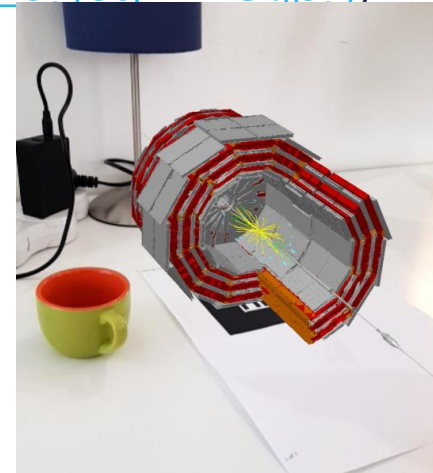
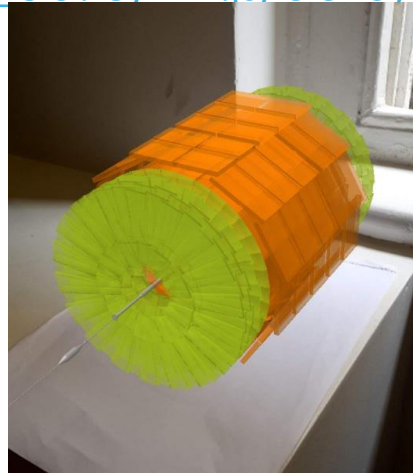
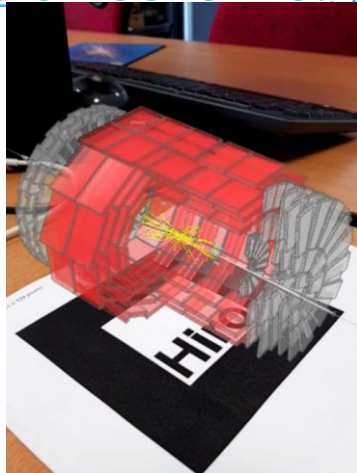
Mini-masterclass tool

- ❖ Developed for ORIGIN event in Toronto (see M. Hoch talk)
- ❖ One-hour workshops with high-school students using tablets
- ❖ Dataset: Z and H to ZZ events
- ❖ <http://cern.ch/ispy-webgl-toronto> (url will be generalized)
- ❖ Used in ORIGIN event in Split Sep 17-20

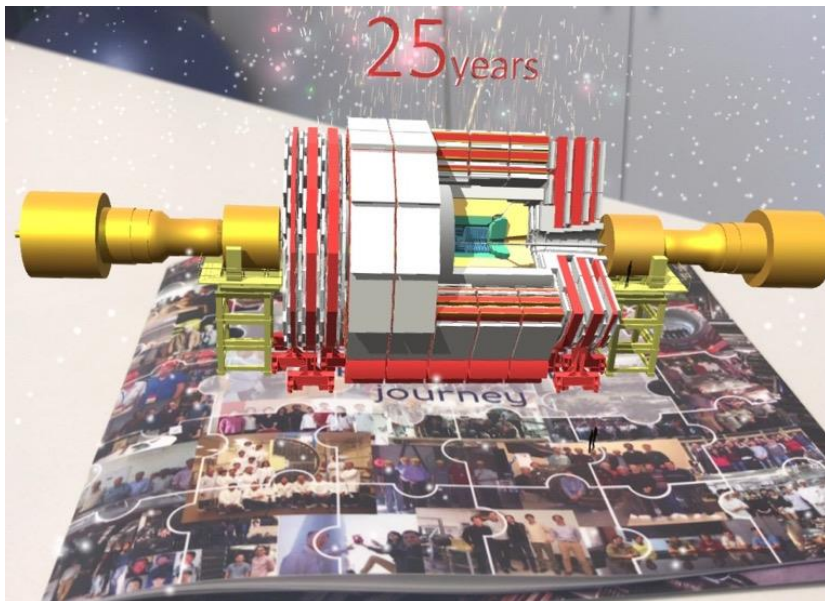


AR in the browser

- ❖ One can create native Augmented Reality (AR) apps but with the A-Frame framework (<https://aframe.io/>) one can make AR that works in the mobile browser
- ❖ Needed: just some HTML & JavaScript (for the simplest applications)
- ❖ On your mobile go to: <https://tpmccauley.github.io/ar-cms>
- ❖ Give the browser permission to use the camera
- ❖ Point your camera to the printed marker (which can be found here <https://jeromeetienne.github.io/AR.js/data/images/HIRO.ipa>)



The CMS Collaboration – a photographic journey



- Collage of pictures from the CMS institutes
- Personal perspective on a history of CMS
- Quotes from young CMS members
- 2018 calendar inside!
- 3D visualization of the CMS detector

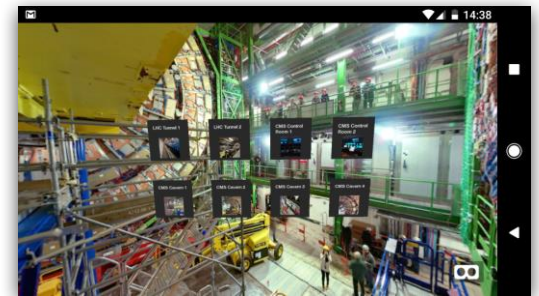
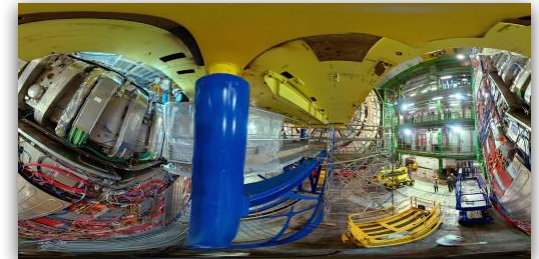


Alaro app needed to scan the cover.

Show the 3D visualization to your friends & family! Use at outreach events, during visits, etc.!

Panorama viewer

- ❖ M. Brice (CERN) has produced many nice 360 deg (4pi actually) panoramas (including CMS cavern, CMS control room, and LHC tunnel)
- ❖ With the A-Frame framework (<https://aframe.io/>) “a web framework for building VR experiences” one can make a nice panoramic viewer in the browser
- ❖ In the desktop: a “magic window” *i.e.* one can pan around the full rotational range
- ❖ In the mobile browser: view the images stereoscopically with a Google Cardboard
- ❖ <http://cern.ch/cms-aframe>
- ❖ Used as part of ORIGIN workshops in Toronto and at public event at CHEP in Sofia
- ❖ Now part of a cross-experiment project (well, ATLAS and CMS for now)
- ❖ <https://github.com/HEPPanoramic>



Oculus Go

- ❖ Oculus Go headset
<https://www.oculus.com/go/>:
self-contained, relatively inexpensive (~300 CHF) VR headset
- ❖ <http://cern.ch/cms-iframe> in the Oculus web browser works well
- ❖ When one clicks on the "goggles" icon on the bottom right the view goes to full 360 and one can navigate to different views
- ❖ Intended for use at ORIGIN event in Split Sep 17-20



CMS Virtual Visits



**Researchers' Night,
28 Sept. 2018.**

Connections from:
Lithuania, Hungary, Mexico,
Italy, Portugal



1000 people
in the audience

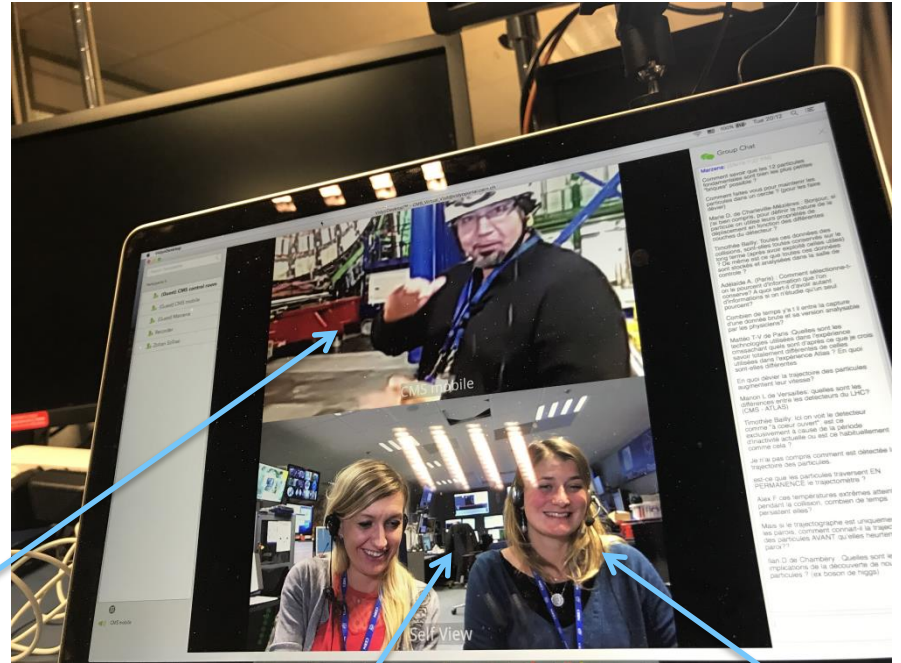


<http://cms.cern/news/news/bringing-cms-lithuania-hungary-mexico-italy-and-portugal>

CMS Virtual Visits

Example: CMS Virtual Visits from France

- ~40 students connected from their homes (after school) to the webcast
- Etherpad for asking questions
- Filtered questions were posted on Vidyo chat for the guides to easy see them & answer



Underground guide,
with a mobile camera

Filtered questions

Surface guide (takes over when the connection from underground is lost) + person filtering questions from Etherpad to Vidyo chat

Behind the scenes:
Noemi Beni and Zoltan Szillasi



<https://www.youtube.com/watch?v=S99d9BQmGB0>

Subtitles in **23 languages**

- Arabic
- Bulgarian
- Chinese (Simplified)
- Chinese (Traditional)
- Dutch
- ✓ English (United Kingdom)
- Finnish
- French
- German
- Greek
- Italian
- Japanese
- Japanese
- Lithuanian
- Persian (Iran)
- Polish
- Portuguese (Brazil)
- Portuguese (Portugal)
- Russian
- Serbian (Cyrillic)
- Spanish
- Swedish
- Turkish



A Capella Science visited CMS



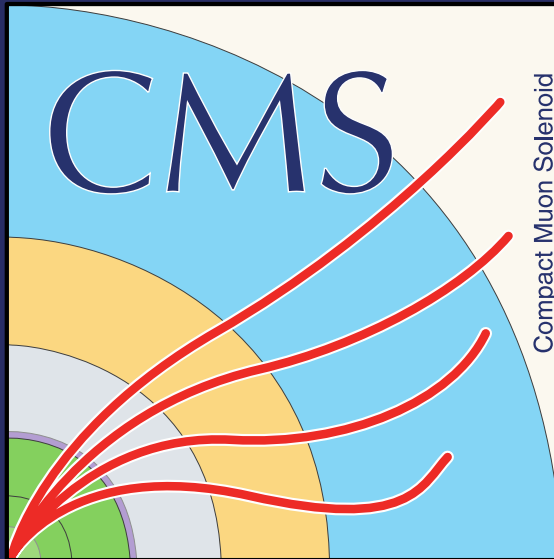
New song?

Stay tuned!

<https://www.youtube.com/user/acapellascience>

THANK YOU

All our projects are possible thanks to help and support of the
CMS Collaborators



cms-communications-team@cern.ch

Key CMS outreach activities:

- ❖ Few successful social media activities:
 - ❖ We launched Instagram:
<https://www.instagram.com/cmsexperiment/> - follow us 😊
 - ❖ tth result explained in 5 minutes [video](#) - most popular post on CMS Facebook + very positive comments
- ❖ A new paper on “Playing with Protons” accepted for publication in *Physics Education*
- ❖ CMS 2012 data release (Dec. 20): <http://cms.cern/news/observing-higgs-over-one-petabyte-new-cms-open-data>
- ❖ CMS Panorama viewer - now part of a cross-experiment project (well, ATLAS and CMS for now) <https://github.com/HEPPanoramic>
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